

Ride Longer , Live Better.

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MOTINOVA



E-bike Power Innovation

PRODUCT CATALOGS

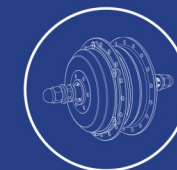


TABLE OF CONTENTS

Motinova is a brand of Midea Industrial Technology.
In 2022, Midea Group has become a holding company of MOTINOVA

01	CORPORATE PROFILE	02-03
02	TECHNOLOGY INNOVATION	04
03	INTELLIGENT MANUFACTURING	05
04	QUALITY CONTROL	06-07
05	MID-MOTOR DRIVE SYSTEM	08-13
	MIGIC SERIES MID MOTOR	10-11
	VOLANS SERIES MID MOTOR	12
	PEGASI SERIES MID MOTOR	13
06	HUB-MOTOR DRIVE SYSTEM	14-21
	HUB MOTORS	15
	BB AXLE TORQUE SENSOR	16
	CONTROLLER	17
	SPARE PARTS	18-21
07	AFTER SALES SYSTEM	22-23
08	DEVELOPING PRODUCTS	24-25



CORPORATE PROFILE

Wuhan Ttium Motor Technology Co., Ltd. is a technological innovator dedicated to providing electric power drive system solutions for global bicycle manufacturers since 2016. Ttium's products comply with the EU standard EN15194-2017. With strong independent development capabilities, our team has mastered critical core technologies such as motor design, automatic control, structural and industrial design, engineering technology, etc. Now the Company owns more than 30 Chinese and international invention patents, utility patents, and software copyrights.

Our own brand MOTINOVA has quickly opened up in overseas motor markets thanks to its core technical highlights of intelligence, high efficiency, smoothness and quietness. With the rapid growth of business and the dynamics of global trade, MOTINOVA has set up a new production base in Vietnam to continue to provide customers with high-quality products and services.

In 2022, Midea Group has become a holding company of Ttium Motor, which has fully empowered Ttium Motor to greatly increase its comprehensive strength and change the world pattern in the field of electric power-assisted mobility.



The Advanced Research Institute is committed to researching motors that are high in energy efficiency, low in noise, and stable in performance



2 modernized factories with an annual production capacity of 600,000 units



A Failure Analysis Center in The Netherlands



Shanghai R&D Center
CNAL Testing and Verification center



Shunde R&D Center



Motor Failure Analysis Center in
The Netherlands



Wuhan Factory



Vietnam Factory

Technological Innovations



Intelligent

Independent intelligent tuning algorithm ensures complete synchronization with the normal cycling



Mute

Unique mute design and manufacturing process, comparable to the first-line benchmark brands



High efficiency

The best efficiency level in the e-bike motor industry



Powerful

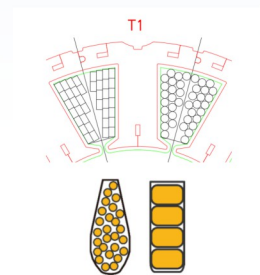
Ultra-high overload capacity, 75% full load continuous operation

Sharing Midea's research results on all categories of motors

Wide efficient to have a longer range

20% wider efficient working

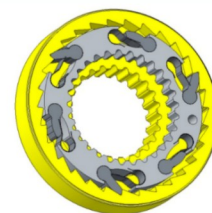
- With flat wire solution get 10% increase in copper wire slot fullness



High precision ratchet clutch technology

Fastest starting response

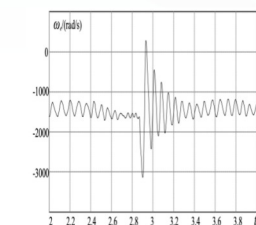
- Independent double gear ratchet clutch design, realizing 6 degrees of pedal false position



Flexible load vibration suppression algorithm

Reduces ineffective current harmonics

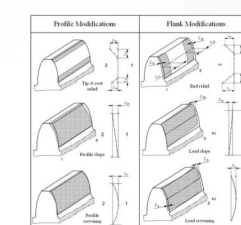
- Creation of a unique vibration suppression algorithm for chain drives
- Adoption of servo control technology for precise observation of load characteristics



High-order profile technology for metal teeth

Ultimate silent experience with high-strength materials

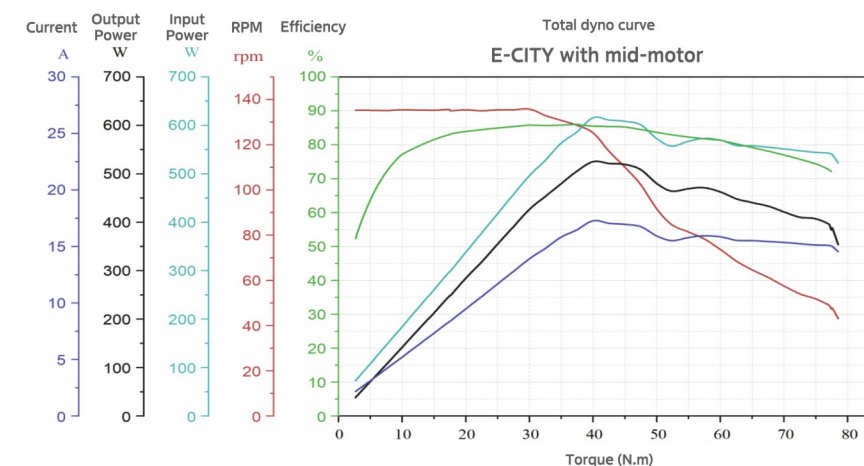
- Contact stress simulation analysis to obtain the trimming parameter that transmits the minimum error under the load condition



Introducing automotive flat wire process to realize a significant increase in efficiency



Flat wire motors



MOTINOVA

Intelligent Manufacturing



50s/table
50s/units



6+6+2
6 basic laboratories
+ 6 product experiments
Failure Analysis Center,
Electronic Control Reliability Center



30-45 days
Shortest lead time
than competitors



50 million
The R&D equipments are worth
50 million RMB and the
laboratory area is 5000 m²



1000PPM
The product defect rate
is less than 1‰



Certificate of Origin
from Vietnam
All products have a certificate
of origin from Vietnam

2 modernized factory with an annual capacity of 600,000 units



Factory in Vietnam

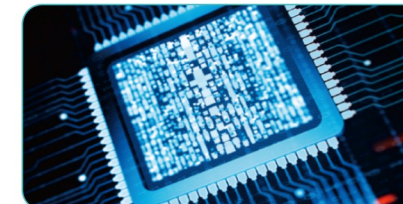


Factory in Wuhan

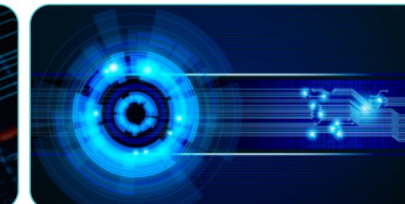


Scan to watch the factory video

Imported into Midea's supply chain system, comprehensively improving product competitiveness



Function integration, chip customization,
high performance



Realize independent R&D and
production of core motor components

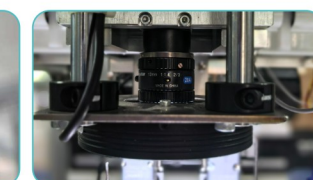


Utilizing Midea's advantage of centralized purchasing
of bulk materials, cost and delivery can be controlled

Production line automation rate >80%, MES system full-process traceability management, quality monitoring and automatic analysis



Laser coding, RFID system to realize the full cycle of production data management



Multiple positions in the production line are equipped with industry-leading visual inspection equipment to ensure zero defects in the production process

Quality Management

Wuhan and Vietnam factories have passed the international professional quality management system certification



Through high-precision testing equipment, we are able to meet the automotive specification level quality standards

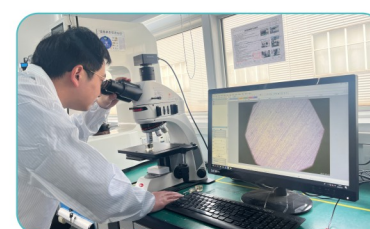
Incoming Material Inspection



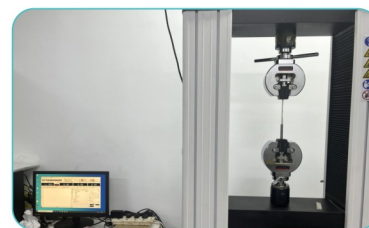
Material testing



Coordinate full-size precision measurement



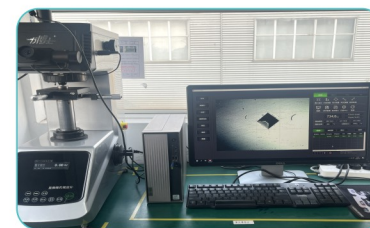
Metal material analysis



Material Mechanical Properties Analysis



Gear Measurement



Vickers hardness test

Production Processing Inspection



Stator Coil Inspection



Motor assembly noise testing



Electrical Safety and Function Testing



Rotor Dynamic Balance Inspection



No-load electrical performance test of the body



Air tightness test

Reliability test



Torque sensor life test



Finished product noise and vibration test



Simulated cycling test



Temperature, humidity and vibration test bench



Environmental Durability Test Rig



Pedal fatigue test bench

MID-MOTOR DRIVE SYSTEM



E-CITY



E-FLOD



E-TREKKING



E-MTB



E-CARGO

MOTINOVA

- MIGIC SERIES MID MOTOR
- VOLANS SERIES MID MOTOR
- PEGASI SERIES MID MOTOR



VOLANS



Model	VOLANS	VOLANS PLUS	VOLANS PLUS
Rated Power	250W	250W	250W
Rated Voltage	36V	36V	36V
Controller current limit	13A	15A	15A
Maximum driving torque output	65Nm	75Nm	80Nm
Pedal frequency	100rpm	100rpm	100rpm
Weight	3.3kg	3.4kg	3.5kg
Dimesions (mm) LxWxH	191.8*132*152	191.8*132*152	191.8*132*152
Center Axle	JIS	JIS	JIS
Gear	OFF\ECO\NORM\SPORT\TURBO\SMART\WALK		
Maximum power assist ratio	250%	270%	270%
Communication	CAN	CAN	CAN
Walk Mode	Yes	Yes	Yes
Noise	<50db	<50db	<50db
Light voltage	6V/12V	6V/12V	6V/12V
Using Environment	-25°C--55°C	-25°C--55°C	-25°C--55°C
Applicable models	E-CITY, E-TREKKING	E-CITY, E-TREKKING	E-CITY, E-TREKKING

all above motors adapter for the same bracket

PEGASI

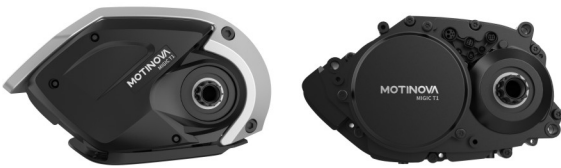


Model	PEGASI	PEGASI PLUS
Rated Power	250W	500W
Rated Voltage	36V	48V
Controller current limit	17A	17A
Maximum driving torque output	80Nm	100Nm
Pedal frequency	110rpm	120rpm
Weight	3.6kg	3.7kg
Dimesions (mm) LxWxH	191.8*132*147	191.8*132*147
Center Axle	ISIS	ISIS
Gear	OFF\ECO\NORM\SPORT\TURBO\SMART\WALK	
Maximum power assist ratio	300%	320%
Communication	CAN	CAN
Walk Mode	Yes	Yes
Noise	<50db	<50db
Light voltage	6V/12V	6V/12V
Using Environment	-25°C--55°C	-25°C--55°C
Applicable models	E-CITY, E-TREKKING	E-CITY, E-TREKKING, E-CARGO

all above motors adapter for the same bracket



MIGIC T1



Model	MIGIC T1	MIGIC T1	MIGIC T1
Rated Power	250W	250W	250W
Rated Voltage	36V/48V	36V/48V	36V/48V
Controller current limit	17A	17A	17A
Maximum driving torque output	75Nm	90Nm	100Nm
Pedal frequency	120rpm	120rpm	120rpm
Weight	3.02kg	3.1kg	3.2kg
Dimesions (mm) LxWxH	213*133.1*144.5	213*133.1*144.5	213*133.1*144.5
Center Axle	ISIS	ISIS	ISIS
Gear	OFF\ECO\NORM\SPORT\TURBO\SMART\WALK		
Maximum power assist ratio	400%	400%	400%
Communication	CAN	CAN	CAN
Walk Mode	Yes	Yes	Yes
Noise	<50db	<50db	<50db
Light voltage	6V/12V	6V/12V	6V/12V
Using Environment	-25°C--55°C	-25°C--55°C	-25°C--55°C
Applicable models	E-MTB	E-MTB	E-MTB

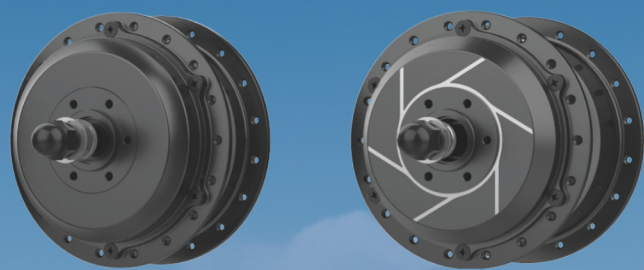
all above motors adapter for the same bracket

MIGIC C1



Model	MIGIC C1
Rated Power	250W
Rated Voltage	36V
Controller current limit	17A
Maximum driving torque output	75Nm
Pedal frequency	110rpm
Weight	3kg
Dimesions (mm) LxWxH	198.3*126.5*145.2
Center Axle	JIS
Gear	OFF\ECO\NORM\SPORT\TURBO\SMART\WALK
Maximum power assist ratio	400%
Communication	CAN
Walk Mode	Yes
Noise	<50db
Light voltage	6V/12V
Using Environment	-25°C--55°C
Applicable models	E-CITY , E-TREKKING

HUB-MOTOR DRIVE SYSTEM



E-TREKKING



E-MTB

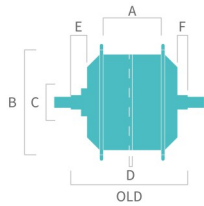


E-CITY

- HUB MOTORS
- BB AXLE TORQUE SENSOR
- CONTROLLER
- SPARE PARTS

MOTINOVA

HUB MOTORS



Model	MN010	MN020	MN040
Certification	R.01A.250.DC/DX	R.01T.250.DC/DX R.01T.350.DC/DX	R.02G.500.DC/DX R.02G.750.DC/DX R.02G.1000.DC/DX
Installation Location	Rear Hub Motor	Rear Hub Motor	Rear Hub Motor
Application Scenarios	E-CITY,E-TOUR,E-MTB	E-CITY,E-TOUR,E-MTB	E-FAT,E-CARGO
Size			
A(mm)	40	40	76
B(mm)	124	126.4	124
C(mm)	44	44	44
D(mm)	3.6/2.1	7.5/6	4.1
E(mm)	15.25	15.25	15.25
F(mm)	40.75/38	40.75/38	40.75/38
O.L.D. (mm)	138/135	138/135	175
Core Data			
Tire Size (Inch)	16/20/26/700C/28/29	16/20/26/700C/28/29	26/700C/28 (E-fat 20/26)
Rated Voltage (V)	36/48	36/48	36/48
Rated Power (W)	250	250/350	500/750/1000
Maximum Speed (Km/H)	25	25/32	32/45
Maximum Torque (Nm)	35	35/50	80
Color	Black Argent	Black	Black
Weight (Kg)	2.8	2.8	3.5
Installation Parameters			
Brake	Disc Brake	Disc Brake	Disc Brake
Outlet Direction	Left Cabling	Left Cabling	Left Cabling
Outlet Length (Mm)	250	250	250
Spoke Specification	36H*13G 12G	36H*13G 12G	36H*12G
Product Testing & Certification	IP65 ROHS/CE	IP65 ROHS/CE	IP65 ROHS/CE



E-CITY

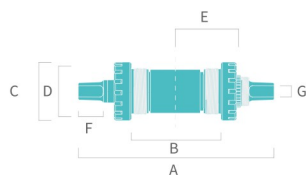


E-TREKKING



E-MTB

BB AXLE TORQUE SENSOR



Model	TS101
Size	
A (mm)	148/148/164/180/200
B (mm)	68/73/84/100/120
C (mm)	2-Φ44
D	2-BC1.37"*24T
E (mm)	47/47.5/53/61/71
F (mm)	2-17
G (mm)	2-M8*P1*25
Core Data	
Type	Cadence & Torque
Number of Pulses(Pulse/Period)	38
Central Axis	JIs
Output Voltage Range	0.5-3V
Installation Parameters	
Installation Location	Bottom Bracket
Cap Material	Aluminum
Protection Rating & Certifications	IP65 EN15194

CONTROLLER



Model	SC101A	SC102A	SC103A	SC101B	SC102B	SC101C	SC102C	SC103C
Rate Power (W)	250 350	250 350	250 350	350 500	350 500	500 750 1000	500 750 1000	500 750 1000
Rate Voltage (V)	36/48	36/48	36/48	36/48	36/48	36/48 48	36/48 48	36/48 48
Under Voltage Protection(V)	30/40	30/40	30/40	30/40	30/40	30/40	30/40	30/40
Overvoltage Protection (V)	46/59	46/59	46/59	46/59	46/59	46/59	46/59	46/59
Max. Phase Current (A)	25 30	25 30	25 30	35	35	55	55	55
Max. Current (A)	15/12	15/12	15/12	18/14	18/14	25/20 30	25/20 30	25/20 30
Communication	CAN	CAN	CAN	CAN	CAN	CAN	CAN	CAN
Torque sensor	YES	YES	YES	YES	YES	YES	YES	YES
Cadence sensor	YES	YES	YES	YES	YES	YES	YES	YES
Handlebars	YES	YES	YES	YES	YES	YES	YES	YES
Walk Mode	6km/h	6km/h	6km/h	6km/h	6km/h	6km/h	6km/h	6km/h
Light Voltage Supply	6V/12V	6V/12V	6V/12V	6V/12V	6V/12V	6V/12V	6V/12V	6V/12V
Light Power Supply	6W/12W	6W/12W	6W/12W	6W/12W	6W/12W	6W/12W	6W/12W	6W/12W
Stoplight	YES	YES	YES	YES	YES	YES	YES	YES
Turn Signal Light	NO	NO	NO	NO	NO	NO	YES	YES
Horn	NO	NO	NO	NO	NO	NO	YES	YES
Diagnose	YES	YES	YES	YES	YES	YES	YES	YES
Colour	Black	Black	Black	Black	Black	Black	Black	Black
Length(mm)	74	72	112	107	85	140	106	106
Width(mm)	45	51	48	51	57	51	57	57
Height(mm)	30	30	48	30	30	30	30	30
Weight(kg)	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Certification	CE	CE	CE	CE/UL2849	CE/ UL2849	UL2849	UL2849	UL2849

SPARE PARTS

CN3010

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DN3010

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	LED Light
Dimensions (mm) L x W x H	51X59X48
Stent diameter(mm)	φ22.2
Protection rating	IP55



Bluetooth



Thoughtful functional layout

CS510

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DS5010

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	1.3"VA segment code screen
Dimensions (mm) L x W x H	68.5X41X24.5
Stent diameter(mm)	φ22.2
Protection rating	IP55



1.3"VA segment code screen



Thoughtful functional layout



Ergonomic design

CS5040

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DS5040

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	3.5"VA segment code screen
Dimensions (mm) L x W x H	Button:23 x 52 x 51.6 Display:99.6 x 62 x 15
Stent diameter(mm)	Button: φ22.2 Display:φ22.2 / φ25.4 / φ31.8
Protection rating	Ip55



3.5"VA segment code screen



Adjustable display angle



Automatic error code display

MOTINOVA

CS5050

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DS5050

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	3.5" segment code screen
Dimensions (mm) L x W x H	Button:58X46.2X45 Display:85.6X65X20.15
Stent diameter(mm)	Button: φ22.2 Display:φ22.2 / φ25.4 / φ31.8
Protection rating	IP55



Adjustable display angle



Independent control switch function



Bluetooth



TYPE A

CS8010

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DS8010

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	2.0"color screen
Dimensions (mm) L x W x H	Button:58X46.2X45 Display:47.5X63.5X14.6
Stent diameter(mm)	Button: φ22.2 Display:φ22.2 / φ25.4 / φ31.8
Protection rating	IP55



2.0" color screen



Adjustable display angle



Independent control switch function

CS820

Adaptation System: VOLANS/VOLANS PLUS/PEGASI/PEGAS IPLUS

DS8020

Adaptation System: MIGIC series/HUB MOTOR

Basic specifications

Display	2.8"color screen
Dimensions (mm) L x W x H	Button:58X46.2X45 Display:47.5X63.5X14.6
Stent diameter(mm)	Button: φ22.2 Display:φ22.2 / φ25.4 / φ31.8
Protection rating	IP55



2.8" color screen



Adjustable display angle



Independent control switch function



Bluetooth



TYPE A

SPARE PARTS

Motor bracket For VOLANS/PEGASI/MIGIC Seires Motors

Model	MM10V N1	MM11V N1	MM10P N1	MM10C N1	MM10T N1	MM11T N1
Support motor	VOLANS/VOLANS PLUS	VOLANS/VOLANS PLUS	PEGASI/PEGASI PLUS	MIGIC C1系列	MIGIC T1系列	MIGIC T1系列
Material	Aluminum alloy	Aluminum alloy	Aluminum alloy	Aluminum alloy	Aluminum alloy	Aluminum alloy

Decorative Cover For VOLANS/PEGASI Seires Motors

Model	MPV01	MPV02	MPV03	MPV04	MBP01	MPV05
Support motor	VOLANS	PEGASI	VOLANS PLUS	PEGASI PLUS	PEGASI / PEGASI PLUS	VOLANS / VOLANS PLUS PEGASI / PEGASI PLUS
Material	PA+GF	PA+GF	PA+GF	PA+GF	PA+GF	PA+GF

Decorative Cover / Lower Guard For MIGIC Seires Motors

Model	MPV07	MPV08	MBP02	MBP03
Support motor	MIGIC C1 series	MIGIC T1 series	MIGIC C1 series	MIGIC T1 series
Material	PBT	PBT	PBT	PBT

Small Chainwheel For VOLANS、PEGASI Seires Motors

A special crankset designed for small crankset motors, available in the following specifications: 15T/16T/18T/20T. These specifications are approximately equal to 36T/38T/43T/48T by equivalent conversion.

Model	MCW16C	MCW18A	MCW20C
Number of teeth	16	18	20
Color	Black		
Tooth shape	Non-positive and negative teeth		

Crankset

For MIGIC series motor

Contact Us !

SAMOX

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TEL : +86-0512-57615996

Zhang Hong

TEL:18012691936

E-mail:info_cn@chainway.com

MOTINOVA

Lock nut For MIGIC Seires Motors

Model	MBS09N	MBS10N
Type	Lock nut	Lock nut
Support motor	MIGIC C1 series	MIGIC T1 series

CRANKSET LOCK NUT For VOLANS、PEGASI Seires Motors

Model	MBS01N	MBS02N	MBS03N	MBS04N	MBS05N
Type	Lock nut	Lock nut / chain disk			
Applicable models	For non-mountain bikes only	For mountain bikes or models without a chain guard			
Chain Line	Unlimited	49mm	52mm	49mm	52mm
Applicable crankset	14-16T	14-16T	14-16T	18-20T	18-20T

CHAIN GUARD

For VOLANS、PEGASI Seires Motors

Model	MCG1A	MCG2A
Material	ABS	PC+ABS
Total length	405	520
Mounting hole distance range (mm)	210-320	327-440

Model	SP-38-1
Tmaterial	PC/PP/ABS
Chainwheel	38T
RC	400-465mm adjustable
Chain guard innerring size	170mm

Speed Sensor For MIGIC、VOLANS、PEGASI Seires Motors

Model	MS1F
Cable length (mm)	420 / 550 / 700 / 1300 /...
Installation location	Chainstay
Mounting screws	M5*12
IP rating	IP67

Magnet Assembly For MIGIC、VOLANS、PEGASI Seires Motors

Model	MA01B	MA02A
Installation location	Spokes	Disc brake
Applicable spoke size	12G/13G/14G	Unlimited
Dimensions (mm)	Magnet bolt: Φ12x12 Magnet nut: Φ12x7	Magnet: Φ31 × 20 × 5
Sensing range	5mm ≤ MA01B ≤ 20mm	5mm ≤ MA02A ≤ 15mm

Washer For VOLANS、PEGASI Seires Motors

Model	MWM01A	MWM02A	MWM03A
Color & Thickness	Black (4mm)*2	Black (4mm)*1 Metallic primary color (3mm)*1	Black (4mm)*1 Metallic primary color (3mm)*2
Chain Line	46mm	49mm/52mm	55mm



AFTER SALES SYSTEM

Linkage Device

Connect the Motinova power-assisted assembly with the after-sales software through Motinova Linkage Device to perform operations such as fault diagnosis, firmware upgrade or custom configuration.



Model	MLD4
Dimensions (mm) Length x Width x Height	110x28x55
USB Interface	DC5V 500mA
Communication Interface	CAN2.0A 250Kbps
Color	Black

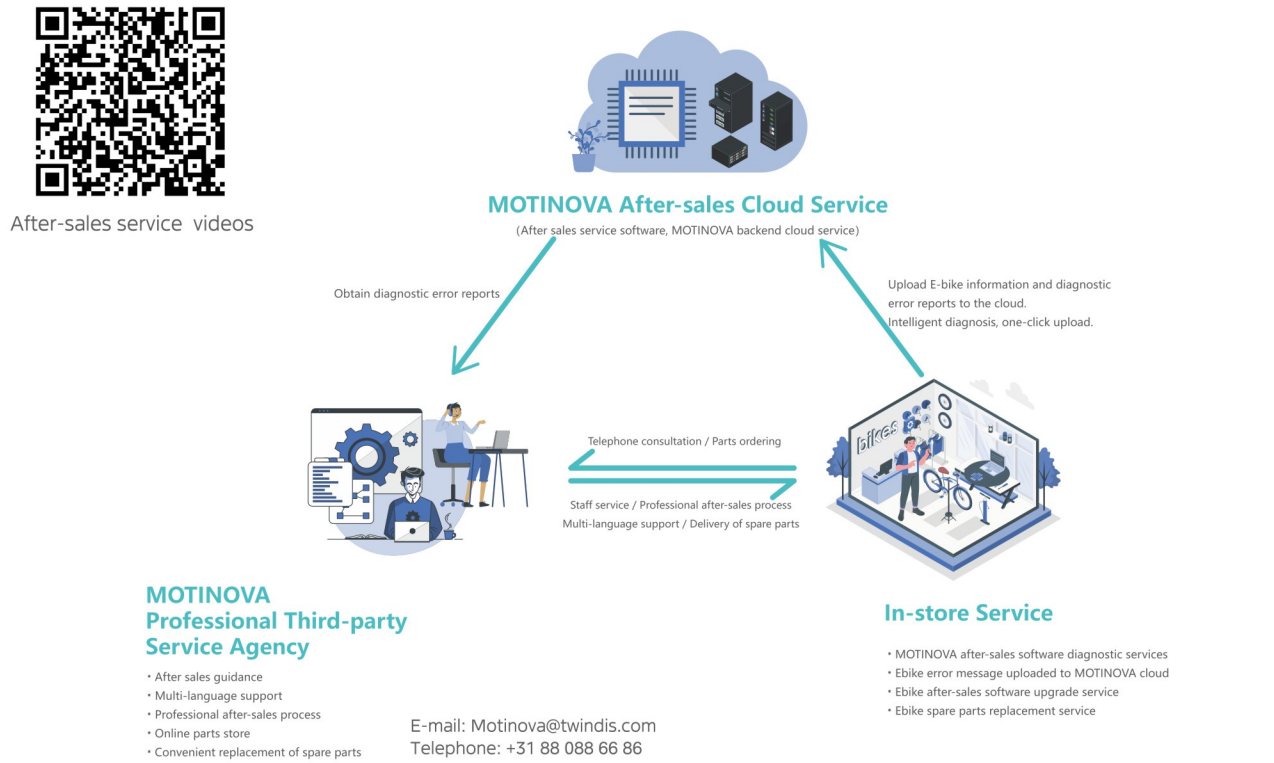
After-sales Service Software

The Motinova after-sales service system allows to specify custom configuration of the power assist system and customize your riding style; keep the firmware of every unit up-to-date through firmware update; Thanks to the Motinova after-sales service system, you can check operation faults, upload the after-sales service image, and obtain the logs of each assembly, making it easier for the maintenance personnel to perform maintenance quickly.



*If necessary, please contact Motinova team to obtain the after-sales service system software and tools.

MOTINOVA



After-sales Service Map

Serving global customers.



New to be launched
Lightweight Compact Series
Mid-motor



- smart
- compact
- high efficiency
- light-weight

Light-weight , compact , high torque

High-end
Mid-motor

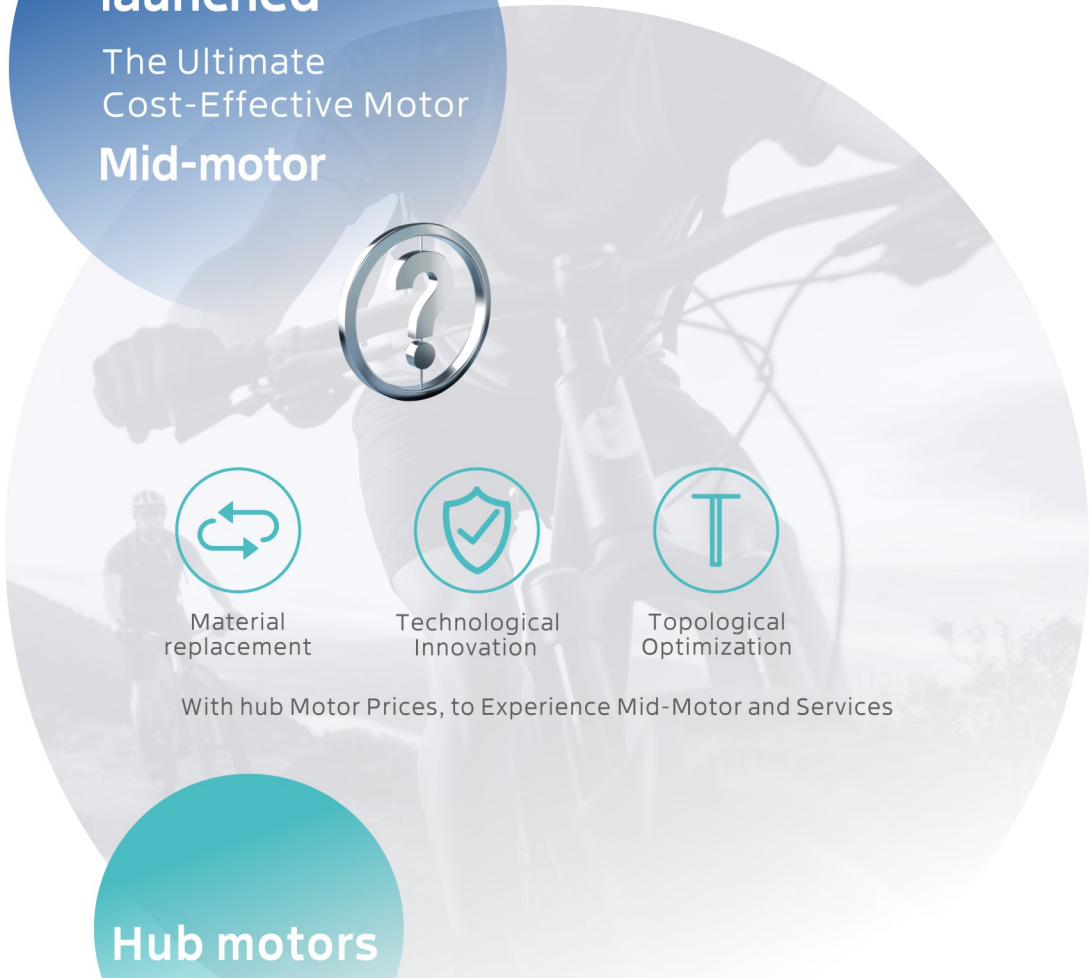
- strong
- silent
- smooth
- high efficiency

Model	MIGIC T1	MIGIC T1
Rated Power	500W	500W
Rated Voltage	48V	48V
Controller current limit	17A	17A
Maximum driving torque output	115Nm	115Nm
Pedal frequency	120rpm	100rpm
Weight	3.3kg	3.5kg
Dimesions (mm) LxWxH	213*133.1*144.5	213*133.1*144.5
Center Axle	ISIS	ISIS
Gear	OFF/ECO/NORM/SPORT/TURBO/SMAR/TWALK	
Maximum power assist ratio	400%	400%
Communication	CAN	CAN
Walk Mode	Yes	Yes
Noise	<50db	<50db
Light voltage	6V/12V	6V/12V
Using Environment	-25°C--55°C	-25°C--55°C
Applicable models	E-MTB	E-CARGO

Note: The product is under development



New to be launched
The Ultimate Cost-Effective Motor
Mid-motor



- Material replacement
- Technological Innovation
- Topological Optimization

With hub Motor Prices, to Experience Mid-Motor and Services

Hub motors

- Material replacement
- Heat dissipation optimization
- Self-made and cost reduction

