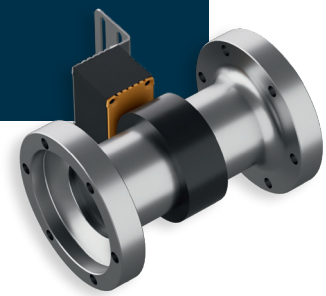
iPK

Sensor-integrated precision coupling
with wireless data transmission

150 – 2250 Nm

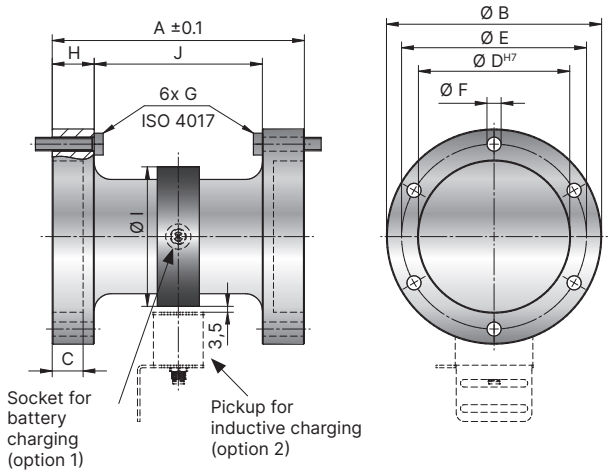


Features
- Measurement of torque, speed and temperature
- Wireless data transmission via app or gateway
- Easy installation and start-up
- Seamlessly integrates into the application

Material
- Sensor-integrated flange made of high-strength stainless steel

Design
- Centrally positioned measuring flange with high concentricity
- Compatible with rigid, torsionally stiff or vibration-damping precision couplings
- Available with overload protection

Specifications
- Bluetooth Low Energy 4.2
- Sampling rate up to 1,000 samples per second
- Speed resistant up to 5,000 min^{-1}
- Measuring deviation < 1% (torque)



Sensor data

Measured values		Torque, speed and temperature
Sampling rates[1]	(SPS)[2]	1, 10, 50, 100, 250, 500, 1,000
Torque accuracy up to T_{KN}[3]	(% of T_{KN})	+/-1
Speed accuracy[3,4]	(% of 660 min^{-1})	+/-1
Temperature accuracy	(°C)	±2
Protection class		IP54
Operating temperature range	(°C)	-20 to +60

1 Battery operating time up to several months, depending on the sampling rate
2 Samples per second
3 The direction of rotation is indicated by the sign
4 In the speed range up to 660 min^{-1}

Model iFL

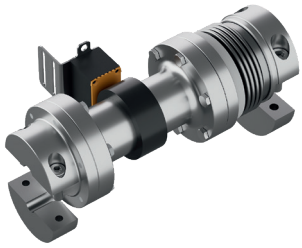
Size			150		500		1,500	
Rated torque	(Nm)	T_{KN}	150		500		1,500	
Max. torque	(Nm)	T_{KMax}	225		750		2,250	
Power supply			Induction	Battery	Induction	Battery	Induction	Battery
Flange length	(mm)	A	130		150		150	
Flange outside diameter	(mm)	B	90		128		170	
Fit length	(mm)	C	7		17		16	
Fit diameter H7	(mm)	D	68		90		125	
Bolt circle diameter	(mm)	E	78		110		148	
Bore diameter	(mm)	F	6.4		8.4		13	
Hex head screw (ISO 4017)		G	M6		M8		M12	
Tightening torque	(Nm)		12		30		110	
Flange thickness	(mm)	H	15		25		25	
Sensor module diameter	(mm)	I	63		83		115	
Torsional stiffness	(kNm/rad)	C_T	110		500		2,600	
Moment of inertia	(10^{-3}kgm²)	J_{ges}	1.2		8.4		25.6	
Weight	(kg)		1.1		3.3		5.5	
Max. speed	(min^{-1})	n	5,000					
Balancing grade			G 2.5					
Static overload	(%)	T_{KMax}	150					

iBK iEK iLP iSK iSN

Possible combinations

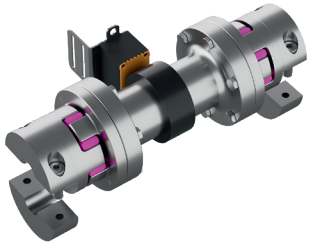
The sensor-integrated precision couping iPK is modular in design. The centerpiece is the sensor-integrated flange iFL, which can be widely combined with R+W precision couplings. Below are just a few of many possible configurations.

Models	Features



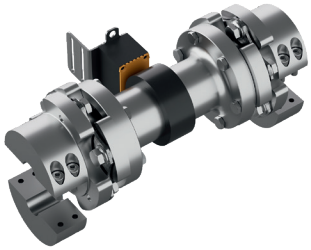
Combination iSNH + iFL + iBKH

- Rigid hub + backlash-free bellows coupling
- High torsional stiffness
- Easy to install / radially mountable
- Misalignment compensation
- Integrated bellows support



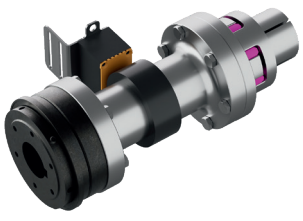
Combination iEKH + iFL + iEKH

- Backlash-free elastomer couplings
- Vibration damping
- Easy to install / radially mountable
- High compensation for angular and parallel misalignment due to dual-flex layout
- Electrically isolating



Combination iLPH + iFL + iLPH

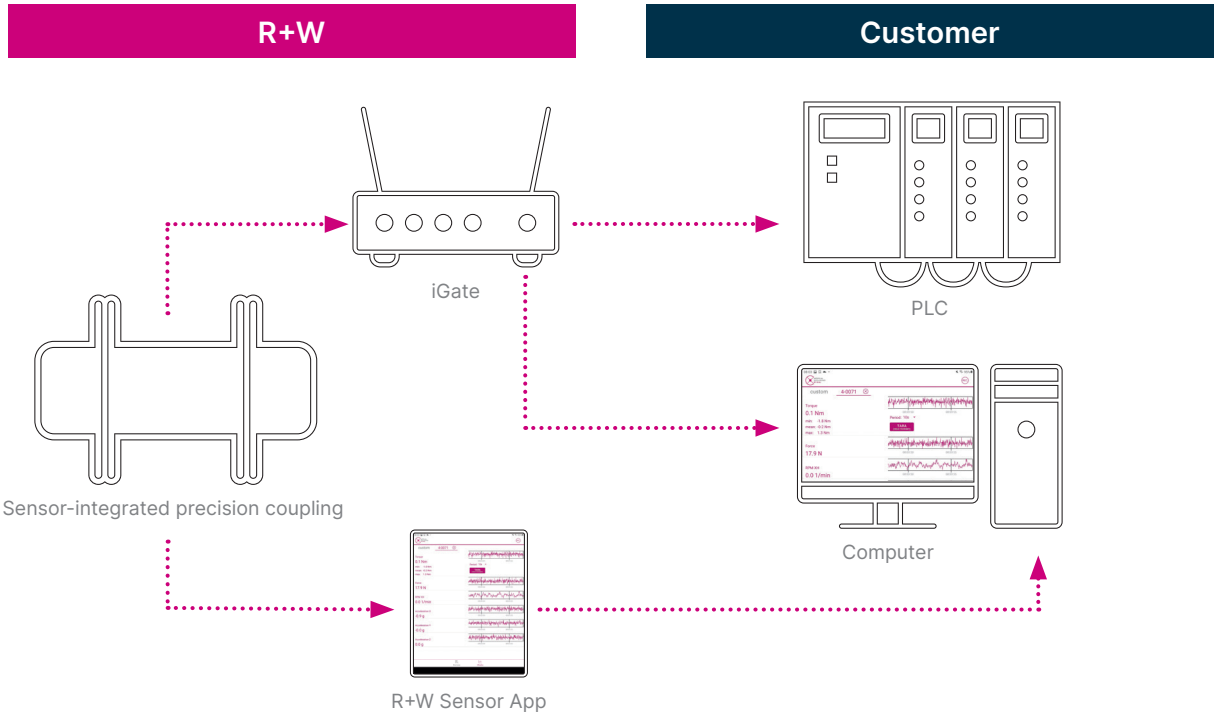
- Backlash-free disc pack couplings
- High torsional stiffness
- Easy to install / radially mountable
- High compensation for angular and parallel misalignment due to dual-flex layout
- Torque transmission through frictional pressure applied to disc pack faces



Combination iSKP + iFL + iEK7

- Backlash-free torque limiter + backlash-free elastomer coupling
- Overload protection through precision disengagement at specified torque
- Disengagement within milliseconds
- Low residual friction after disengagement
- Misalignment compensation

Measurement sequence



iGate – R+W Gateway

The R+W Gateway transmits the data via analog outputs directly to the customer's machine control (PLC) or via the USB-C port using a virtual COM port (UART) to a PC or another evaluation unit.

R+W Sensor App

The R+W Sensor App allows for real-time visualization and for data to be stored on a mobile device or on the measuring amplifier itself. Additionally, the data can be exported in CSV format and analyzed on a PC.

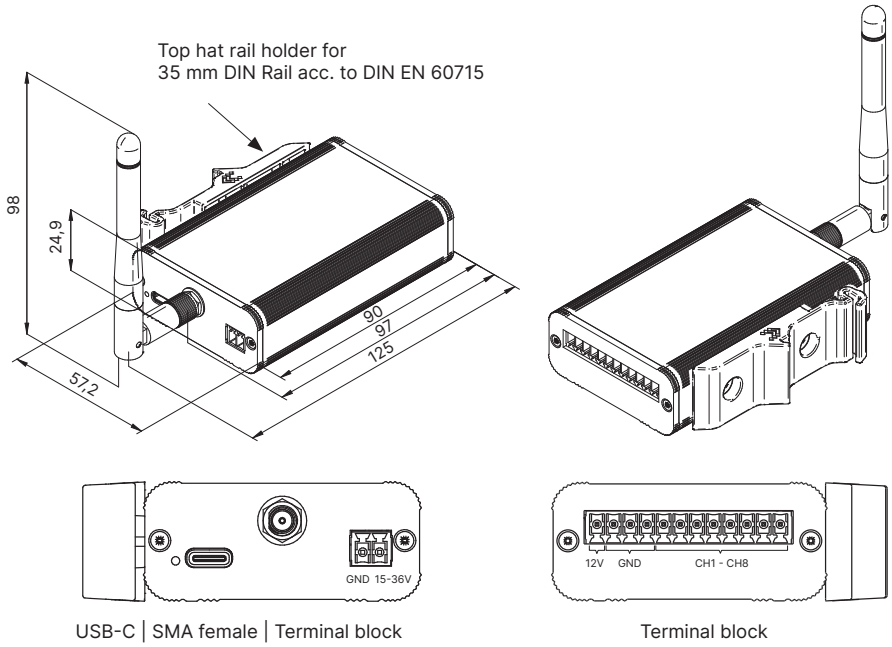
R+W Sensor App for tablet/smartphone

Function and features

+ Configuration of the sensor-integrated precision coupling and the R+W Gateway
+ Display of measured values in various formats with additional features
+ Recording, storing and exporting as CSV or PDF
+ Creating individual dashboards
+ Available on Android and iOS
+ Available languages: English and German

iGate

R+W Gateway



USB-C | SMA female | Terminal block

Terminal block

Order number	90009400_00000XXXX

Features		
Antenna port		SMA female
Connection types		USB-C port | Digital interface UART
		Terminal block for analog outputs
Number of analog ouptuts		8
Input resistance of analog inputs	(kΩ)	min. 10
Voltage range of analog outputs	(V)	0 to 10
Supply voltage (front side 2-pole green)	(V)	min. 15 to max. 36
Bluetooth reach	(m)	max. 10
Temperature range	(°C)	-20 to +60
Protection class		IP20

Depending on the sampling rate and number of sensor nodes (sensor-integrated flanges), a limited number of channels is available per gateway. For example, 2 sensor nodes with a sampling rate of 500 SPS can be connected to one gateway. Per sensor node, 2 sensors, such as for torque and speed, can then be read out.

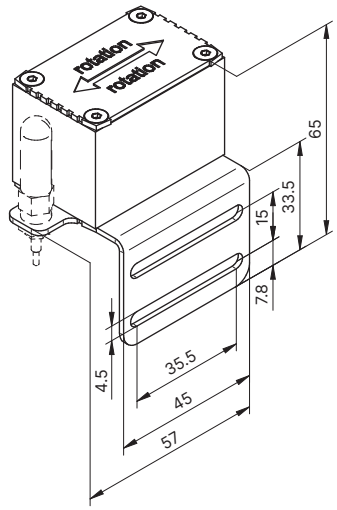
Samples per second [SPS]	Sensor nodes	Sensors per sensor node
1,000	1	1
500	2/1	2/3
250	4/2	2/6
100	4	6
50	4	6
10	4	6
1	4	6

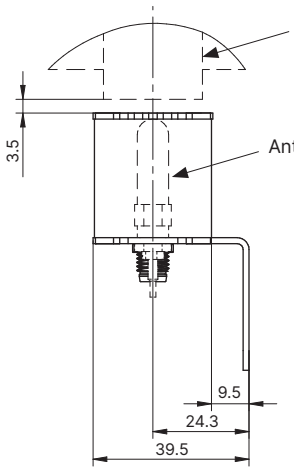
iPK

Accessories for sensor-integrated precision coupling

Pick-Up for induction

Order number	90004770_00000XXXX	Delivery scope of iFL with Induction





The iFlange is supplied with power via the pick-up using induction. For reliable power transmission, a distance of approximately 3.5 mm between the pick-up and coil ring must be maintained.

Charging cable Pick-Up for induction

Length in [m]	Order number	Delivery scope of iFL with Induction
2	90003620_00000XXXX	X
5	90005410_00000XXXX	
10	90005420_00000XXXX	

Antenna for Pick-Up

Order number	90005430_00000XXXX

Antenna cable

Length in [m]	Order number
2	90005440_00000XXXX
5	90005450_00000XXXX
10	90005460_00000XXXX

Charging cable for battery

Length in [m]	Order number	Delivery scope of iFL with Battery
1,5	90005400_00000XXXX	X