

DATA SHEET

DA110

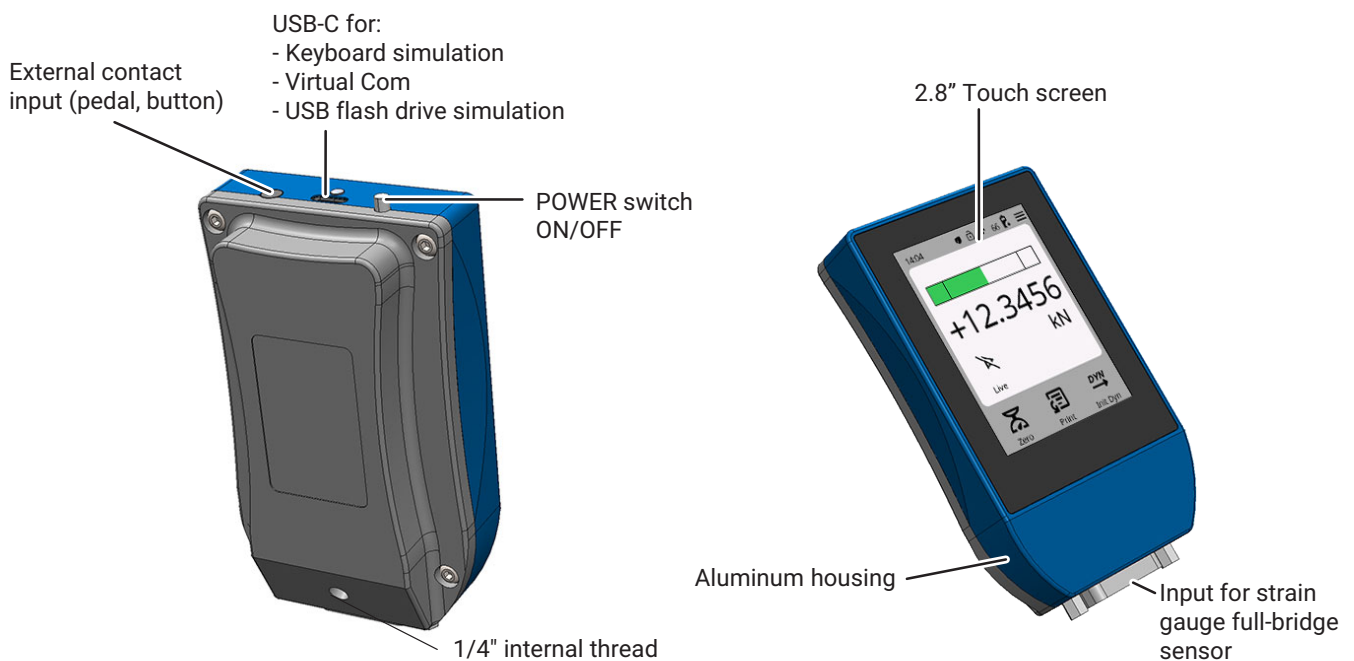
Portable Display-Amplifier with Data-Logger

SPECIAL FEATURES

- Perfect for calibration and maintenance tasks
- Strain Gauge measurement with 0.01 % accuracy
- Bright 2.8" color display, multilingual, simple touch control
- Sensor plug SubD 15 pin-compatible to HBK SG-Sensors
- Internal battery, chargeable via USB-C
- Digital contact for remote controls (e.g. measured value trigger, zero balance)
- 4 GB memory for measured data
- Data transfer via USB-C to PC or Server
- Scratch and shock resistant display
- Robust aluminum housing, shock resistant
- Including power-supply and calibration certificate



CONNECTIONS AND FUNCTIONS



SPECIFICATIONS

Display and operation			
Display	Size	2.8" color touch screen, capacitive, graphical display	
Resolution	Pixel	240 x 320	
Programmable buzzer		Yes	
Numerical representation	Digits	6 plus decimal point	
Display modi		Actual value, Peak min/max, Peak to peak	
Force units		N, kN, lbf, daN, KgF	
Torque units		Nm, lbf*ft, lbf*in	
Pressure units		Pa, kPa, bar, mbar, atm, mmHg, inHg, psi	
Weighing units		g, kg, t, mg, lb, oz	
Display elements		Numerical value, Colored bargraph, Tolerances, Smiley	
Operation		Finger touch or screen-pencil	
Password protection		2 levels, operator and admin	
Metrological properties			
Measurement input	Number	1	
Sensor technologies	SG	Strain Gauge, Full-Bridge 4/6 wire connection	
Sensor impedance	Ω	80 ... 5,000	
Sensor supply voltage	VDC	5	
Measuring ranges	mV/V	2, 5, 10, 20, 100	
Accuracy class	%	0.01 (800 Hz and 19.2 kHz sampling rate)	
Measurement resolution		Measuring range/10,000	
Sensor cable length max.	m	30	
A/D Conversion	Bit	24	
Sensor connection		D-Sub connector, female, 15 pole, HBK standard sensor-pinning and cable-colors	
Sampling rates	Hz	800, 19200 in fast-mode	
Signal bandwidth (-3 dB)	Hz	380, 3920 in fast-mode	
Digital filter		Exponential moving average, Butterworth, Bessel	
Transducer identification		Zero-wire and 1-wire TEDS acc. IEEE 1451.4	
Noise at 25°C with 6 sigma		800 Hz sample rate	19200 Hz sample rate
with 1 Hz Bessel filter	uV/V	0.15	0.15
with 10 Hz Bessel filter	uV/V	0.16	0.3
with 100 Hz Bessel filter	uV/V	1	0.3
Non linearity	%	0.005 of full scale	
Zero drift	%/10K	0.01 of full scale	
Full scale drift	%/10K	0.01 of measured value	
User interfaces and storage			
Digital interfaces USB-C		Connection to a PC to transfer data in CSV format, keyboard simulation, USB flash drive simulation, virtual COM interface, ASCII and modbus/RTU (for command set see manual)	
Internal memory and recording speed/times		10 ms... 24 h (adjustable): 4 GB = 500000 samples+time 800 Hz: 10 min rec.time (max) 19200 Hz: 25 sec rec.time (max)	
Internal parameter-sets	number	6	
Measuring jobs		Free configurable, e.g. 1: Start if Force > 50 N, 2: Save every 0.1 s, 3: End after 15 s (+audio signal), 4: Display results, 5: Store results	

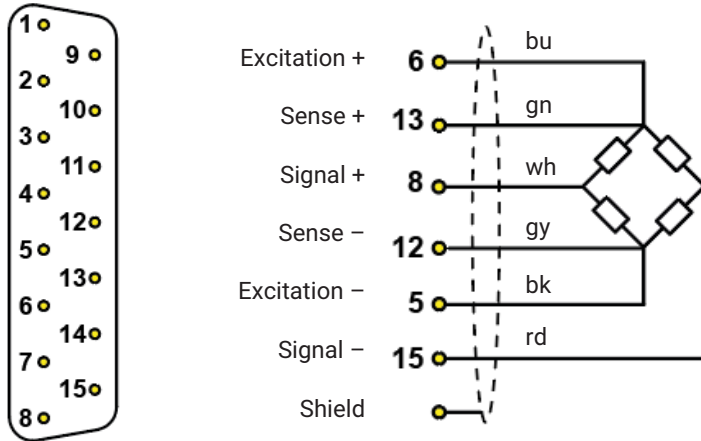
Measurement time stamping		Time + date , battery buffered
Simple statistics		Peaks, Trend (in preparation)
Digital input	Number	1 jack 3.5 mm, N.O. contact for trigger function (e.g. start/stop recording, zeroing, firmware-update, ...)
Power supply nominal	VDC	5, via internal battery or external power-supply with USB-C incl. battery charging
Time for full charging	h	7 hours for 3500 mAh
Operating times Display bright @ 100% Display bright @ 10% Display off Standby mode	h h h years	~10 ~17 ~18 ~2.5
Temperature impact on operating time 25 °C 0 °C -10 °C -20 °C	% of capacity	~100 ~80 ... 90 ~60 ... 70 ~40 ... 60
Galvanic isolation	V	60, between sensor input, USB-C and digital input
Nominal (rated) temperature range	°C	+10 ... +50 (recommended)
Operation temperature	°C	-10 ... +50 (autom. safety switch-off >55 °C)
Storage temperature range	°C	-25 ... +55
Relative humidity	%	5 ... 95 (non condensating)
Protection class (height up to 2000 m, degree of pollution 2)		III (as per EN61140)
Equipment protection level		IP40 with connected plugs or mounted plug protection (acc. to EN60529)
Mechanical tests (device off, acc. PLC hardware-standard IEC 60068-2-8) Oscillation (90 min. in each direction)	g	2 (20 m/s ²), 8.4 ... 200 Hz (const. acceleration), 3 (number of axis) ... 8.4 Hz (const. amplitude 14 mm)
Impact (3x 6 shocks in each direction acc. IEC 60068-2-27)	g	35 (350 m/s ²), sinus, impact duration 6 ms
EMC requirements		Compliance with group 1, class B according to EN 55022 (emission) Compliance with criterion B for ESD and Surge according to EN 61326-1 (Immunity)
Proof of quality		Production Test report and HBK Calibration certificate according to working-standard
Dimensions (H x W x D)	mm	114 x 64 x 32 (w/o plug and cable)
Weight	g	300

Important: To ensure safe operation, do not use quick charge devices. If a replacement is required, please contact HBK Support.

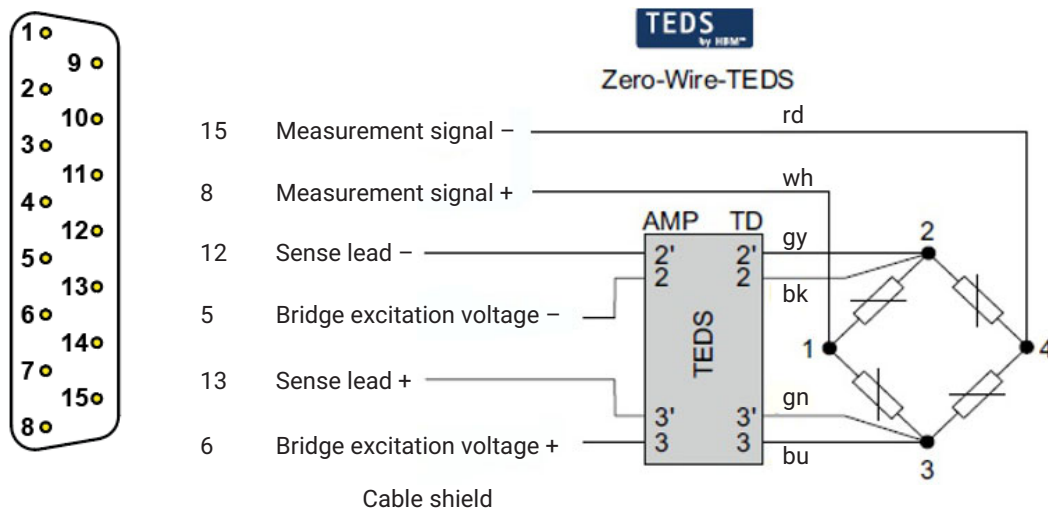
SENSOR PIN ASSIGNMENT

Cable wire colors (HBK transducer): bu = blue; gn = green; gy = gray; rd = red; bk = black; wh = white
DA110 with D-SUB 15 pole female sensor-connector

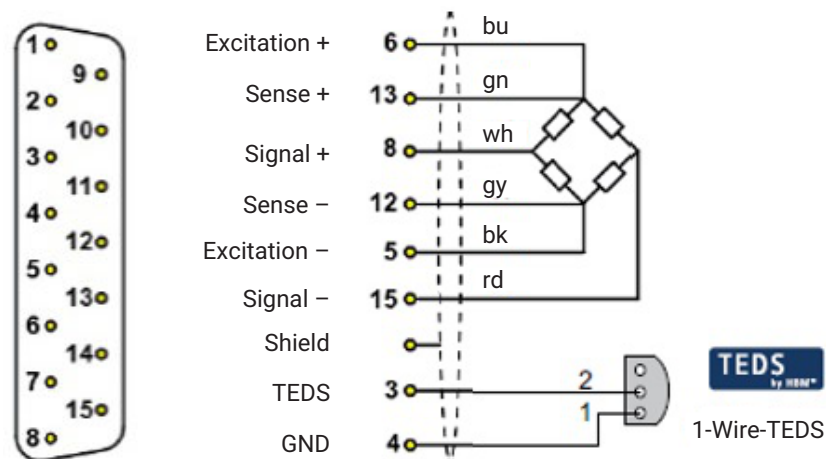
6-wire strain gauge wiring without TEDS



6-wire strain gauge wiring with 0-wire TEDS

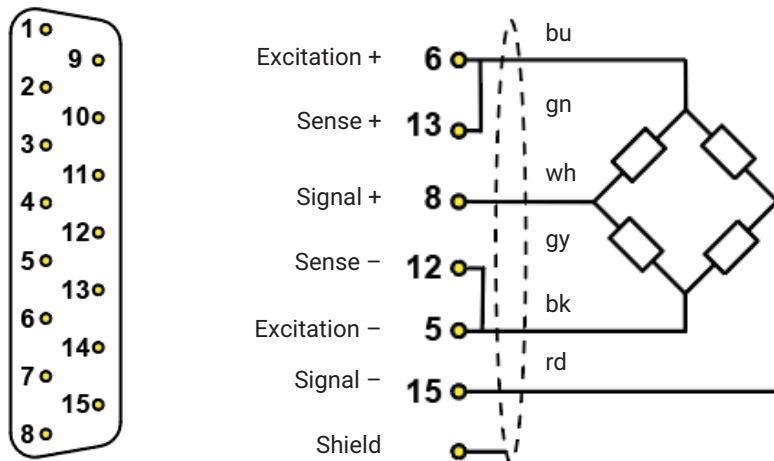


6-wire strain gauge wiring with 1-wire TEDS

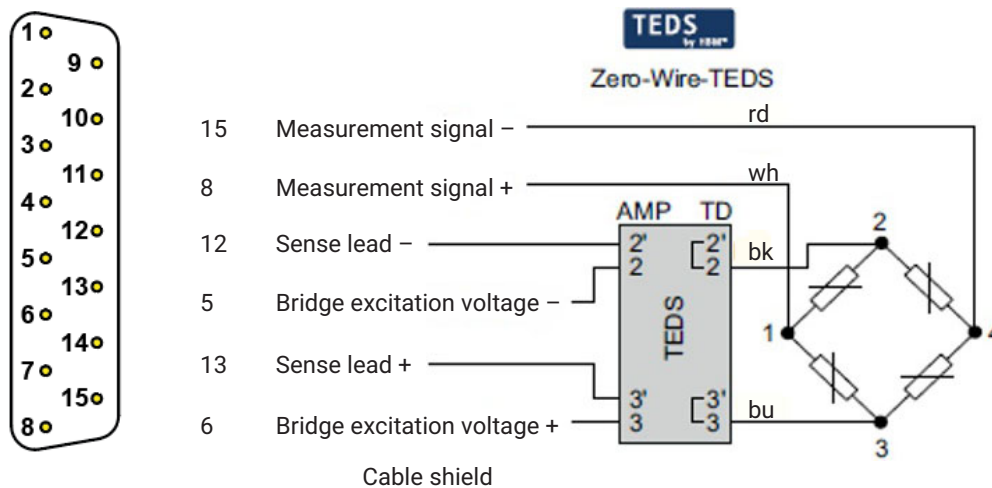


TEDS optional, view form below (solder side)

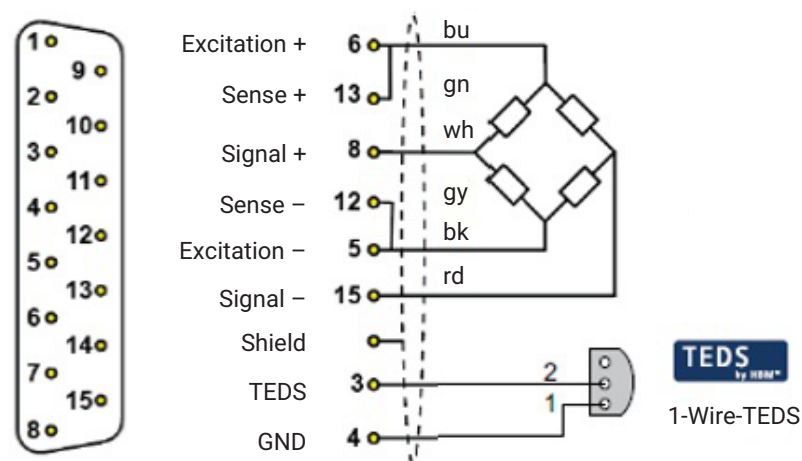
4-wire strain gauge wiring without TEDS



4-wire strain gauge wiring with 0-wire TEDS

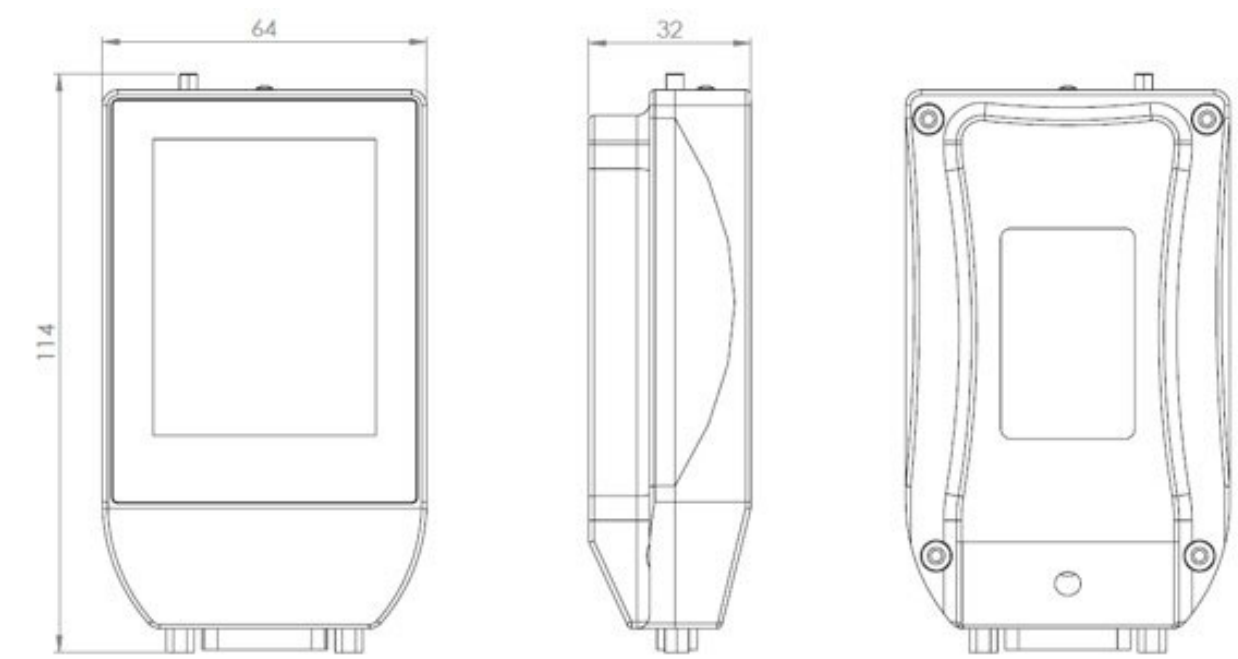


4-wire strain gauge wiring with 1-wire TEDS



TEDS optional, view form below (solder side)

DIMENSIONS IN MM



DA110 is fitted with a standard threaded connector (1/4" internal thread) ensuring it can be mounted on different camera accessories, such as tripods, articulated arms, and mounting brackets.

ORDER NUMBERS

1-DA110	Portable Display-Amplifier one channel, strain-gauge input (full-bridge) incl. re-chargeable internal battery
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SCOPE OF DELIVERY

DA110	Portable Display-Amplifier with Data-logger
USB-A/USB-C	Connection cable, 2 m
USB-A	Plug-in power supply, with adapter compatible to various countries
Documentation	Calibration certificate ISO 10012 HBK working standard (11 points each measuring range), safety instructions, quick start guide

DA110 WITH SENSORS AND PERIPHERALS



ACCESSORIES

1-CON-P1024	Sub-D plug male, 15 pol (without TEDS)
1-TEDS-DB-15P	Set: Sub-D plug male, 15 pol, 0-wire TEDS-board clean
1-SUBD15-MALE	Set: Sub-D plug male, 15 pol, 1-wire TEDS-chip clean
1-TEDS-PAK	TEDS pack, 5x 1-wire EEPROM DS24B33+

Note: To use the Plug & Measure function, HBK sensors can be ordered with a D-Sub connector and integrated TEDS, which contains the sensor data.

To retrofit this function on existing sensors without a TEDS chip, the sensors can be posted to the HBK Calibration Department to be calibrated and for a D-Sub connector with TEDS chip sensor calibration to be installed.

CALIBRATION

K-CAL-U-S01	DA110 device (re-) calibration ISO 10012 according to HBK factory standard
K-CAL-U-A01	DA110 device calibration ISO 10012 according to DAkKS standard

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