

# **PRODUCT PORTFOLIO**

## **WHEEL DRIVES**

Wheel drives are integrated drive units for free-moving transport systems (AGVs and AMRs) and rail-based vehicles (shuttles).

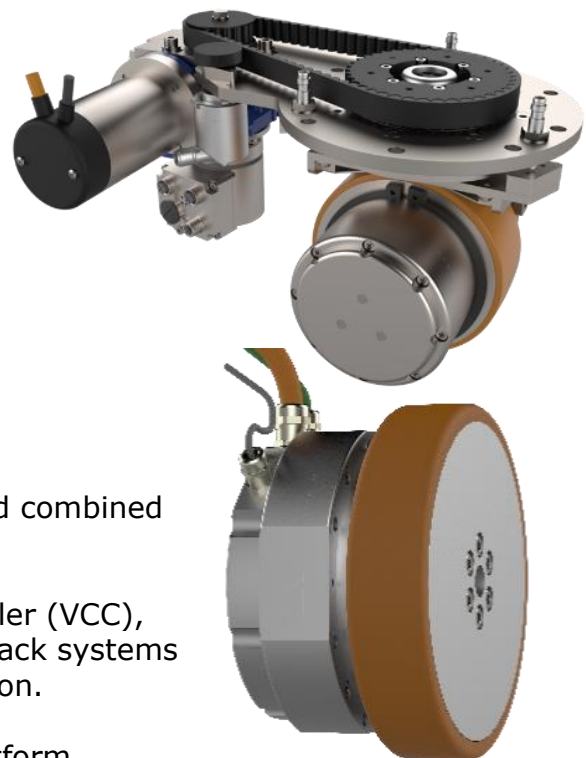
Differential drives for steering or combined driving/steering drives are implemented for omnidirectional steering and driving, depending on the application and area of application.

Every driving and steering requirement can be implemented with the scalable MTA drive solutions.

An end-to-end product portfolio on differential and combined wheel- and steering-drives is available.

In combination with the MTA Vehicle Core Controller (VCC), standardised communication interfaces and feedback systems enable effortless integration into vehicle automation.

The Vehicle Core Controller (VCC) is a control platform designed for use in AGVs and AMRs, and, for the first time, combines sequence control, control technology and functional safety in one system. This enables the simple integration and control of MTA drives via EtherCAT and FSoE (Safety over EtherCAT).



### **Properties:**

- Differential drives or combined driving/steering drives
- Nominal voltage 24 VDC or 48 VDC
- Integrated drive electronics versions or external motor controllers for two axes
- End-to-end performance spectrum
- Gearless differential drives and geared versions
- Integrated holding or service brake
- Redundant encoder systems
- Full digitisation via the CANopen interface

- Coordinated comprehensive system with Vehicle Core Controller and motor controllers for two axles

### **Advantages/Benefits:**

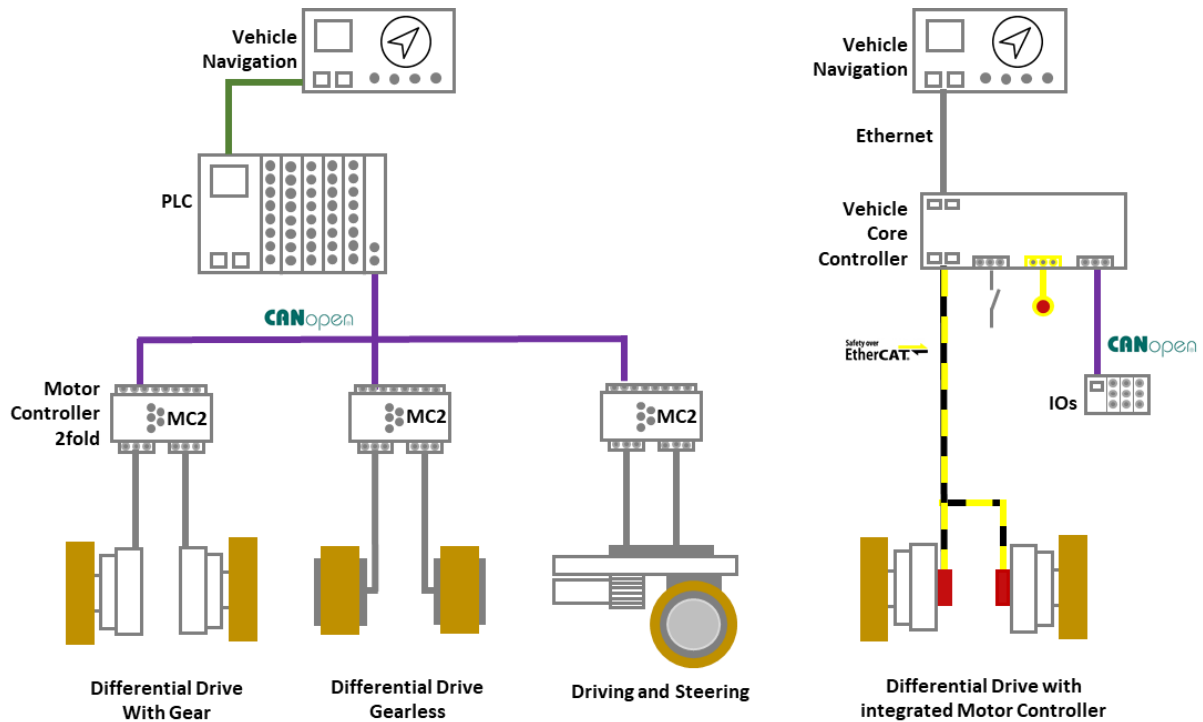
- Scalable modular system for transport weights from 50 kg to 2.000 kg
- Flexible layout of the mechanical drive construction for a high degree of integration in vehicle mechanics
- Compact version for space-saving in the chassis
- Reduced application expenditure when used with MTA motor controllers for two axles  
→ Synchronisation of the drives
- Service brake version for emergency stop functions
- End-to-end digitisation, diagnostics and analysis via CANopen ensures high availability
- Redundant encoder systems for safety-relevant operating states
- Individual design of new AGV/AMR generations with Vehicle Core Control and MTA drive components

### **System integration:**

With the motor controllers for two axles, MTA wheel drives can be effortlessly integrated into existing AGV and AMR control environments.

The Vehicle Core Controller ensures integration into vehicle automation for a coordinated comprehensive system on drive, control and safety functions.

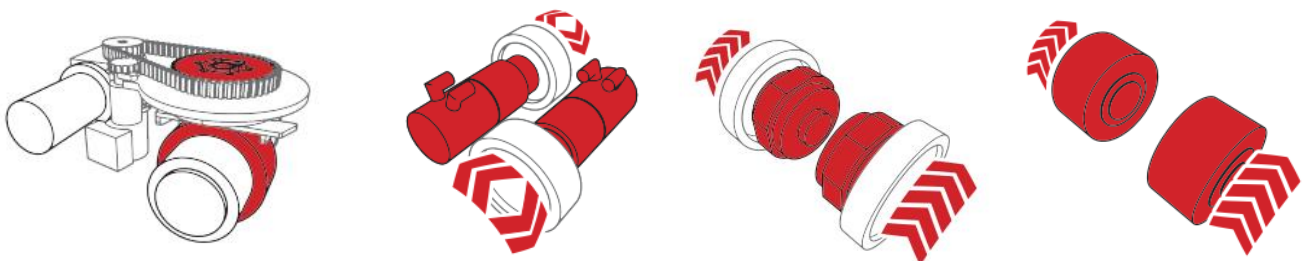
There are a variety of interfaces (CANopen, TCP/IP, EtherCAT, ...), a set of safe and unsafe digital I/Os, analog inputs and counter inputs. This enables drives for vehicle movement and vehicle superstructures (lifting units, load-carrying equipment, conveyor segments) to be controlled. The system has prefabricated drive-based commands for control and fast commissioning of the vehicle. Additional functions for various assemblies can be freely programmed by the customers. STO, SBC and SLS are available in combination with the MTA controllers and drives.



**Areas of application:**

Wheel drives are used in mobile conveyor technology for internal material transport, and are implemented in driverless free-moving transport systems or in rail-based vehicles.

- AGVs (automated guided vehicles)
- AMRs (autonomous mobile robot)
- Transport platforms
- Shuttle systems, e.g.: for high-bay storage
- Pallet transport



## Portfolio overview:

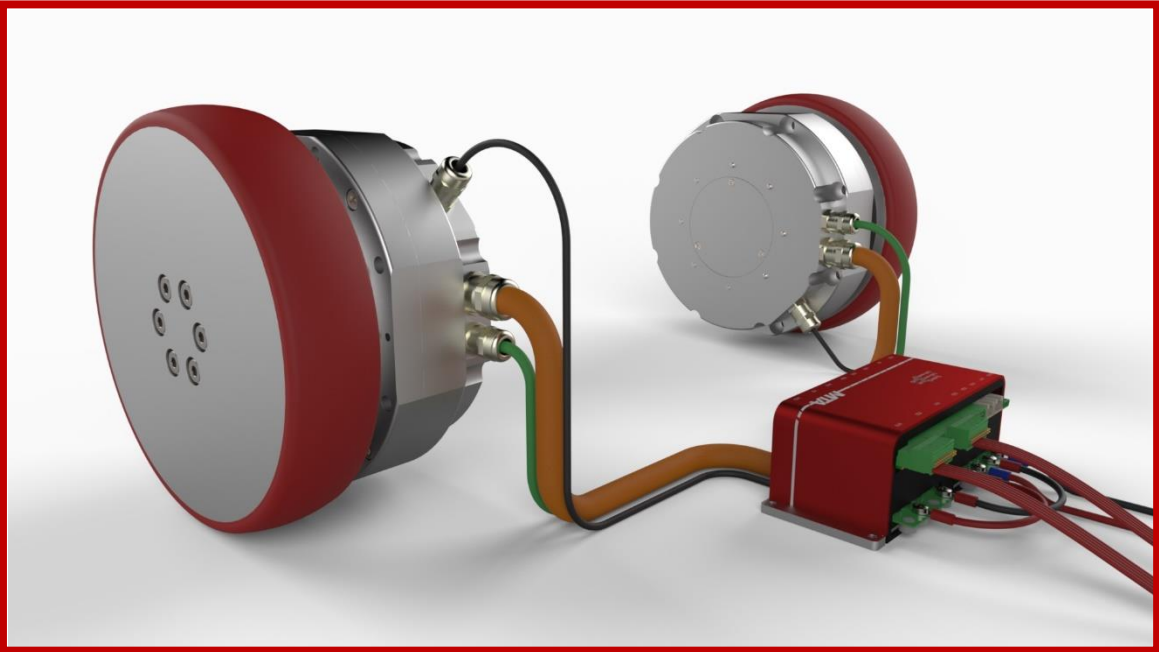
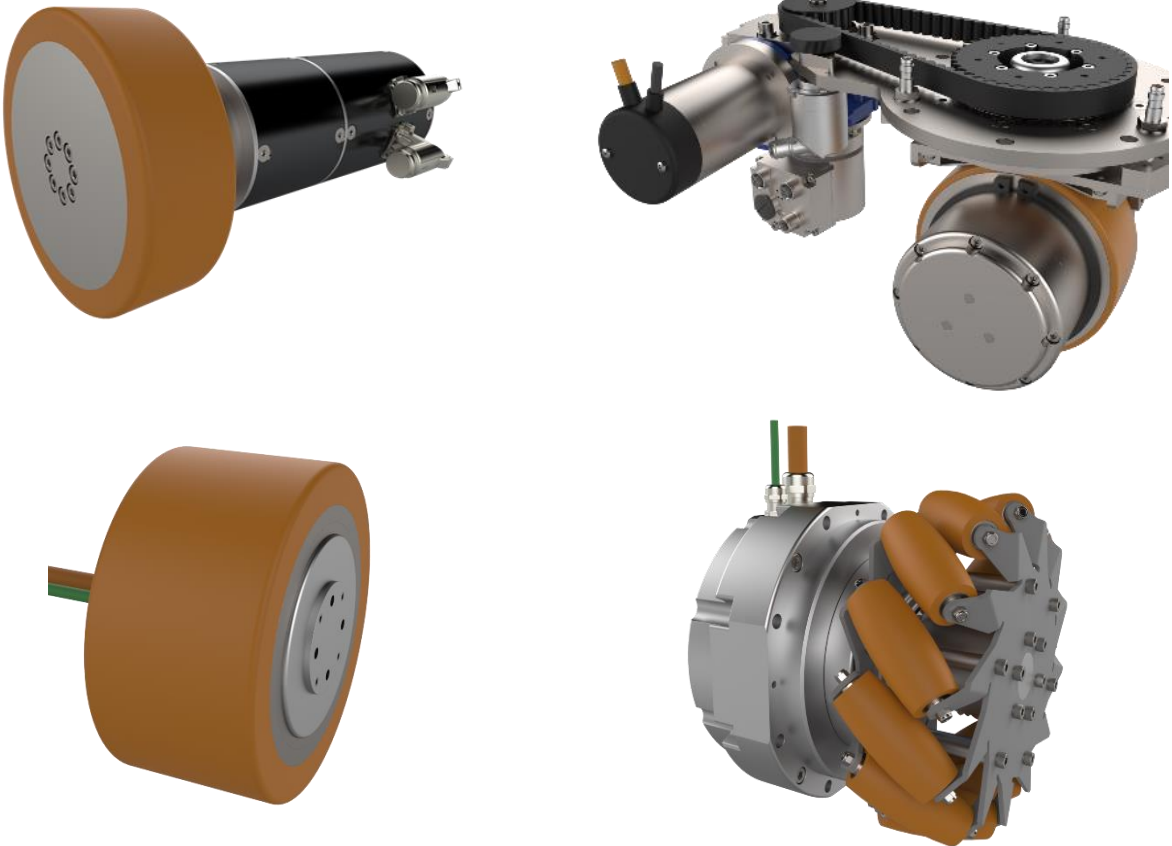
### Differential drives:

Nominal voltage	24 VDC or 48 VDC
Mechanical power	200 W to 1,170 W
Speed range	70 rpm to 250 rpm
Wheel diameter	75 mm to 200 mm
Wheel loads	Up to 500 kg
Encoder	1 or 2 Optional version for functional safety
Movement	Differential driving and steering In combination with Mecanum-wheel → omnidirectional driving and steering
Brake	Holding or service brake
Drive controller:	integrated or separate

### Combined driving/steering drives:

Version/Height	Versions with height 125 mm, 150 mm, 175 mm
Nominal voltage	24 VDC or 48 VDC
Mechanical power	260 W to 400 W
Speed range	0.1 m/s to 1.7 m/s
Wheel diameter	90 mm to 130 mm
Wheel loads	Up to 500 kg
Encoder	1 or 2 Optional version for functional safety
Movement	Omnidirectional driving and steering
Brake	Holding or service brake
Drive controller:	integrated or separate

**Product images:**



## Type code:

### Differential drives:

Wheel drives	WD	D	5	4	1	3	2	A	5	7	S0	1B	C111
Wheel drive	WD												
Type	Omnidirectional	O											
	Differential	D											
Mechanical power	1.170 W		6										
	680 W		5										
	650 W		4										
	400 W		3										
	250 W		2										
	200 W		1										
Nominal voltage	48 VDC			4									
	24 VDC			2									
Output speed	250 rpm				4								
	200 rpm				3								
	100 rpm				2								
	70 rpm				1								
Motor diameter	∅200 mm					3							
	∅90 mm					2							
	∅75 mm					1							
Feedback system	Magnetic encoder						2						
	Hall sensor						1						
Protection class	IP54							A					
Wheel load	500 kg								5				
Brake	Service brake 1.00 Nm									D			
	Service brake 0.50 Nm									C			
	Holding brake 2.6 Nm									7			
	Holding brake 1.5 Nm									6			
	Holding brake 0.75 Nm									5			
	No brake									1			
Safety systems	1 safety sensor										S1		
	No safety sensor										S0		
Cable and connector	Length 1.5 m, Motor 3×ring cable lug M4, Transmitter connector JST PUDP-10V-S 10-pin 2-row, Brake open ends											2B	
	Length 1.5 m, Open ends											2A	
	Length 1.0 m, Motor 3×ring cable lug M4, Transmitter connector JST PUDP-10V-S 10-pin 2-row, Brake open ends											1B	
	Length 1.0 m, Open ends											1A	
Customer-specific version													C111

## Combined driving/steering drives:

Wheel drives	WD	O	4	4	- C	3	7	- 2	A	5	- D	- L2	- 1B	- A	A	A	- C111
Wheel drive	WD																
Type	Omnidirectional Differential	O D															
Mechanical power	400 W 335 W 260 W		4 3 2														
Nominal voltage	48 VDC 24 VDC			4 2													
Output speed	1.7 m/s 1.6 m/s 1.6 m/s 1.6 m/s				D C B A												
Wheel diameter	130 mm 100 mm 90 mm					3 2 1											
Construction height	187 mm 175 mm 150 mm 125 mm						8 7 5 2										
Feedback system	Resolver Magnetic encoder Hall sensor							3 2 1									
Protection class	IP54								A								
Wheel load	500 kg 250 kg 150 kg									5 2 1							
Brake	Service brake 1.00 Nm Service brake 0.50 Nm Holding brake 2.6 Nm Holding brake 1.5 Nm Holding brake 0.75 Nm No brake										D C 7 6 5 1						
Safety systems	2 transmitters for steering angle monitoring 1 transmitter for steering angle monitoring No transmitter											L1 L1 L0					
Cable and connector	Length 1.5 m, Motor traction drive 3×ring cable lug M4, Transmitter traction drive connector JST PUDP-10V-S 10-pole 2-row, Brake + temp Monitoring of traction drive, spring-loaded terminal, 6-pole, 1- row, Motor steering drive 3× ring cable lug M4, Transmitter steering drive connector JST PUDP-10V-S 10-pin 2-row. Length 1.5 m, Open ends Length 1.0 m, Motor traction drive 3×ring cable lug M4, Transmitter traction drive connector JST PUDP-10V-S 10-pole 2-row, Brake + temp Monitoring of traction drive, spring-loaded terminal, 6-pole, 1- row, Motor steering drive 3× ring cable lug M4, Transmitter steering drive connector JST PUDP-10V-S 10-pin 2-row Length 1.0 m, Open ends												2B  2A 1B  1A				
Steering speed	270 °/s 200 °/s 90 °/s														C B A		
Max. steering angle	±120 °														A		
Enveloping circle	221 mm 213 mm 201.5 mm 200 mm															D C B A	
Customer-specific version																	C111