



# THUN ELECTRIFIES

Sensory BB-Cartridges



## Sensory BB-Cartridges X-CELL R and X-CELL RT

Specifications	X-CELL R	X-CELL RT	Remarks
Performance 1	Cadence: rotation/min.	Cadence: rotation/min.	
Performance 2	Rotational direction	Rotational direction	
Performance 3	-	Torque [Nm]	
Length of spindles	120K; 120L; 128K; 128L; 136L	120K; 120L; 128K; 128L; 136L	See drawing
Certification: EN 14764 (City-Trekking)	Yes	Yes	
Certification: EN 14766 (MTB)	Yes	Yes	
Cup threads	BS 1.375x24	BS 1.375x24	
Right-hand cup	Low profile	Low profile	
Material of cups	PA 6.6 Gf 30 %	PA 6.6 Gf 30 %	
Material of sensor shell	Macromelt	Macromelt	
Ball Bearings	2 x 61902 2RS	2 x 61902 2RS	
Square	12.73 mm	12.73 mm	
Surface of spindles	A2B	A2B	
Assembly tool	Shimano® compatible	Shimano® compatible	
Sensory system	2 x Hall-sensors	2 x Hall-sensors, PCME-sensor	
Impulse transmitter 1	Poled ring - 32 impulses/rotation	Poled ring - 32 impulses/rotation	
Impulse transmitter 2	-	Magnetized spindle	
Voltage feed	Analogue: +7...16 V DC, Digital: +4...16 V DC	+7...+16 V DC	For lower voltage feed please contact technical support.
White cable (input)	Power supply	Power supply	
Brown cable (output)	Sine signal	Sine signal	
Blue cable (output)	Cosine signal	Cosine signal	
Black cable (ground-connection)	Ground	Ground	
Grey cable (output)	No connection	Torque signal	
Length of cable	1100 mm	1100 mm	Different lengths optional: surcharge applies
Signal output: sine	Analogue or digital (open collector)	Analogue or digital (open collector)	Analogue: offset +2.5 V Amplitude max. 4.5 V <sub>SS</sub> Digital: 0 V/Open collector
Signal output: cosine	Analogue or digital (open collector)	Analogue or digital (open collector)	Analogue: offset +2.5 V Amplitude max. 4.5 V <sub>SS</sub> Digital: 0 V/Open collector
Signal output torque: attribute 1	-	Offset +2500 mV at 0 Nm	
Signal output torque: attribute 2	-	Analogue: ±10 mV/Nm	
Signal output torque: attribute 3	-	Bandwidth: 250 Hz at -3 dB	
Accuracy of signals: sine/cosine	± 3° (± 0,8 %)	± 3° (± 0,8 %)	Per turn of crank (360°)
Accuracy of signals: torque	-	Effective range ± 200 Nm	
Accuracy of signals: torque	-	± 2.5 %	Of effective range
IP level	IP 56 as per EN 60529	IP 56 as per EN 60529	

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## WIRING DIAGRAM X-CELL R AND X-CELL RT



### X-CELL RT Digital (open collector)

Wire color	Description	Signal	Signal range	Remark
White	Power supply	+7...16 V DC	max. 20 mA	-
Black	Ground	0 V	-	-
Blue	Output	Cosine	0 V/Open collector	16 Impulses/Rotation
Brown	Output	Sine	0 V/Open collector	16 Impulses/Rotation
Grey	Output	Torque	Offset +2,5 V bei 0 Nm	+/- 10 mV/Nm

### X-CELL R Digital (open collector)

Wire color	Description	Signal	Signal range	Remark
White	Power supply	+4...16 V DC	max. 10 mA	-
Black	Ground	0 V	-	-
Blue	Output	Cosine	0 V/Open collector	16 Impulses/Rotation
Brown	Output	Sine	0 V/Open collector	16 Impulses/Rotation
Grey	No connection	-	-	-

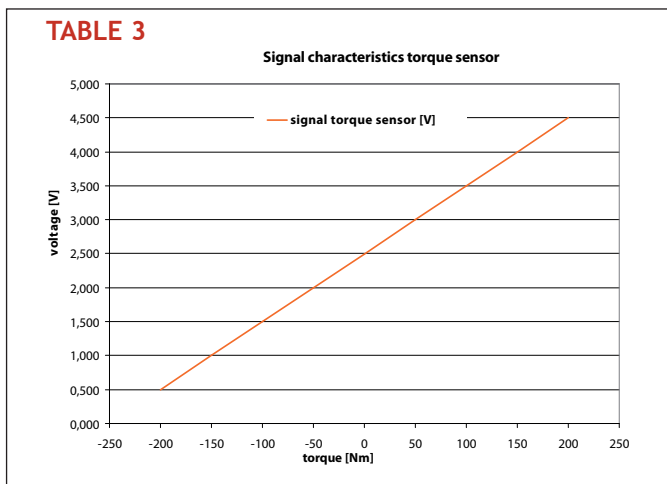
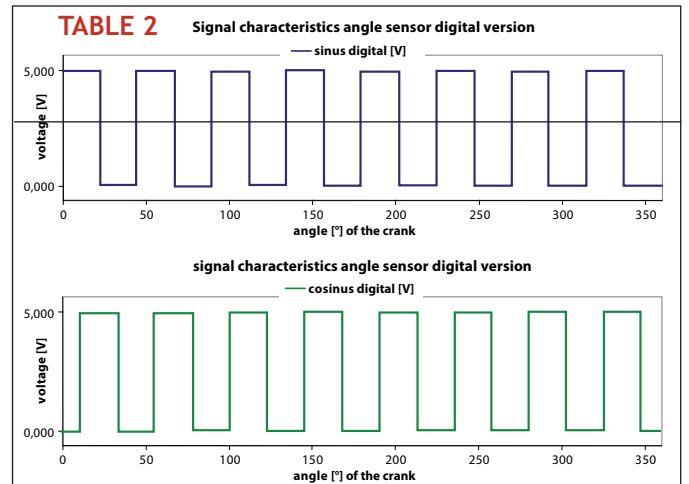
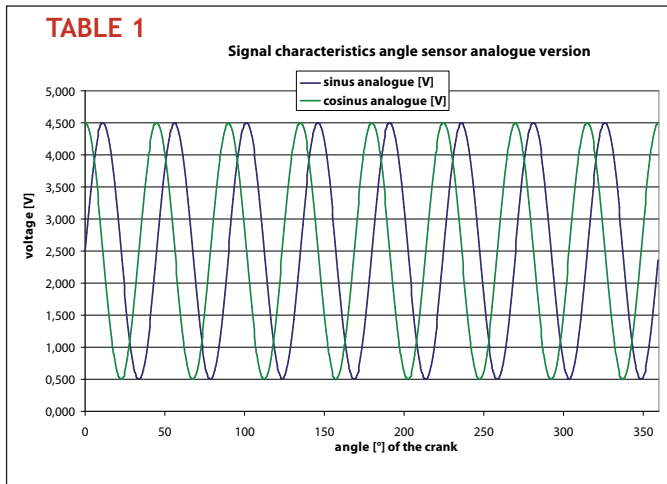
### X-CELL RT Analogue

Wire color	Description	Signal	Signal range	Remark
White	Power supply	+7...16 V DC	max. 20 mA	-
Black	Ground	0 V	-	-
Blue	Output	Cosine	Offset +2,5 V amplitude max. 4,5 V <sub>ss</sub>	16 Impulses/Rotation
Brown	Output	Sine	Offset +2,5 V amplitude max. 4,5 V <sub>ss</sub>	16 Impulses/Rotation
Grey	Output	Torque	Offset +2,5 V bei 0 Nm	+/- 10 mV/Nm

### X-CELL R Analogue

Wire color	Description	Signal	Signal range	Remark
White	Power supply	+7...16 V DC	max. 15 mA	-
Black	Ground	0 V	-	-
Blue	Output	Cosine	Offset +2,5 V amplitude max. 4,5 V <sub>ss</sub>	16 Impulses/Rotation
Brown	Output	Sine	Offset +2,5 V amplitude max. 4,5 V <sub>ss</sub>	16 Impulses/Rotation
Grey	No connection	-	-	-

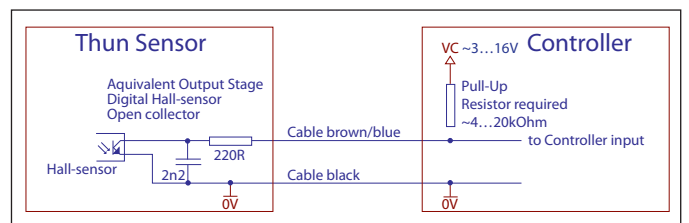
## SIGNAL CHARACTERISTICS OF X-CELL R AND X-CELL RT



**TABLE 1:** X-CELL R and RT analogue version

**TABLE 2:** X-CELL R and RT digital version

**TABLE 3:** X-CELL RT torque



Errors and modifications excepted!

