



Features

- Complete Package of gear, servo motor, and drive
- High integration of all components
- Compact size achieved by in-wheel structure
- Easy installation and setup
- Long-life grease lubrication (enclosed at the factory shipment)
- Safety function STO (Safe Torque Off) is available as an option
- Customization available on request

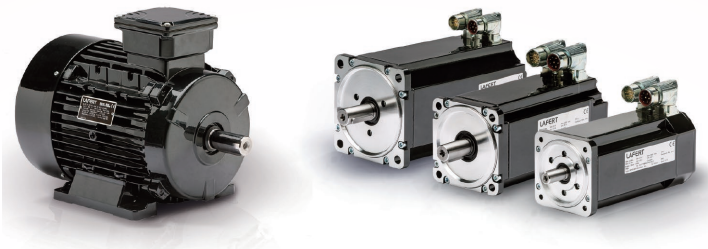
Assumed Specifications

- Up to approximately 3000kg payload (AGV + cargo)
- Max AGV speed 2.0m/s
- Max AGV acceleration 1.0m/s²

Example of AGV Configuration

Type	ECO		PRO	
Size	S	M	M	L
Gearmotor Frame Size	5087E	5097E	5097P	5107P
Payload (AGV body + cargo)	kg	800	1100	1800
Number of Driving Wheels	2	2	2	2
Number of Supporting Wheels	4	4	4	4
Max AGV Speed	m/s	2.0	2.0	2.0
Max AGV Acceleration	m/s ²	1.0	1.0	1.0
Wheel Diameter	mm	180	200	280
Reduction Ratio		21	21	22
Rated Wheel Torque	N·m	15.8	24.0	39.3
Rated Wheel Output	W	392	537	878
Load per Supporting Wheel	kg	125	125	175

Note: This is an example of configuration under specific conditions. Please select proper configuration according to customer's operating conditions.



Lafert S.p.A., an Italian industrial motor manufacturer who became a member of Sumitomo Heavy Industries, Ltd. Group in 2018, offers a wide range of products, including high-efficiency magnet motors, induction motors, and servo motor drivers, to meet customer needs in the fields of automation and energy.

Sumitomo Heavy Industries, Ltd. will continue to provide drive solutions that meet the sophisticated needs of society by mutually utilizing and integrating the technologies and knowledge of gearmotors, electronics, and control.

Shaping the future together

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Specifications, dimensions, and other items are subject to change without prior notice.



Scalable Drive System Solution

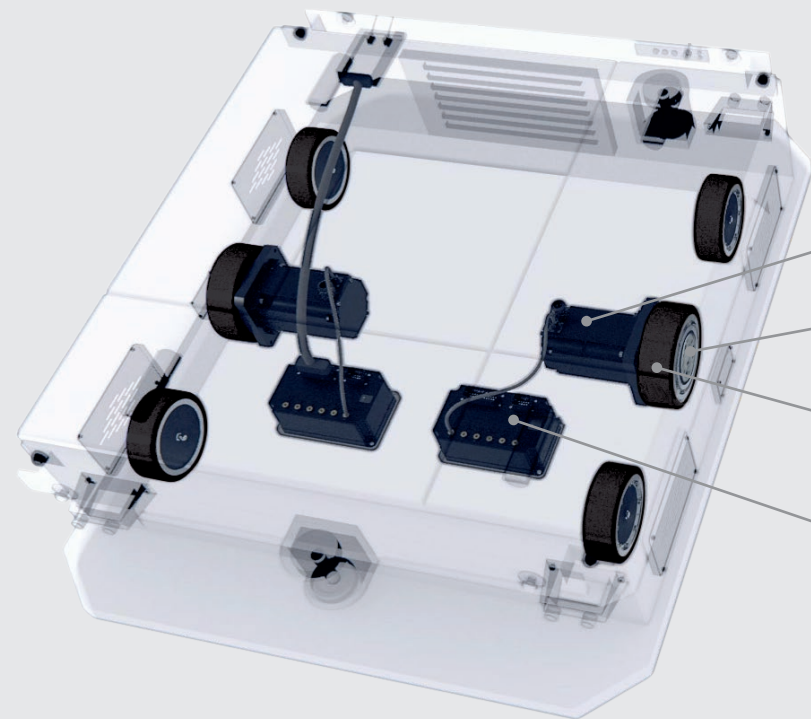
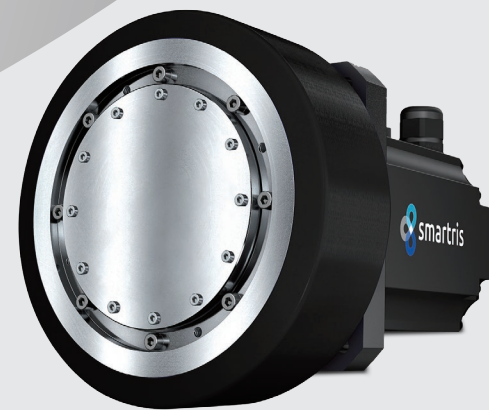


Combination of three smart components.
Creating a compact, integrated and intelligent solution of: GEAR + SERVO MOTOR + DRIVE

smartris is a drive solution for AGVs consisting of gears, servomotor, and drive.

The fusion of the servo control technology achieved by Lafert and reduction gear expertise with Sumitomo has cultivated developed a new product, smartris.

We offer a safe and compact drive solution which realizes traveling performance and payloads for various types of AGVs.



Servo Motor

Cyclo Gear

Wheel

Drive Unit



Options

	Specifications	Standard Specifications	Option Specifications
Servo Motor	Rotation feedback	Resolver/resolution 4096 (with cable 1m)	Absolute encoder/resolution 4096 (with cable 1m)
			Absolute encoder (safety)/resolution 4096 (with cable 1m)
Drive	Brake	PM brake (for holding) ^{Note}	Spring brake (for holding) ^{Note}
	Safety function	-	STO (Safe Torque Off)
	Control method	For resolver	For absolute encoder

Note: The brake is for holding when parked and cannot be used for braking. Contact us if you wish to use the product for braking, such as an emergency stop.

Gearmotor (Gear · Servo Motor) Specifications

Type		ECO						PRO				
Size		S			M			M		L		
Gearmotor Frame Size		5087E			5097E			5097P		5107P		
Voltage	VDC	48						48				
Allowable Radial Load per Driving Wheel	N	1500			3000			6500		10000		
Reduction Ratio		21	25	29	21	25	29	22	26	22	26	30
Max Motor Speed	r/min	4500			4500			4500		3000		
Max Wheel Speed	r/min	214	180	155	214	180	155	205	173	136	115	100
Rated Wheel Torque	N·m	16.0	18.9	18.9	39.3	40.4	40.5	39.3	40.4	84.7	87.5	80.3
Peak Wheel Torque (2sec)	N·m	61.9	73.7	84.8	145	179	207	145	179	294	360	246
Ambient Temperature	°C	- 10 to 40						- 10 to 40				
Protection Class		IP54						IP54				
Thermal Class		Motor : 155 (F), Brake : F						Motor : 155 (F), Brake : F				
Output Type		Output Shaft Rotation						Ring Gear Housing Rotation				

Note: 1. Allowable radial load of ECO type is a value at the position inside the output shaft end face.
2. Allowable radial load of PRO type is a value at the center of the gear part.

Composition

This product consists of Gear, Servomotor, and Drive for driving automated guided vehicles (AGVs). We offer a reliable, high efficient, and accurate solution for variety types of AGVs.

Performance

Servo control provides high efficiency and high performance. Max speed of 2.0m/s and max acceleration of 1.0m/s².

Dimensions

The in-wheel structure realizes space-saving in AGVs. It contributes to lower the AGV's floor and more effective use of internal space.

Payload

Multiple sizes and reduction ratios are available. Optimal size can be selected from various sizes according to AGVs specifications.

Safety

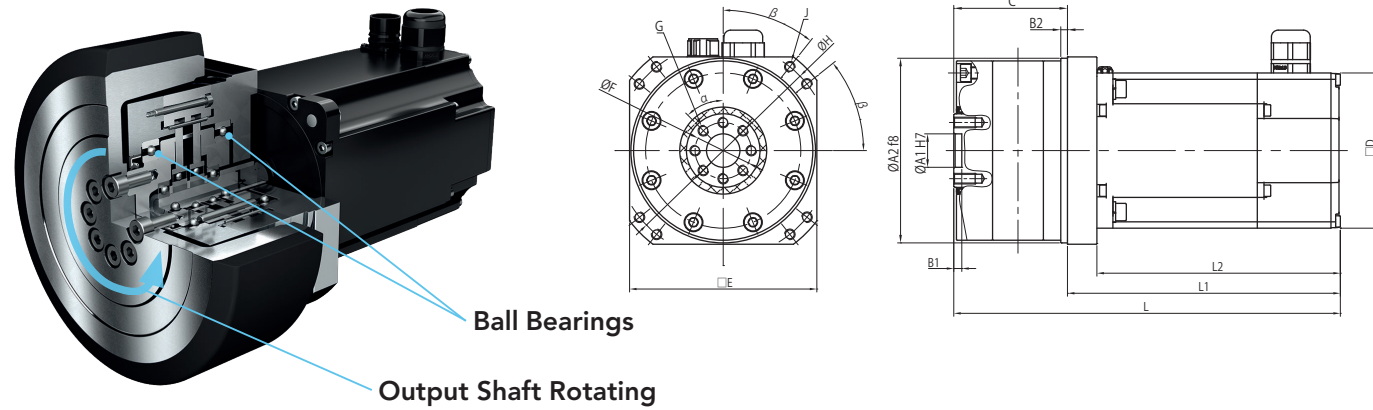
The Cyclo principle (Altax NEO) provides high safety. Designed with high-quality grease sealing for environmental safety and protection. Safety function STO (Safe Torque Off) is available as an option.



Gearmotor (Gear · Servo motor) Dimensions

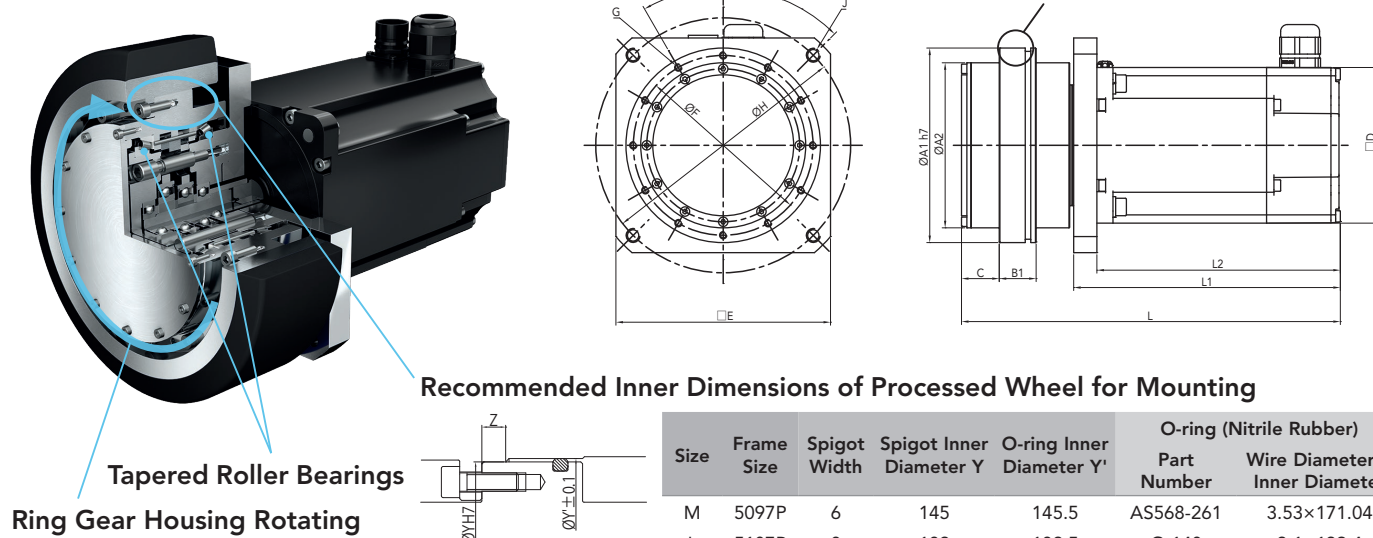
ECO TYPE

- Output Shaft Rotation
- For light payload Machines



PRO TYPE

- Ring Gear Housing Rotation
- High radial payload



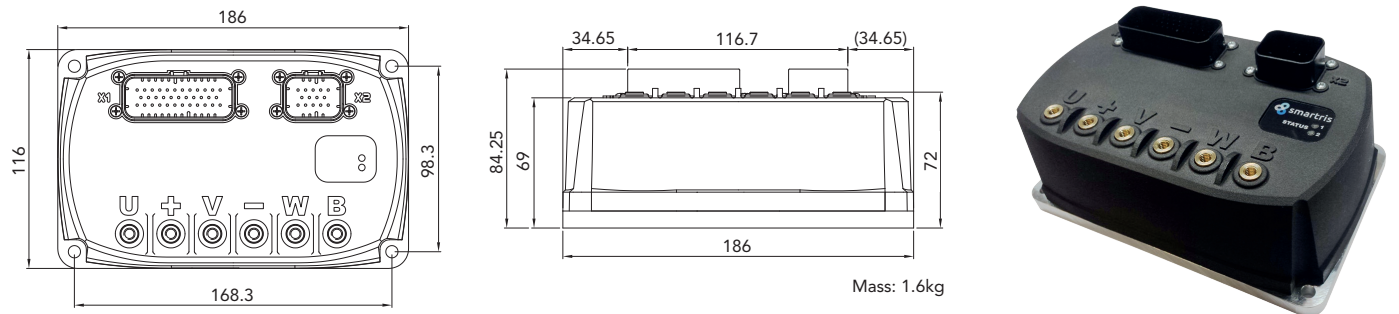
Type	Size	Frame Size	L ^{Note 2,3}		L1 ^{Note 3}		L2 ^{Note 3}		ØA1	ØA2	B1	B2	C	□D	□E	ØF	G	ØH	J	K	ØN	M	α°	β°	Mass (Kg)
ECO	S	5087E	235	159	143	25	110																		5.6
	M	5097E	289	204	182	25	138																		11.3
PRO	M	5097P	282.5	199	182	145	123																		14.5
	L	5107P	309	213	196	182	155																		24.5

Note: 1. Please inquire us for dimensions other than those listed above.
2. The wheels need to be prepared by the customer.
3. Dimensions listed above are of standard specifications. Please inquire us for those of optional specifications.



Drive Dimensions and Specifications

- Gain control adjusted for common AGV applications
- Implements the best CANopen profile (DS402) for AGV
- Equipped with emergency stop input function



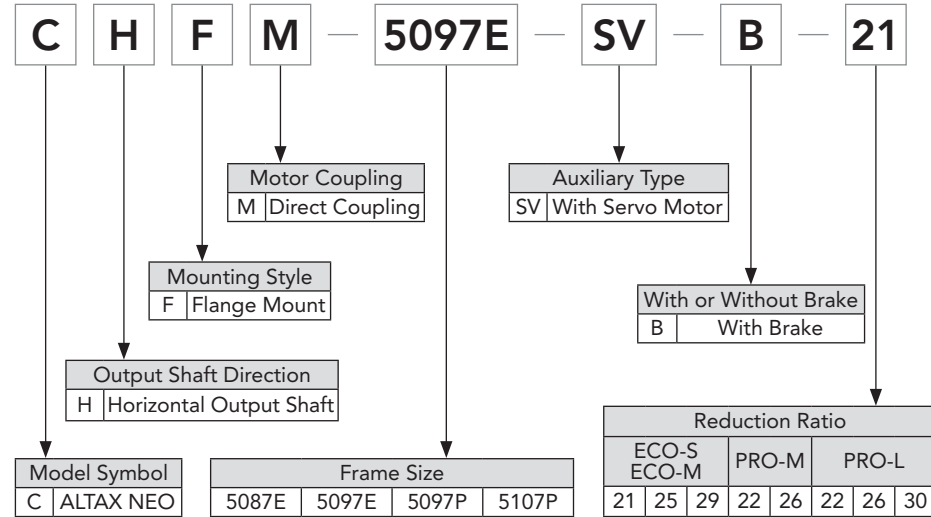
Type		ECO		PRO	
Size		S	M	M	L
Gearmotor Frame Size		5087E	5097E	5097P	5107P
Drive Nomenclature		AG110	AG110	AG110	AG120
Voltage	VDC	48 (30 to 60)			
Rated Current	Arms	11.5	25.8	25.8	35.8
Peak Current (2sec)	Arms	41.7	96.3	96.3	136.2
Peak Current (10sec)	Arms	24.9	57.5	57.5	81.3
Rotation Feedback		Resolver (absolute encoder is available as an option)			
Communication Method		CANopen (DS402) <small>Note:1</small>			
Digital Input		4 Points/photocoupler (24V±20% 100mA) can be used with sink logic or source logic			
Digital Output		4 Points/photocoupler (24V±20% 7mA input impedance 3kΩ) can be used with sink logic or source logic			
Analog Input		1 point/±10V or 0 to 10V (input impedance 10kΩ)			
Analog Output		1 point/0 to 10V max 1mA			
Safety Function		STO (Safe Torque Off) is available as an option			
Protection Class		IP54			
Certification		CE			

Note: 1. We are planning conformity to RS485(Modbus). Please inquire us about RS-232C for service tool.
2. Power cable and control cable are not attached.



Nomenclature

Gearmotor (Gear · Servo Motor)



Drive

