Technical Data SBBRT - Digital

- Rated torque 200 Nm, bi-directional
- Service temperature: -20°C to +70°C
- Protection class according to EN 60653: IP64
- Torque output signal: 0-5 V
- Integrated angle sensor for determining the speed and direction of rotation
- Suitable for frames with BSA 68

Special Advantages

- Compliant with DIN EN 15194:2017
- Salt spray test 96 hours DIN EN 60068-2-52:2018 passed.
- Simple and intuitive assembly
- Completely maintenance free
- Made in Germany
- No recalibration required

Summary

The S-BB-RT sensory bottom bracket with integrated sensors is a long-standing successful solution for detecting torque, speed and direction of rotation.

The completely non-contact measuring principle based on magnetostriction and the robust design are ideally suited for the demanding use in e-bikes. Our many years of experience show that our sensors master the tough demands. Our sensors have proven their performance and robustness in the laboratory, and meet the requirements of DIN EN 15194.

Our torque sensors ensure that your e-bike rides the way your customers expect it. Splendid, harmonious and battery-friendly.

We are happy to supply our SBBRT for your small, medium and large series.

Technical characteristics - SBBRT

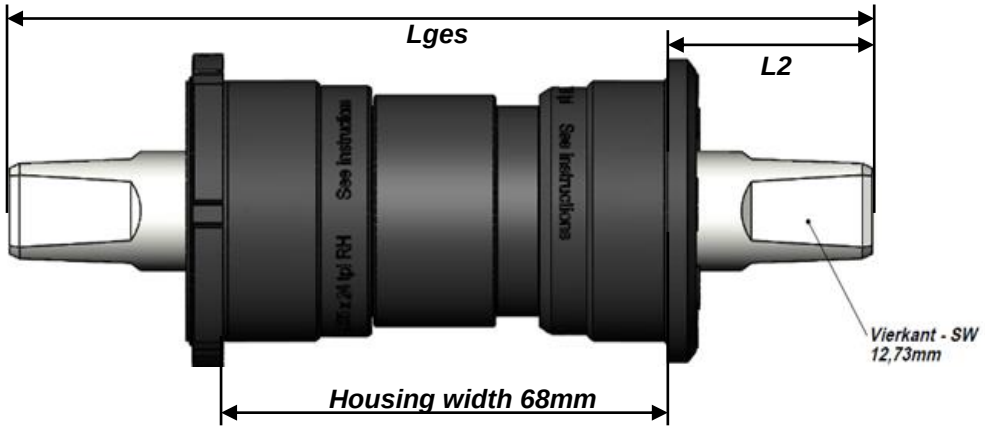
	S-BB-RT /Square
Ball-bearing	2 x 61902-16- 2RS
Shaft surface	Zinc A2B
Cerification according to DIN ISO 15194:2017[1]	Yes
Material of sensor shell	Macromelt
Thread	BS 1,375x24
Impermeability	IP 64[2]
Salt spray test according to DIN EN 60068-2-52:2018	test duration 96 hours passed[3]
Pulse	Pole ring 32 pulses / rotation
Power supply	Digital: +7 … 16 V DC
Current limited supply voltage	Max. 1A
Signal output bandwidth:	Torque 250 Hz Angle sensor 4 kHz
Measuring range: Torque	±200 Nm
Signal quality: Torque	±2.5 % FS related to linearity
Error signal torque output[4]	Permanent approx. 2.5 V
Signal output characteristic	10 mV/Nm (+/- 2.5 % FS)

Do not use strong magnets or magnetic tools during assembly, otherwise the magnetic field of the shaft may change. The bottom bracket becomes permanently disfunctional! The bottom bracket may only be disassembled by NCTE employees, otherwise the warranty expires.

[1] The configuration of the test setup for product release can be obtained from NCTE on request.
[2] In the installed state
[3] In the installed state
[4] With constant signal output during operation

Dimensions

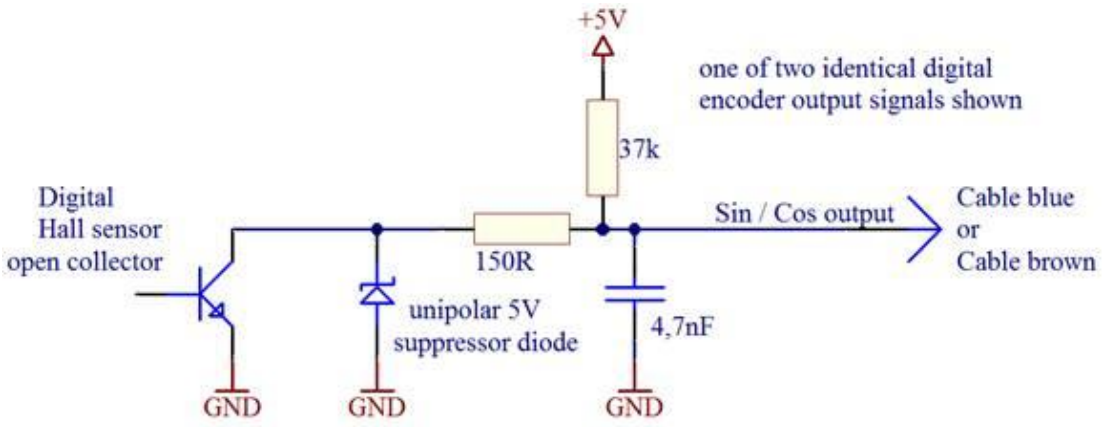
Sr. No.	Corresponds to the following inner bearing lengths	L2 ±0.5 mm	Lges ±1.0 mm
Bottom bracket with screw adapter BS 1,375x 24			
1	120 K	24.40	120.00
2	120 L	26.40	120.00
3	128 K	28.40	128.00
4	128 L	30.40	128.00



Connection plan

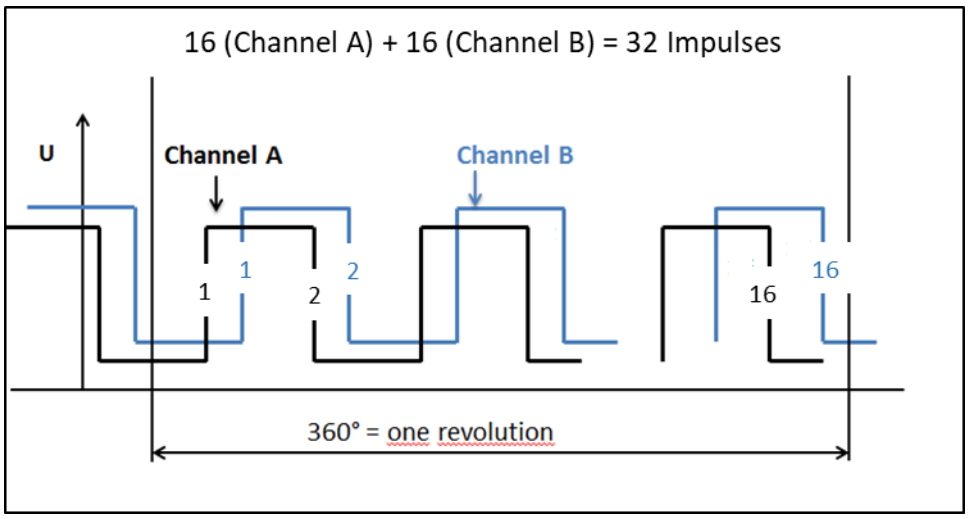
S-BB-RT Digital				
Cable colour	PIN	Description	Signal	Annotation
White	1/2	Supply Voltage	+7 … 16V DC	-
Black	2/2	GND	0V	-
Blue	1/3	Channel A	0V / Open collector	16 CPR
Brown	2/3	Channel B	0V / Open collector	16 CPR
Grey	3/3	Torque	Offset 2.5 V at 0 Nm	10 mV/Nm

Connection diagram

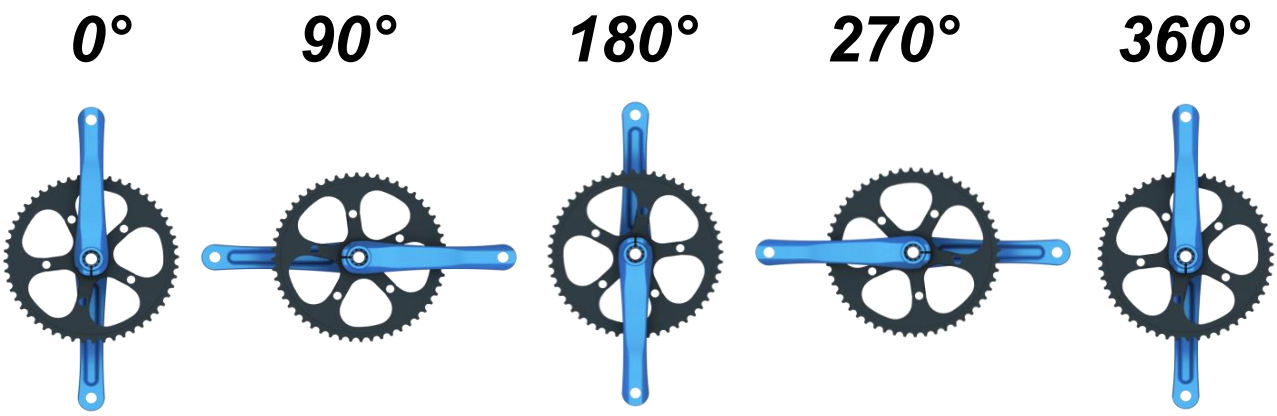


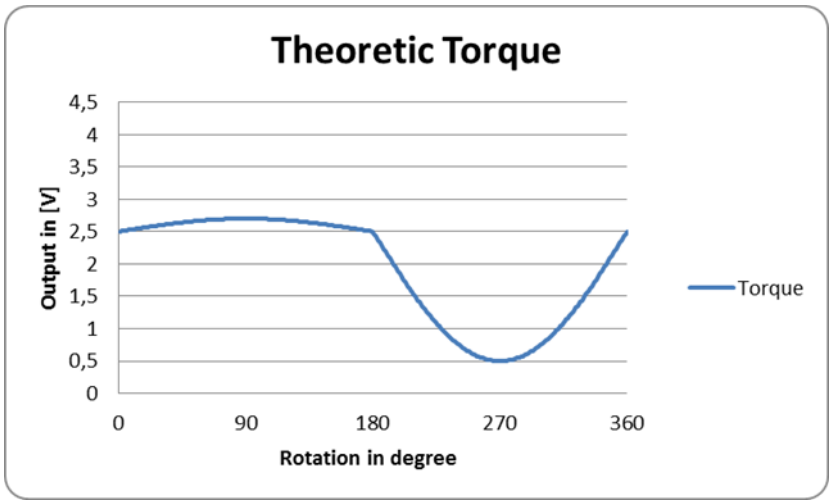
Angle sensor

Angle sensor with 32 impulses for precise determination of speed and direction of rotation.



Torque curve





Option

Version	Part number	Price
SBBRT-120K	100000450	
SBBRT-120L	100000449	
SBBRT-128K	100000452	
SBBRT-128L	100000451	

All versions including digital angle sensor, 100mm connection cable and JST PAP 2 and 3 pole plug.

Operation Manual

The sensory bottom brackets are used in all types of e-bikes, from city bikes to trekking and mountain bikes to cargo bikes. They deliver the necessary signals to the controller for a harmonious driving feel, thus enabling an individual driving experience with battery-saving engine assistance. The so-called S-pedelecs are also equipped with our sensors.

General

Please read this manual carefully before using it for the first time and only use the product as directed. Keep this manual for future reference to avoid any misuse. For the correct installation please proceed analogously to the installation instructions. The user and installation instructions can be downloaded as a PDF file under the following link: http://www.ncte.de/serienprodukte_downloadbereich/, or be requested from our customer service at: sales@ncte.de.

The explanation and operating instructions refer only to the sensor in the condition in which it was placed on the market. Subsequent parts attached by the end user and / or subsequent interventions are not taken into consideration.

Manufacturer

The manufacturer of the torque sensor series S-BB-RT- digital is:
NCTE AG
Raiffeisenallee 3
82041 Oberhaching
Deutschland
Tel.: + 49 (0) 89 665 619-0

Intended use and installation

The sensor is intended for use in bicycles with electric drive (pedelec, e-bike and electric bicycle) within the meaning of section 39 (7) of the German Road Traffic Act. Only use the product in bicycle frames with a BSA thread and 68mm bearing width. Crank arms are to be mounted on the square shaft ends. The sensor measures the torque introduced via the pedal and crankshaft in a clockwise direction. The sensor also detects the speed and direction of rotation. For safety reasons, the motor assist may only be activated if both speed outputs supply several correct and plausible signal sequences.

For this, the direction of rotation and the speed must be determined from both signals and checked for sensible limit values.

Any other use is considered improper and may result in property damage or even personal injury. The manufacturer assumes no liability for damage caused by improper or incorrect use.

Possible error cases

In the event of an unexpected defect in the electronics, this outputs a constant value of approx. 2.5V, which corresponds to 0 Nm.

If the sensor is blocked, contact the manufacturer immediately and stop using the product.

Scope of delivery

The torque sensor system consists of a calibrated **sensor** with integrated signal acquisition / processing in the housing and a **connection cable** according to the configuration**.**

Handling and Transport

During handling, storage and transport, care must be taken that the sensor is not exposed to strong magnetic or electromagnetic fields (e.g., demagnetization coils). Also make sure that no magnetic tool is used.

Assembly

For the correct installation please proceed analogously to the installation instructions. The user and installation instructions can be downloaded as a PDF file under the following link: http://www.ncte.de/serienprodukte_downloadbereich/, or can be requested from our customer service at: sales@NCTE.de. Please note the pin assignment in the plug.

Important technical safety instructions

1. Opening the sensor is strictly prohibited.
2. Impacts and falls should be avoided when not in use.
3. To prevent damage due to a short circuit of the connecting cable, the power supply to the sensor must be limited by a suitable fuse (approx. 1A rated current).
4. The sensor may only be operated within the permitted load limits. These can be found in the standard DIN 15194: 2017 and ISO 4210: 2018 Cycles- Safety requirements for bicycles Part 2: Requirements for city bicycles Chapter 4.13: Pedals and pedal / crank drive system
5. The polarity reversal or overvoltage on the connection cables can damage the sensor. The cable leads must be connected to the terminal strip in accordance with the connection diagram.
6. The routing outside the bicycle frame may affect the sensitivity of the sensor. NCTE recommends the laying of the connection and data line accordingly in the frame. If this laying is not possible due to technical reasons, the radiation sensitivity should be re-evaluated accordingly by the EPAC manufacturer.

Disposal

Dispose the article and all associated components via an authorized waste disposal company. Observe the currently applicable regulations. If in doubt, ask your disposal centre for environmentally sound disposal.

Service

Service-Contact: Tel.: +49 89 66 56 19 0 or E-Mail: sales@ncte.de

Cleaning

The sensor must not be cleaned with a high-pressure cleaner as the ball bearings could be damaged.
The contact or cleaning of the sensor with solvent-containing liquids is not permitted

Conformity with EU directives

The product meets the requirements of the European Union for CE. For more information, please contact Customer Support (sales@ncte.de). The conformity is shown by the CE Label.