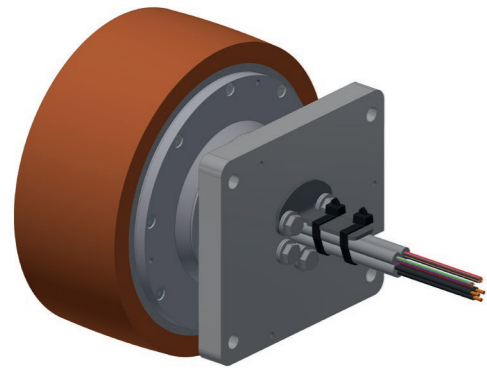


# i-Wheel 3213.00-2XXX



## Direct drive - Benefits in a nutshell

- No gearbox – no wear
- Much longer service life compared to conventional drive technology with a gear stage
- Excellent running properties with barely perceptible noise level
- Safe operation due to permanent temperature monitoring
- Ultra-compact with extremely high power density
- Easy replacement of the the wheel coating on site possible thanks to the patented Ketterer solution



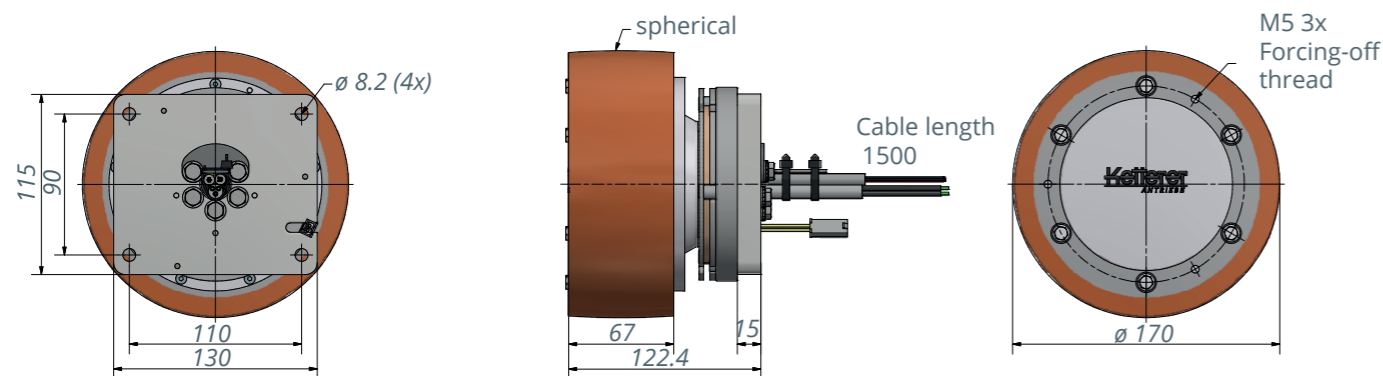
## Safety first

- Rotational control system using diverse redundancy
- **PL-d** safety level achievable with suitable controller
- Safe production processes, as there are no risks of contamination from gear oils and greases (no gearbox)

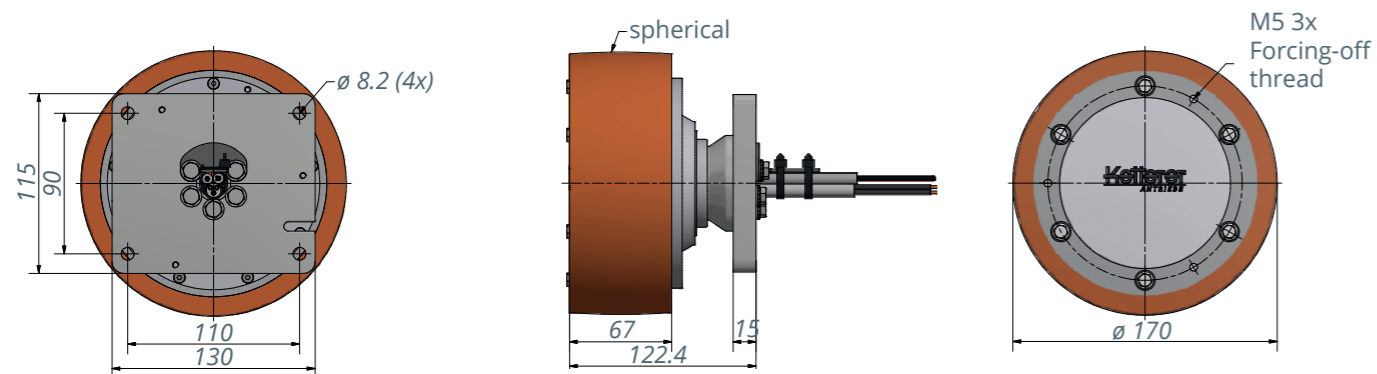
## The choice is yours - we implement it

- Encoder optional: BiSS, SSI, TTL incremental (various resolutions)
- Brake optional: Spring-operated brake
- Can be combined with various controllers
- Customer-specific mechanical integration and system connection

### 3213.00-2XX1 with brake



### 3213.00-2XX2 without brake

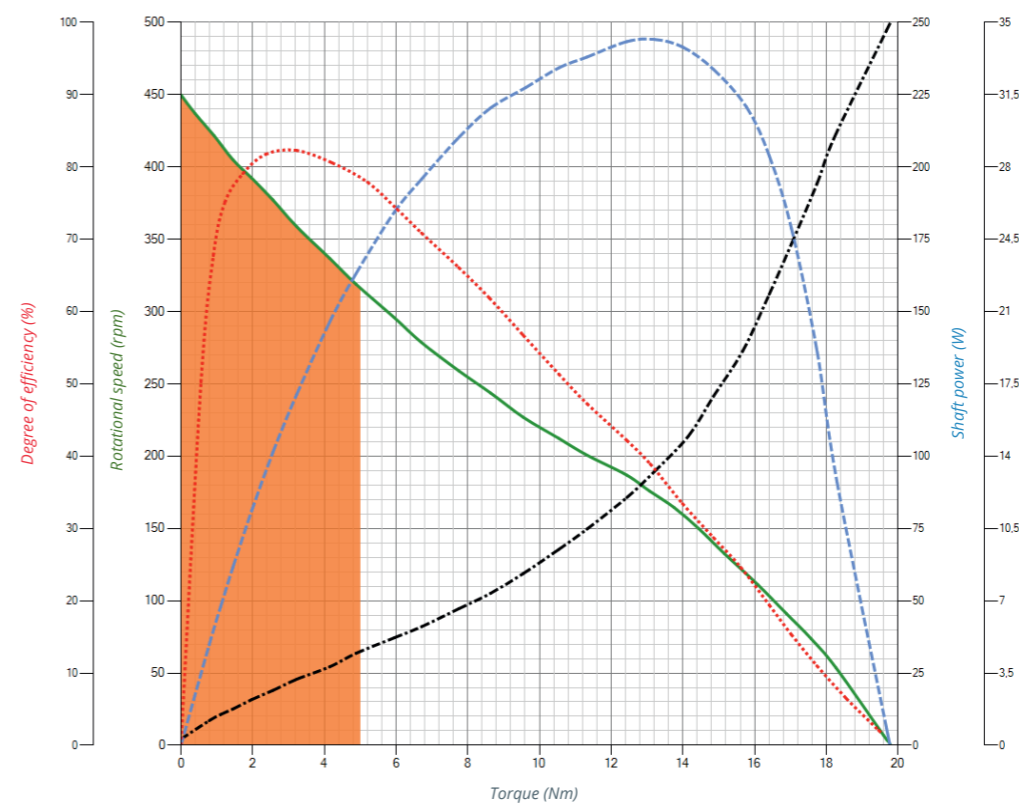


3213.00-2XXX i-Wheel-A-170-123	
Rated voltage	48 VDC
Rated current <sup>1)</sup>	4.5 A
Rated torque <sup>1)</sup>	5 Nm
Rated speed <sup>1)</sup>	316 rpm
Max. speed at rated torque <sup>1)</sup>	10 km/h
Shaft power (output) <sup>1)</sup>	165 W
Idle running speed <sup>2)</sup>	450 rpm
No-load current <sup>2)</sup>	0.3 A
Achievable max. speed <sup>2)</sup>	up to 14 km/h
Max. efficiency <sup>2)</sup>	82 %
Standstill torque <sup>2)</sup>	20 Nm
Starting current at idle speed <sup>2)</sup>	32 A
Torque constant <sup>2)</sup>	1.25 Nm/A
Speed constant <sup>2)</sup>	9.4 rpm/V
Terminal resistance (phase to phase)	1.05 Ohm
Terminal inductance	7 mH

3213.00-2XXX i-Wheel-A-170-123	
Rotor inertia	14,500 kg*mm <sup>2</sup>
Max. radial axle load F <sup>3)</sup>	2,500 N
Max. axial axle load F <sup>3)</sup>	1,250 N
Number of magnets poles	32
Interconnection of the motor	L63S4
Encoder type in standard	Digital Halls + TTL magnetic incremental ABZ
Encoder resolution	4,096 cpr
Material of the coating	Blickle Besthane 92 ±3 Shore A

Braking torque	16 Nm
Power supply brake	24 VDC / 19.4 W
Power consumption brake	7 W through PWM Power reduction
Weight incl. brake	10,3 kg

1) Max. ambient temperature = 40 °C, controller-specific  
 2) At the nominal point (TU = 20°C), controller-specific  
 3) Radial and axial forces apply to the nominal service life  
 L10h = 20,000h according to DIN ISO 281



Brake:	
1	+24 V PIN1
2	GND PIN2

Motor phases:	
igus CF77.UL.25.04.D (4G2.5)	
U = 1	
V = 2	
W = 3	
The PE conductor is not connected	

Hall sensors:	
igus CF240.PUR.01.08 (8x0.14)C	
1	+5 V red
2	GND blue
3	H1 gray
4	H2 pink
5	H3 green
6	B- yellow
7	Z white
8	Z- brown
Output signal: 3 square-wave signals The hall signals have a phase shift of 120° to each other. Power supply: 5V ± 5% Input current: typ. 40 mA	

Encoder:	
igus CF240.PUR.01.08 (8x0.14)C	
1	+5 V red
2	GND blue
3	A gray
4	A- pink
5	B green
6	B- yellow
7	Z white
8	Z- brown
Differential output signal: 3 square-wave signals (RS422) Channel A, B (90° phase shift) and Index Z Accuracy: ± 0.5° Power supply: 5V ± 5% Input current: typ. 35 mA	