

Data sheet

ArgoDrive

ebmpapst

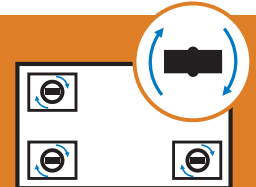
engineering a better life

Equip your transport vehicle with omnidirectional mobility.

The innovative ArgoDrive driving/steering system can be used as a drive unit for automated guided vehicles (AGVs) and autonomous mobile robots (AMRs). It is a complete unit, consisting of a motor, transmission, omnidirectional steering, sensors, and all the necessary connections. With the superposition gear, the two integrated motors contribute simultaneously to steering, acceleration, movement and braking, depending on requirements. The infinite steering angle enables space-saving, free-range vehicle movement – even from a stationary position.

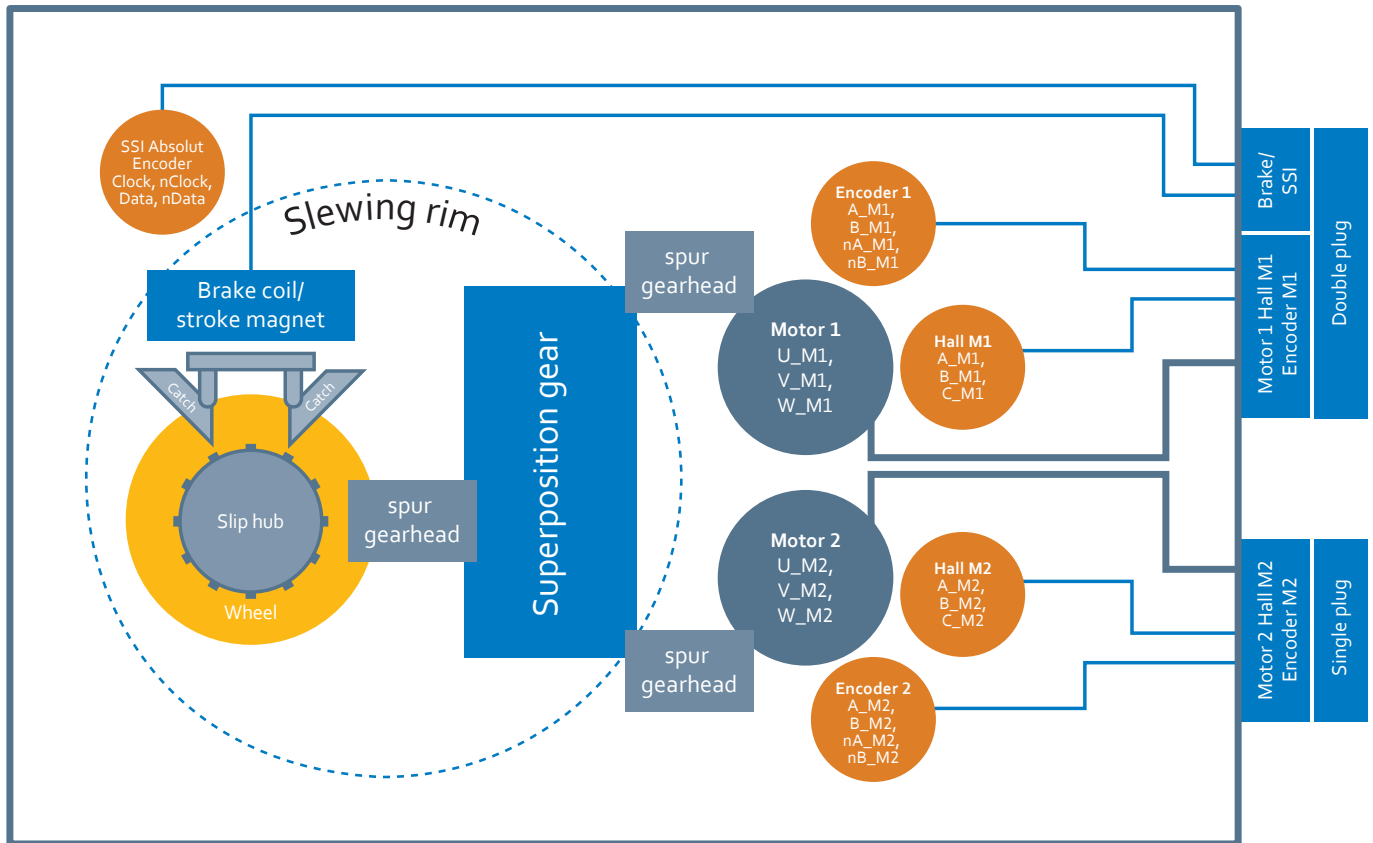
Advantages:

- + Maneuverability
- + Compact design
- + Modular principle
- + Service life



Performance data	Light	Standard	Heavy
Type	AD-80.7	AD-100.12	AD-145.25
Partnumber	446.92 002	446.92 102	446.92 202
Wheel diameter	mm 80	100	145
max. load capacity per wheel	kg 100	300	500
Overall length	mm 250	250	250
Overall width	mm 170	170	170
Overall height	mm 103	123	205
Ground clearance to transmission	mm 26	45.5	128
Ground clearance to brake disc	mm 11	12	14
Nominal speed	m/s 3	2	1.5
Acceleration (completely loaded)	m/s ² 2	0.8	0.6
Motor-driven brake delay (completely loaded)	m/s ² 2.6	2	1.5
iTotal	6.85	11.88	24.97
iSteer		32	
Steering speed	°/s	180	
Steering angle		unlimited	
Nominal wheel speed	1/min 716	382	198
Motors, nominal current per motor	A 2.0	2.0	2.0
Nominal voltage motors	V	48	
Max. acceleration torque	Nm 9.4	16.0	31.4
Max. braking torque (motor-driven)	Nm 10.7	28.4	54.6
Wheel and brake replacement option		yes	
Weight	kg approx. 10.5	approx. 11.5	approx. 18
Wheel material		Vulkollan	
Wheel material hardness	Shore A	95*	

Subject to changes; *Alternative wheel material hardness on request



Motor feedback Hall

Feedback type		digital Hall
Supply voltage range of the Halls	V	5 – 24
Design		Open Drain
Commutation sequence	PPR	3 x 4

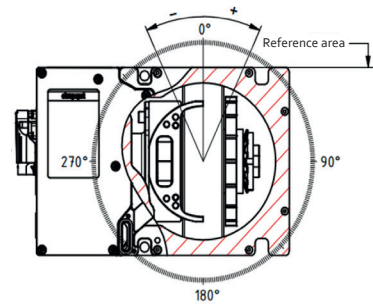
Motor feedback encoder

Encoder type		Magnetic incremental
Used magnetic field		separate magnetic sensor
Encoder power supply	V	4.8 – 5.5
Voltage level of the outputs		RS422 (TTL), output 5V
Maximum resolution	Bit	10
Maximum resolution	PPR	1024
Square evaluation	CPR	4096
Signals at the Argodrives plug		A, B, nA and nB
MTTF values Hall and encoder part systems	years	12972

Steering angle sensor

Encoder type	magnetic incremental (absolute)		
Power supply	24 V internally is regulated to 5 V		
Output signal level	V		5

Zero position



Zero position accuracy	°		±1
Resolution	Bit		12
Protocol	Standard SSI protocol		
Coding	Gray		
Data frame	Bit		13
Transmission frequency	MHz		10

Brake

The ArgoDrive has a holding brake with emergency stop function. The brake is de-energized and prevents a stationary vehicle from rolling away. To a limited extent, the brake can perform emergency braking on the ArgoDrive at full load and full speed. The braking system acts directly on the wheel without burdening the transmission or the motors. The signal processing time until the coil drops can last up to 160ms. The brake catches' mechanical engagement time must also be taken into account (varies depending on the wheel module).

		Light	Standard	Heavy
Nominal voltage	V DC	24V		
Nominal current (ventilation/holding)	mA	700 / 310 after 1 second		
Brake actuation		PWM not permitted		
Braking torque, mechanical slip hub	Nm	Tolerance 10 %	13.4	35.5
Tolerance for slip hub braking torque with environmental influences (internal calculated value)				68.3
Typical electric drop-in time for brake	ms		30	
Drop-in time of latch	ms	9.3	12.1	19
Permissible number of emergency brakings	Amount		500	
Brake module replacement			possible	

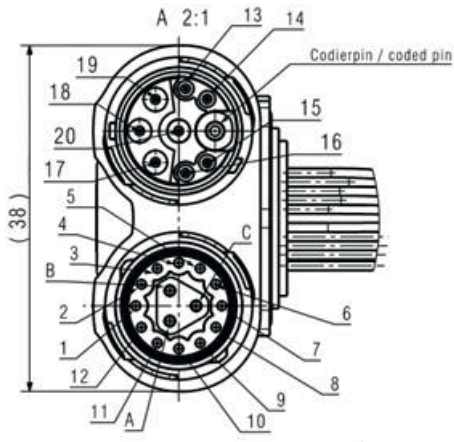
Environmental conditions

EMC immunity to interference and interference emission	DIN EN 1175-1 safety of industrial trucks DIN EN 12895:2020-03 electromagnetic compatibility of industrial trucks		
Degree of protection	IP54 (Gearbox without brake)		

Environmental operating conditions

Climatic conditions EN 60721-3-3:1995	Class	3K3		
Ambient temperature	°C	5 up to +50		
Relative humidity	%	5 up to 95		
Max. installation height	m above standard zero	1000		
Permissible floor properties		dry/fixed / (asphalt/ screed concrete / industrial floor floors)		
Thresholds / sections (permissible height)	mm	2	2.5	3.6
Maximum pitch	%	5		

Double plug



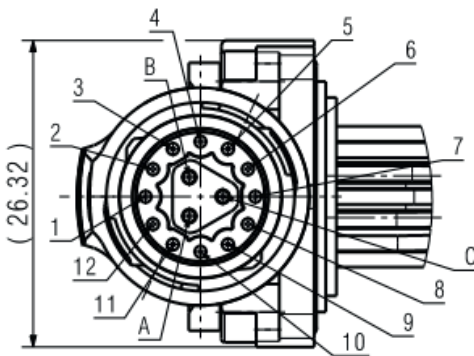
Plug connection	B1	Remark	Cable Color
A	U_M1	Motor winding connection	Brown
B	V_M1	Motor winding connection	Black
C	W_M1	Motor winding connection	Gray
1	Hall_A_M1	Digital Halls	White
2	Hall_B_M1	Digital Halls	Brown
3	Hall_C_M1	Digital Halls	Green
4	Uhall_M1	Hall supply	Yellow
5	GND_M1	Hall GND	Gray
6	Reserve	Reserve	Pink
7	A_M1	RS422 (TTL), output 5V	Blue
8	nA_M1	RS422 (TTL), output 5V	Red
9	B_M1	RS422 (TTL), output 5V	Black
10	nB_M1	RS422 (TTL), output 5V	Purple
11	P5V_M1	Encoder power supply 5V	Gray Pink
12	GND5_M1	Encoder power supply GND	Red Blue
13	B_LW (nClock SSI)	SSI nClock steering angle	White
14	A_LW (Clock SSI)	SSI Clock steering angle	Brown
15	Y_LW (Data SSI)	Data SSI steering angle	Green
16	Z_LW (nData SSI)	nData SSI steering angle	Yellow
17 (A)	+24V	Power supply for the LW encoder	Red
18 (B)	GND	GND for power supply	Blue
19 (C)	Brake1_GND	GND for brake voltage	Gray
20	Brake2 +24V	Attention no PWM actuation	Pink

Motor cable 1

Brake cable SSI steering angle

Subject to changes.

Single plug



Plug connection	B1	Remark	Cable Color
A	U_M2	Motor winding connection	Brown
B	V_M2	Motor winding connection	Black
C	W_M2	Motor winding connection	Gray
1	Hall_A_M2	Digital Halls	White
2	Hall_B_M2	Digital Halls	Brown
3	Hall_C_M2	Digital Halls	Green
4	Uhall_M2	Hall supply	Yellow
5	GND_M2	Hall GND	Gray
6	Reserve	Reserve	Pink
7	A_M2	RS422 (TTL), output 5V	Blue
8	nA_M2	RS422 (TTL), output 5V	Red
9	B_M2	RS422 (TTL), output 5V	Black
10	nB_M2	RS422 (TTL), output 5V	Purple
11	P5V_M2	Encoder power supply 5V	Gray Pink
12	GND5_M2	Encoder power supply GND	Red Blue

Motor cable 2

Subject to changes.

Service life

The service life is up to 12,000 hrs, provided that the defined load and ambient conditions are observed. This does not include the components subject to maintenance: Wheel, slip hub (of brake) and lubricant. These are subject to maintenance depending on the load and application.

Accessories

Motor cable 2x	821 7200 072	3m
Brake cable 1x	821 7201 248	3m
Brake enclosure	tbd.	80-type, 100-type, 145-type wheel
Floor brush	tbd.	80-type, 100-type, 145-type wheel
Drive controller (CANopen, STO) housing	1513986	VTD-60.19-K5SC-S
Drive controller (CANopen, STO) modul	1513985	VTD-60.21-K5SC-L