

Manual of Motion Energy Controller

一、 Product profile

The motion energy controller is used for the intelligent control of the motion equipment, and has the functions of motion power generation, energy storage, motion data collection, motion resistance control, power transformation and transmission, internet data transmission, etc. , it can realize the perfect unity of intelligent sports and high-efficiency power generation, upgrade customer sports experience, and satisfy the green life yearning.

二、 Core functions

1、 Digital variable frequency resistance

This product uses the PWM technology automatic frequency modulation, realizes each second ten thousand times automatic transformation resistance output value, realizes the more real movement experience

2、 Power Generation Management

The generator power is dynamically adjusted by the PWM digital variable-frequency and variable-resistance system, and the generator is stably generated by the dynamic current rectification, filter, shunt and reverse control

3、 Power management

Through the intelligent control chip, the generation current can be intelligently shunted to supply power to controller, display, brake resistance, storage battery, external power and so on

4、 Network interconnection of motion data

Through 5.2 Bluetooth module, dynamic and mobile phones, tablets and other devices for two-way movement data interaction, can realize movement data networking, support multi-person movement data ranking

5、 data acquisition

Motor voltage and current acquisition, inter-module voltage and current acquisition, movement position data acquisition, battery voltage and current data acquisition, movement time and state data acquisition

6、 Voltage Regulator

The generator terminal 0 ~ 100V AC rectifier, filter, sectioned output voltage regulator 3.7 V, 5v, 14.76 V, 24 V, 36 V, 48 V voltage

7、 Wireless/wired digital control

ST low-energy Intelligent Chip Master Control combined with 5.2 Bluetooth module to achieve dynamic wireless/wired transmission of motion data and control data, all digital intelligent control

8、 High efficiency sports power generation

Rated Speed 1800, rated Power 300W, 98% conversion rate of motion energy

9、 Intelligent simulation of the movement of the sense of body

The motion position data are collected by two sensors, and the real motion sense is simulated by the intelligent resistance compensation of core chip combined with the principle of human mechanics

三、Core component parameters

component	Mod	Specs	Brand	Description	Params
Core master chip	STM32F103C8T6	LQFP-48 (7x7)	ST	Mainstream enhanced ARM Cortex-M3 MCU with 64kb Flash, 72mhz CPU, motor control, USB and CAN	CPU Core: ARM-M3 ROM: 64KB RAM: 20KB GPIO: 37
Data acquisition chip	ACS712E LCTR-20A-T	SOIC-8	ALLEGR O	Houle effect linear current sensor	ACR: 20A VCC : 5V SEN: 100mV/A WT: -40°C~+85°C
	EG358	SOIC-8	EG	Dual OP amp, operational amplifier chip, single power or dual power	AMP: SMP IQ: 2mA
	TI LM393DR G4	SOIC8	TI	LM393 commercial grade two-channel differential comparator	VOS:5mV IB: 250nA VCC: 1V~18V; 2V~36V OUT: open set
Power management chip	AMS1117 -3.3	SOT-223	AMS		OUT: fxd OV: 3.3V OC: 1A PSRR: 72dB@(120Hz)
	EG1163S	SOP16	EG		T/M/S: Buck MOSFET: 300kHz WT: -40°C~+125°C@(TA) SR: Y
	TPS5430 DDAR	SOP-8_EP	TI	TPS 54305.5 V-36 V input 3A 500 khz Buck converter	T/M/S: Buck OUT: adj Vi: 5.5V~36V Vo: 1.221V~32.04V
Bluetooth module	PB-03F	SMD, 16x24mm	Ai-Thinker	PB-03F RTC-free version-1589 BLE combo AT conventional firmware-0546 conventional	CPU Core: PHY6252 API: I2C; PWM; DMA; ADC; UART; SPI; GPIO; PDM

				screen printing-no other requirements-taping	TCP/IP: Bluetooth 5.2 TX Power: 10dBm
Power control chip	SL27517	SOT-23-5	Slkor		GPIO: L PT: MOSFET; IGBT ASIO: 1 Sink Current: 4A
	AGMH12H05H	TO-263	AGM-Semi		Type: NMOS Vdss: 120V Id: 125A RDS (on)@Vgs, Id: 4.3mΩ @10V, 20A

四、Product range and specifications

1、Product line

PN	Model				params			
	Brand	Type	Series	Model	Output Voltage	Output Current	Version	remarks
Motion control panel	BEL	ST	10	BEL-ST-10	12V	15A	STD	150*95
	BEL	ST	11	BEL-ST-11	24V	15A	24V	150*95

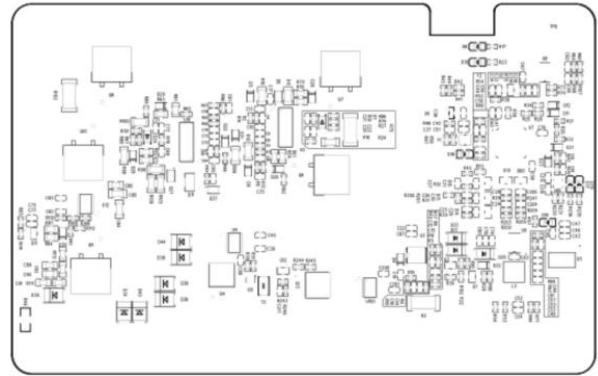
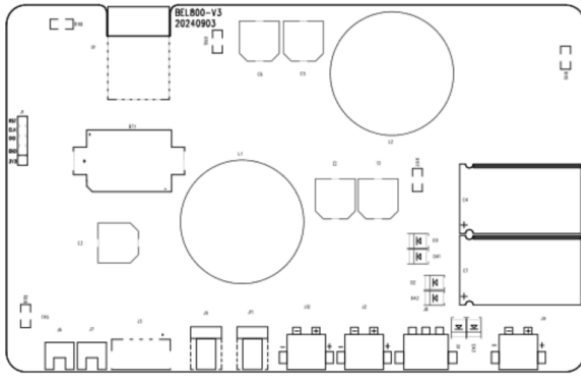
Sports Generator	BEL	ST	21	BEL-ST-21	42V	12A	STD	125*8.25
	BEL	ST	22	BEL-ST-22	42V	12A	No inertia	114*3.5
	BEL	ST	23	BEL-ST-23	42V	12A	Large inertia	152*21.5

The standard version of the motion controller has a rated voltage of 12V and a rated current of 15A output

The diameter and wall thickness of the standard version are 127mm and 10mm respectively

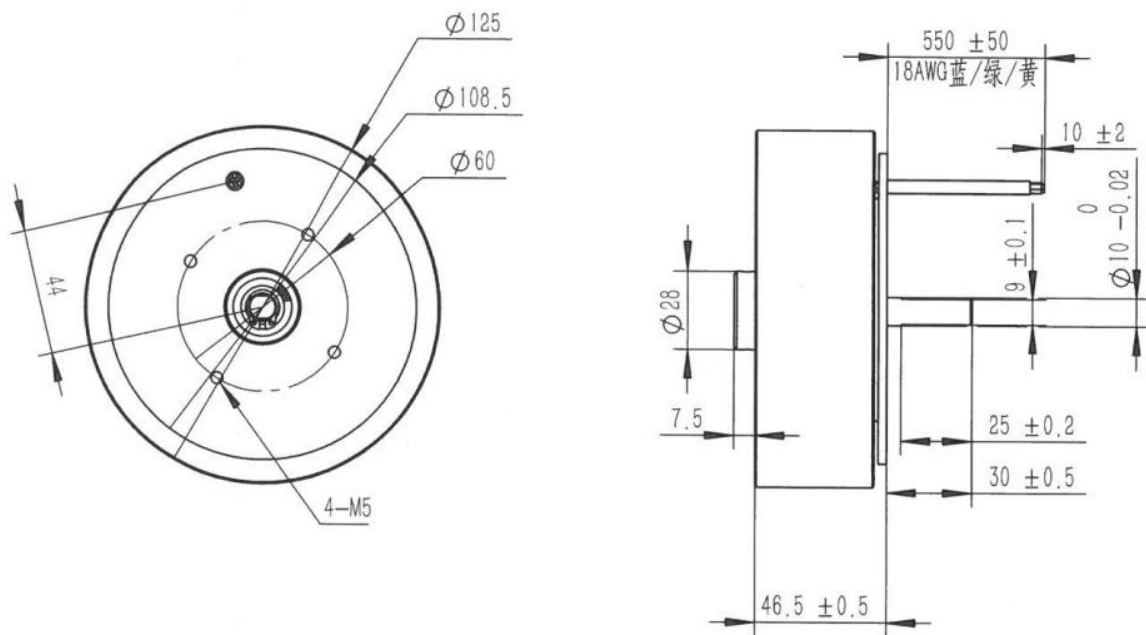
2、Product specifications

Motion control panel

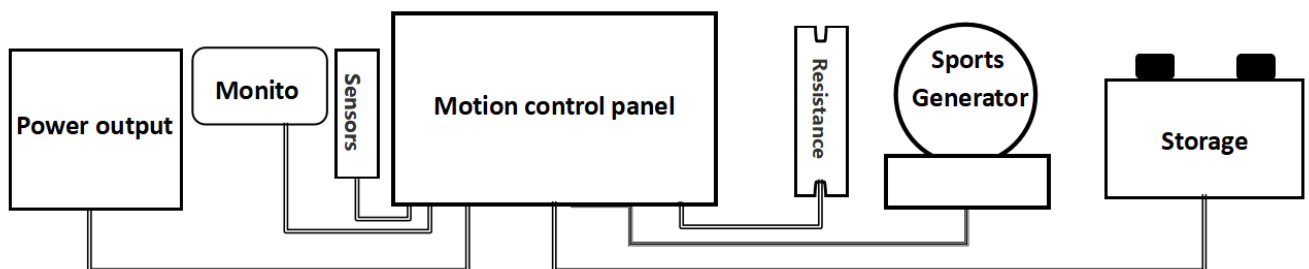


Product dimensions: 150mm×95mm×25mm

Sports Generator



五、 Installation and application



SENSOR: 2 DIP 2p XH2.54 mm horizontal interface terminals

Monitor: 1 SMD 4Pin 2.5 mm interface terminal

Output Power: 2 DIP 2p VH3.96 mm terminals, provide 14.76 v Voltage 7A (Max)

power output

Storage equipment: 2 XT30PW terminals, provide 14.76 v Voltage 15A (Max) current charging output

Motor Generator: 1 MR30PW terminal, connected to the Motor 300W (Max) input

Resistor: 1 XT30PW terminal, connecting aluminum case resistor 5 Ω 150W

In order to ensure the reliable use of equipment and the safety of personnel, please install, use and maintenance, contact our technical staff to operate;

Non-professional personnel without permission, please do not privately repair, in order to avoid accidents or aggravate the extent of damage to equipment.

FCC Caution:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions,

may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between the equipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.