7 Technical data

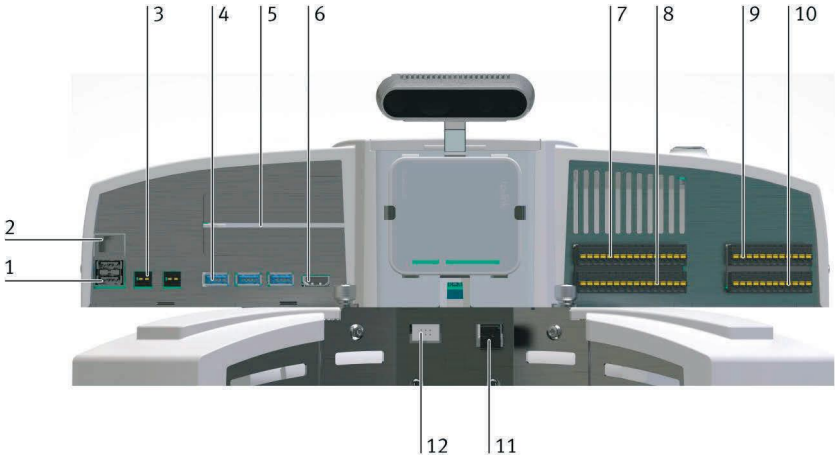
7.1 General data

Parameter	Value
Height	325 mm
Diameter	450 mm
Total weight (unladen weight)	20 kg
Total weight (including 4 rechargeable battery packs)	22.8 kg (approx. 700 g per rechargeable battery pack)
Payload	max. 30 kg (centered)
Degree of protection	IP 00
Battery voltage	18 V
Housing material	Stainless steel, PA6
Degrees of freedom	3 translational in x- and y-direction rotational about the z-axis
Subject to change	

7.2 Control and interfaces

Parameter	Value
Drive	
Wheels	3 x omnidirectional wheels with 120 mm diameter
Motors	3 x DC motors, maximum 3,600 rpm, with encoders and gear unit, gear ratio: 32:1
Controller	Embedded PC to COM Express specifications Intel i5, 8th generation, 2.5 GHz frequency, up to 4.2 GHz in turbo mode, 4 physical cores with hyperthreading Integrated UHD Graphics 630 Main memory: 8 GB RAM Hard disk: 64 GB SSD Operating system: Linux Ubuntu 18.04 LTS (64 bit) Motor control: microcontroller with 32-bit microprocessor and separate Ethernet interface
Subject to change	

7.2.1 Electrical connections



Parameter	Value	No. in fig.	Designation
Interfaces	2 x USB 2.0 (1 x occupied by Access point) 1 x RJ-45 (occupied by Access point) 2 x 12 V WAGO-734-162 (max. 2 A total) 4 x USB 3.0 (1 x occupied by camera) 2 x PCI express slots (Gen3 4 x, extensions) 1x HDMI 2 x Digital I/O connector 1 x analog input connector 1 x relay connector 1 x Wago 721-462 2-pole motor 4, power plug 1 x MPE RM 2.54 2x3-pole motor 4, encoder WLAN to specification, 5 GHz and 2.4 GHz as client or access point in bridge mode	1 2 3 4 5 6 7, 8 9 10 11 12 –	-XF2, -XF3 -XF1 -XD5-1, -XD5-2 -XF4, -XF5, -XF6, -XF9 – -XF7 -XD1, -XD2 -XD3 -XD4 – –
Subject to change			

Parameter	Value
Digital inputs/outputs Inputs: 8 Outputs: 8	 Max. 24 V DC Max. 2 A per output Max. 2 A total
Analog inputs	8
Relay toggle switch	2
Camera	USB 3.0 controlled stereo camera (Intel® RealSense ™ depth camera D435) with two color cameras (1080p resolution) Infrared projector and RGB depth-sensing camera architecture with on-board processing
Subject to change	

7.2.2 Motor 4 encoder pin allocation

Pin	Function
1	GND 0 V
2	I (30-3)
3	W
4	V_{CC} 5 V
5	B
6	n.c.
Subject to change	

7.2.3 Motor 4 power plug

Pin	Function
Left (view of plug)	+(PWM 0-24 V)
Right (view of plug)	GND (PWM)
Subject to change	

7.2.4 Access point specification

Parameter	Value
WLAN standards	5 GHz (IEEE802.11 ac/n/a) 2.4 GHz (IEEE802.11 b/g/n)
Transmission power	CE: max. 23 dBm (5 GHz) max. 20 dBm (2.4 GHz)
Interfaces	10/100 Mbps WAN/LAN port USB 2.0 port Micro USB port (power supply)
Power supply	5 V max. 2 A
Subject to change	