



WHEEL HUB MOTOR

Series RN-EC
Brushless direct drive

COMPACT

QUIET

MAINTENANCE-FREE

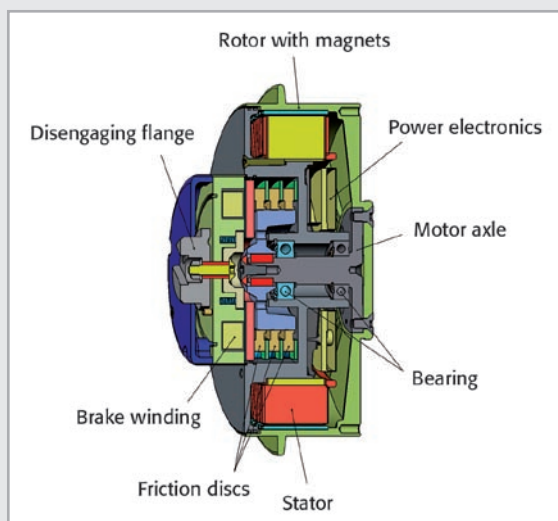
VERSATILE

RN-EC: direct drive brushless wheel hub motors

The RN-EC series is a range of brushless multipole external rotor motors with direct drive. They comprise a wheel hub fitted to one side, which contains the motor parts as well as the control electronics. A mechanical parking brake can also be integrated on request. If the motors are arranged in pairs, they can communicate with each other via a CANbus and with a control device (e.g. joystick) to steer the vehicle.

They are used in goods transport systems, loading carts and wheelchairs etc. Adapters for pressure sensitive handle bars and RF remote controls are available.

Individual motors can also be used as stand-alone battery operated actuators for rotating and pivoting motion.



Powerful and maintenance-free

Thanks to its gearless and contactless design, this direct drive wheel hub motor is sturdy, virtually maintenance-free and thus perfect for industrial use.

The optional parking brake is serviced by the integrated motor electronics. During normal motion the brake is not used. This is because the acceleration and deceleration is performed by the motor itself. This means that the operator no longer has to worry about frustrating maintenance work which can disrupt everyday operation. The signals can be given by analogue or digital inputs or by CANbus according to preference.

Features

Motor

- ✓ ***Gearless direct drive***
- ✓ ***Quiet***
- ✓ ***Maintenance-Free***
- ✓ ***Robust***
- ✓ ***Running surface: rubber coating or puncture-proof tyres***

Brake (optional)

- ✓ ***Parking brake***
- ✓ ***Automatically operated by the integrated electronics***
- ✓ ***Can be opened manually***

Integrated Electronics

- ✓ ***Protected against reverse polarity of battery***
- ✓ ***Integrated battery management***
- ✓ ***Individually tuned to the motor***
- ✓ ***Various setpoint devices possible:***
 - ***Remote control***
 - ***Joystick (P&G Pilot plus)***
 - ***Manual control (analogue)***
 - ***Switch***



RN-EC 185.35

Rating

Motor type	Stall torque	Stall current	Max. stall torque	Max. stall current	Output power	Torque	Speed	Voltage	Current	Back-EMF constant	Torque constant	Rotor inertia	Weight	Braking torque of mech. brake
	M_0	I_0	M_{0max}	I_{0max}	P	M	n	Uzk	I_n	K_e	Kt	J	m	M_{br}
	Nm	A	Nm	A	W	Nm	min ⁻¹	VDC	A	V/1000min ⁻¹	Nm/A	kgcm ²	kg	Nm
T*	13,2	8,2	60	44,2	150	11,5	125	24	7,2	121,5	2,01	160	7,1	...
W*	17,8	9,4	60	37,3	130	15,5	80	24	8,1	143,7	2,38	140	6,3	...
TI**	13,2	10,1	60	54,6	150	11,5	125	24	8,8	171,8	1,64	160	7,1	...
TBI**	13,2	10,1	60	54,6	150	11,5	125	24	8,8	171,8	1,64	160	9,3	50
WBI**	17,8	11,5	60	46,1	130	15,5	80	24	10,0	203,3	1,94	140	8,2	42

Control electronics: inputs/outputs

Motor type	Digital inputs	Comb. digital inputs and outputs	Comb. inputs analogue/serial	Analogue inputs
TBI**	2	1	1	1
TI**	2	2	1	1
WBI**	0	0	1	0

* The voltage constants / currents are AC values. They refer to the motor winding.

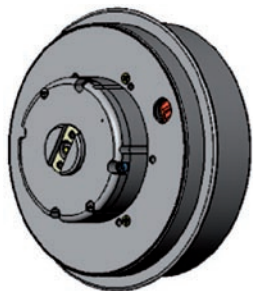
** The voltage constants / currents are DC values. They refer to the intermediate circuit.

T=Traction; W=Wheelchair; B=Brake; I=Integrated electronic

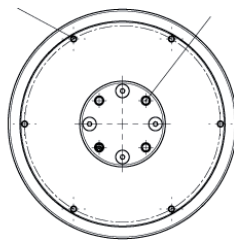
Protection class IP 54

Subject to technical change

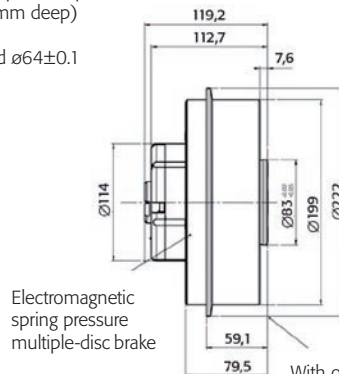
RN-EC 185.35 T(B)I



Threaded hole for 2nd rim ring
6x M6 (8mm deep);
6x 60°
Wheel tread $\varnothing 190 \pm 0.1$



Threaded hole to screw on rotating parts (e.g. rim etc.) or sealed with plastic caps
4x M8 (13mm deep)
4x 90°
Wheel tread $\varnothing 64 \pm 0.1$

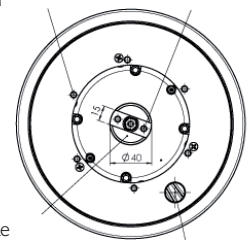


Electromagnetic spring pressure multiple-disc brake

With or without 2nd (outer) rim ring and tyre equipment as preferred

Threaded hole to attach motor
6x M6 (10mm deep)
6x 60°
Wheel tread $\varnothing 124.5 \pm 0.1$

Threaded hole 2x M6 (8mm deep)
2x 180°
Wheel tread $\varnothing 27 \pm 0.1$
Groove depth: 5mm

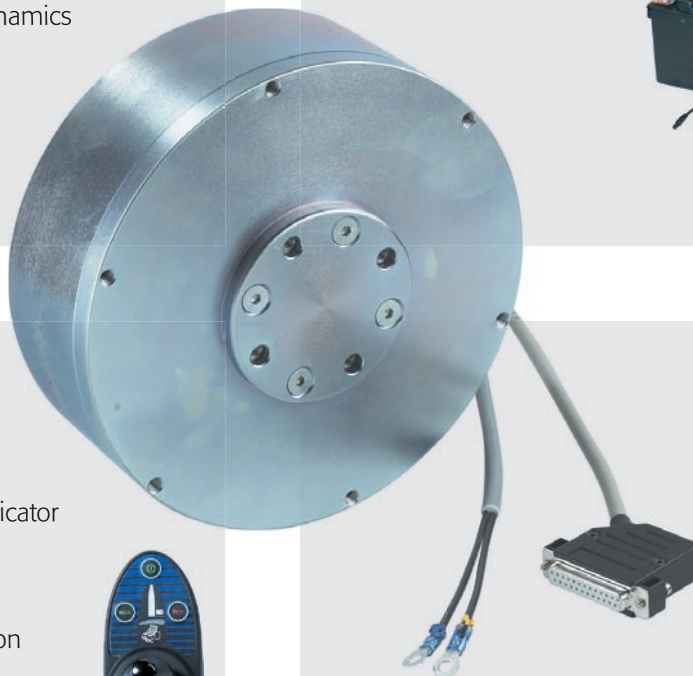


Cable outlet

Operating area of manual brake release: 30°

Functionality

- ✓ **Battery management:**
 - State of charge of sealed lead-acid batteries monitored and, if necessary, displayed
- ✓ **Driving dynamics:**
 - Separate speed governor for forward motion and steering; parameters set individually
- ✓ **Active steering:**
 - Optimal for robotic vehicles
- ✓ **Parameter settings:**
 - Adjustable inputs and outputs, functions can be switched on and off, adjustable operational profile and dynamics



Setpoint setting

- ✓ **Joystick:**
 - Battery state of charge indicator
 - Fault symbols
 - Biaxial for steering motion
 - Operational profile selection
- ✓ **Analogue:**
 - E.g.: potentiometer, pressure sensors
 - Linearization possible
 - Detection of incorrect setpoint signals, e.g. lost cables
- ✓ **Digital:**
 - Switching functions for forwards and reverse
 - Operational profile switch
 - Special functions possible
- ✓ **Remote control:**
 - Connection to an industrial remote control available



Tyre equipment (optional)

- ✓ **Rubber coating mount:**
 - Ideal for industrial flooring, changeable
- ✓ **Tyres:**
 - Good driving comfort thanks to high level of cushioning

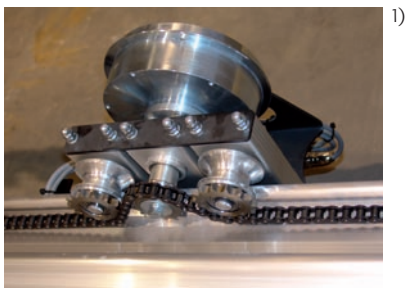
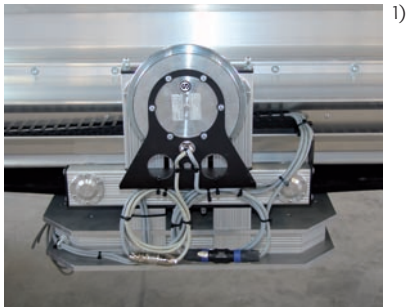


Applications

- ✓ **Power engine:**
 - Front- and rear-wheel drive possible
 - Twin motor drive for active steering
- ✓ **Single motor:**
 - As auxiliary drive or for trikes
- ✓ **General Drive:**
 - For everything that moves e.g. jibs, cable winches

Sample applications

Easy to install, convenient to operate



- ✓ Electric wheelchairs
- ✓ Robotic vehicles
- ✓ Traction drives
- ✓ Transport vehicles
- ✓ Light electric vehicles
- ✓ Servo drives
- ✓ Swivel gantries
- ✓ Rotary tables

Special system for manual wheelchairs RN EC 185.35-WBI

- ✓ Full-floating axle for quick mounting
- ✓ Electric contacts integrated in axle
- ✓ External brake application
- ✓ TÜV certified*

**with Meyra Connection System*



1) ©Schlegel & Heimer GmbH
2) ©Expresso Deutschland GmbH



Also available from HEINZMANN Electric Drives:

- SL disc motors and EC external rotor motors
- Wheel hub motors
- Conventional motors
- Drive systems for electric light vehicles

Heinzmann GmbH & Co. KG, a medium-sized company and consolidated economic factor at its site in Schönau, is one of the top 100 enterprises of Baden-Württemberg.

HEINZMANN's key successes are: creativity, innovation and dedication towards customers and staff. In the area of speed governors and special electric drives, HEINZMANN is one of the leading players worldwide.

Based on specific know-how that has steadily grown in the course of many decades, HEINZMANN shows itself driven by its exceptional innovative capabilities. Thanks to this, the company can offer high grade quality at a cost-efficient price performance ratio.

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**Heinzmann GmbH & Co. KG
Electric Drives**

Am Haselbach 1
D-79677 Schönau (Schwarzwald)
Telefon +49 (0) 7673 8208-129
Fax +49 (0) 7673 8208-199
e-Mail: info@heinzmann.com
www.heinzmann.com