

# RHEA-I660A

## Supercapacitor backup board

Uninterruptible power backup solution based on IEL intelligent supercapacitors

- Six 3.0V/600F supercapacitors
- 12/19/24 VDC Adaptive input/output.
- Maximum 150W load 3V@25°C lasting 60 sec
- The standard 60W load 3V@25°C lasting 180 sec
- -40°C to 60°C wide temperature environment
- 500,000 charge-discharge life cycles
- Long supercapacitor lifetime, up to 10 years
- Intuitive power management software for easier management
- Provide power-off shutdown service through software/hardware



# RHEA-I660A

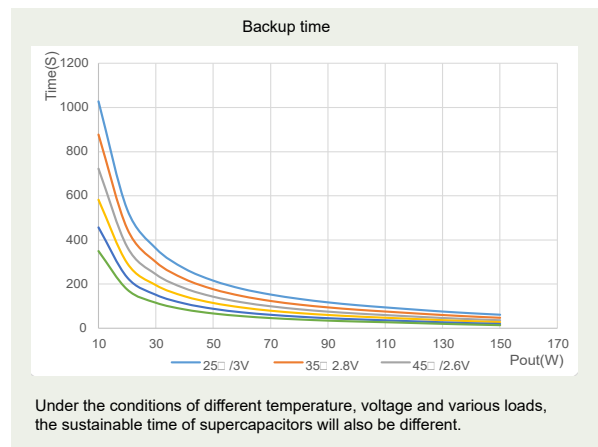
It can be equipped with six 600F supercapacitors, combined under the power of 150W, with different backup time and different size solutions to meet the different needs of customers in different application scenarios.



## Long Life Supercapacitors- Maintenance-free energy storage

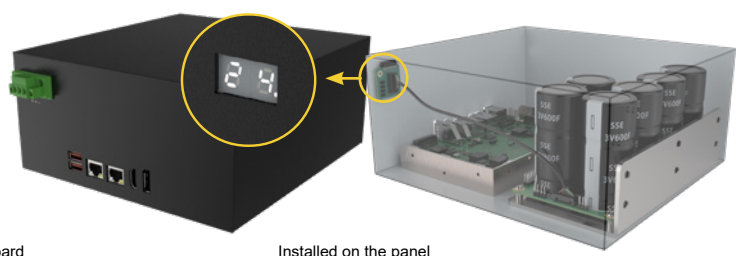
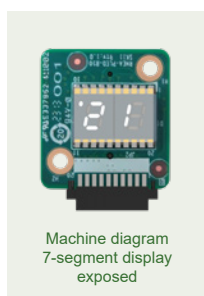
Six of 3.0V/600F capacitors in series design (customized services for various series and parallel connections with different capacities can be provided), It can be used as a maximum load of 150W at a normal temperature of 25 degrees, providing 60 seconds of operation and safe shutdown time after the system is powered off.

Maintenance-free long-life supercapacitors serve as efficient and long-lasting energy storage devices, providing uninterrupted power in short transition times and up to 500,000 charge and discharge cycles. Different from bypassing batteries that store energy through chemical reactions, supercapacitors are based on electrophysical principles and can be fully charged for use in a very short time. The service life of supercapacitors is ten times longer display interface than that of traditional lead-acid batteries, and energy storage systems equipped with supercapacitors usually have high current carrying capacity, power density and reliability.



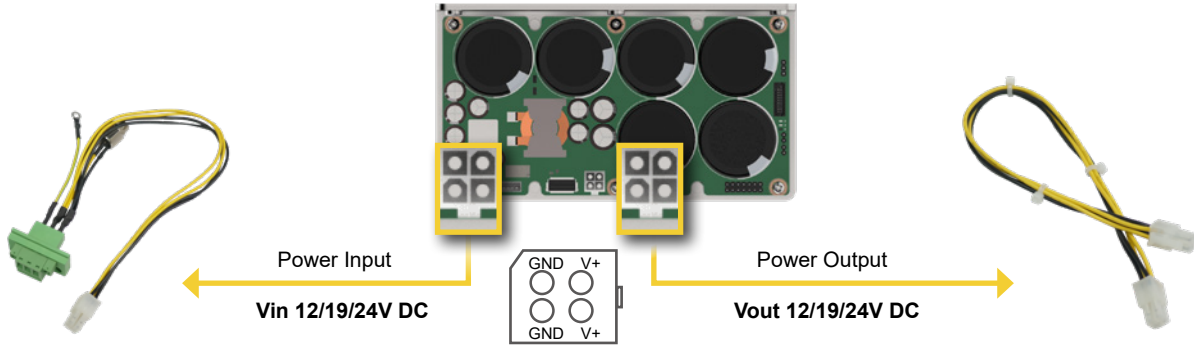
## 12/19/24V adaptive input and output, 7-segment digital tube status display

The supercapacitor backup board supports three input voltages of 12/19/24V  $\pm 10\%$ , and the output voltage is consistent with the input voltage. The MCU control unit inside the product will monitor the status of the input voltage in real time, and provide a seven-segment digital tube to display the real-time voltage at the same time. The 7-segment digital tube provides two installation methods. By default, it is inserted into the supercapacitor backup board, or it can be installed on the panel selected by the customer through an accessory 50MM wire for external display.



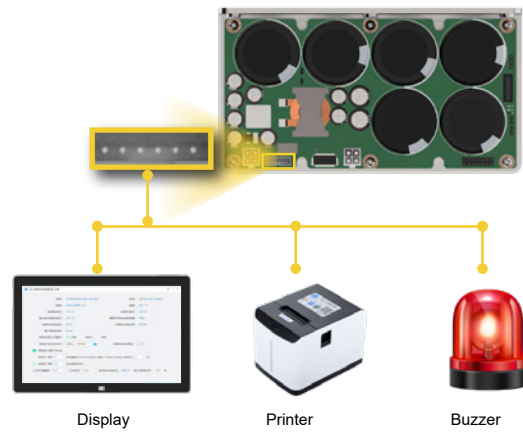
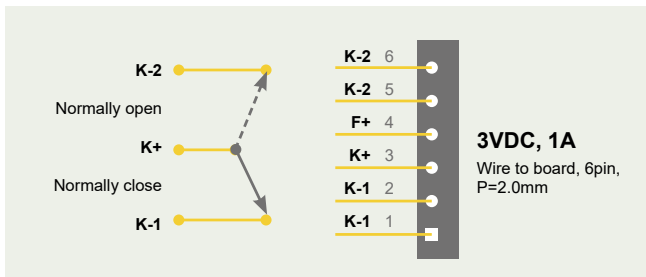
## Standard input and output interface

The supercapacitor backup board is designed as a built-in board, providing a square-shaped input and output interface, and users can configure the input and output wires by themselves



## Two Sets of Relay Switch control

The supercapacitor backup board provides 2 groups of state relay switch signal outputs, which are configured to start after power failure (the start time can be configured), and users can mount switch signals of other devices, such as monitors, printers, or buzzers.

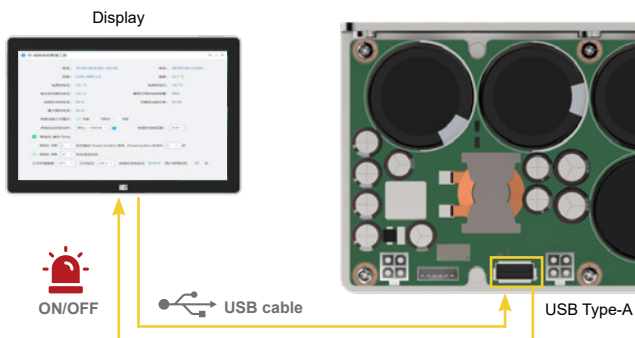


## Power Failure Abnormal Information Trigger Mode

### Mode 1

#### Through Software

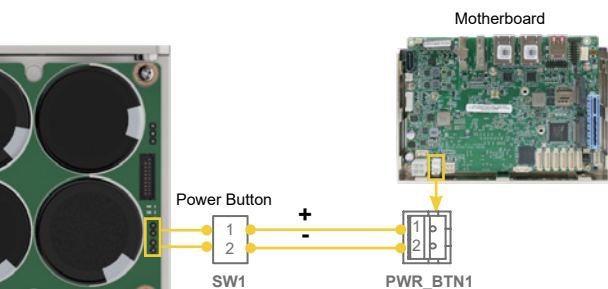
Connect to the Windows computer via USB, and start the shutdown command through the IEL supercapacitor management tool software after receiving the abnormal notification (after 10 seconds by default).



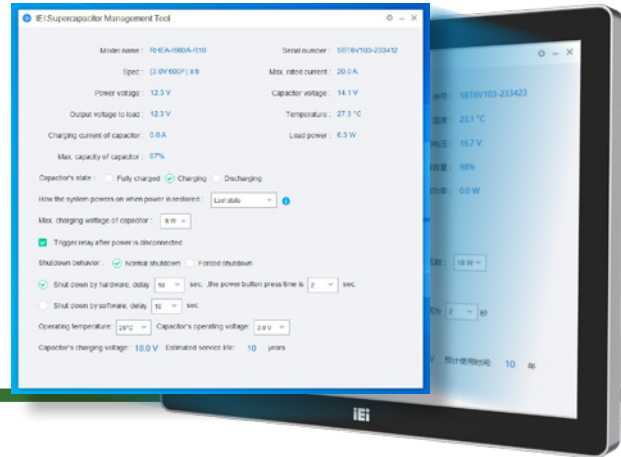
### Mode 2

#### Through Hardware

Through 2 sets of hardware POWER BUTTON switches. Switch button that can be directly connected to the main unit button pin, send a shutdown signal after power failure (10 seconds by default).



# IEI Supercapacitor Management Tool



## Intuitive user interface and information

The "IEI Supercapacitor Management Tool" software allows the connected device to obtain the basic information of the supercapacitor backup board through the USB cable, including model, serial number, specification, voltage, load power, working mode, current and other intuitive information.



## Ensuring safe shutdown of IPC systems

In the case of "Power Input Disconnection", the supercapacitor backup board sends "Power Input Failure" to the PC motherboard system, thereby starting the shutdown command of the planned system and saving valuable data.

In the absence of software management, there will be 2 sets of Power Button control signals (response time can be set by software) and 2 sets of Relay switch response triggers at the same time, and users can set the Power button by themselves.

The Button signal is linked to the host or other control devices to realize the hardware-controlled shutdown function, and the Relay control switch can also be linked to other load devices, such as printers, monitors and other power supply devices, or alarm measures such as turning on hardware buzzers to deal with different on-site demand



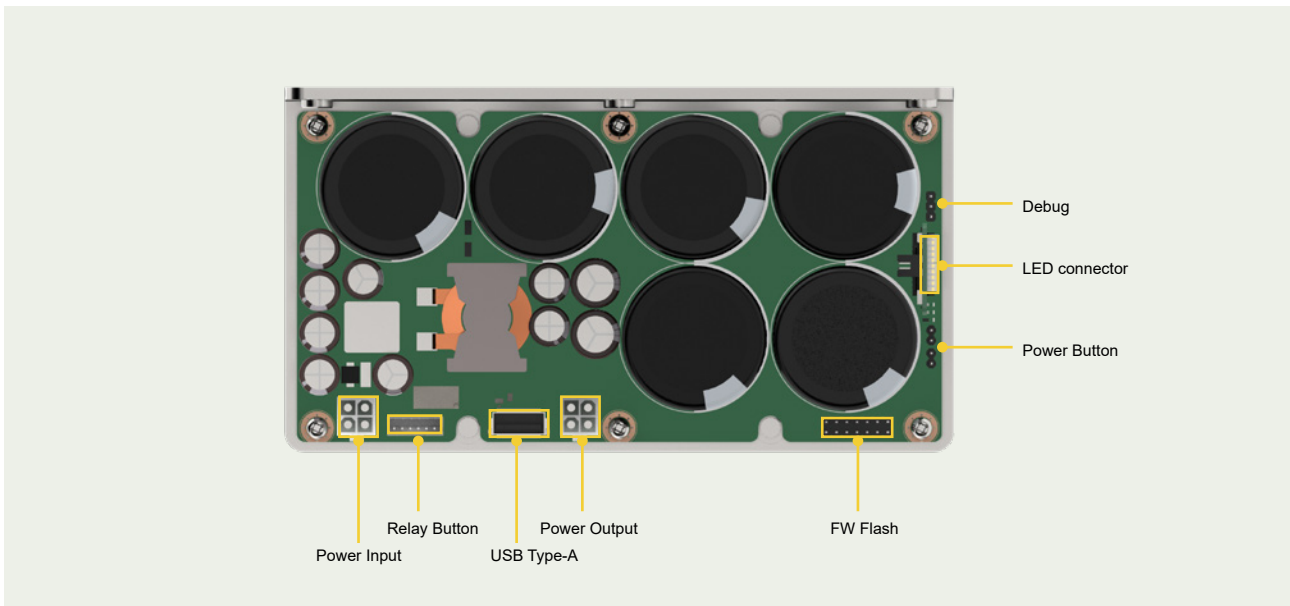
## Temperature control

Supercapacitors are affected by ambient temperature and operating voltage, which will affect the entire service life. The standard temperature, voltage, and load life comparison table are as follows:

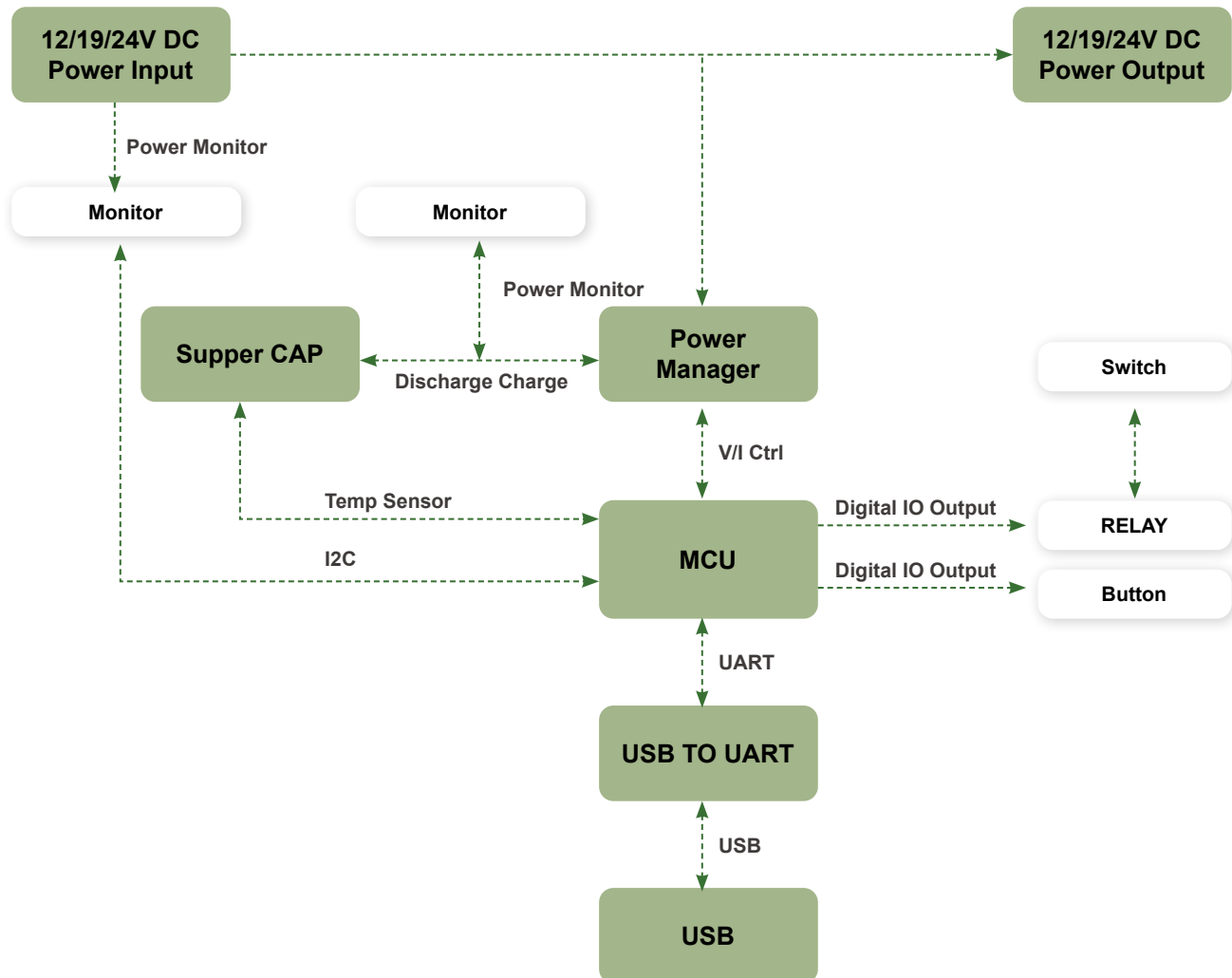
Load life under different voltage and temperature											
Temperature \ Voltage	2V	2.1V	2.2V	2.3V	2.4V	2.5V	2.6V	2.7V	2.8V	2.9V	3V
65°C	96955 hours	61364 hours	38838 hours	24581 hours	15558 hours	9847 hours	6232 hours	3944 hours	2496 hours	1580 hours	1000 hours
	11.07 years	7.01 years	4.43 years	2.81 years	1.78 years	1.12 years	0.71 years	0.45 years	0.28 years	0.18 years	0.11 years
55°C	300561 hours	190228 hours	120398 hours	76201 hours	48229 hours	30524 hours	19319 hours	12227 hours	7739 hours	4898 hours	3100 hours
	34.31 years	21.72 years	13.74 years	8.70 years	5.51 years	3.48 years	2.21 years	1.40 years	0.88 years	0.56 years	0.35 years
45°C	931739 hours	589708 hours	373233 hours	236223 hours	149509 hours	94626 hours	59890 hours	37905 hours	23990 hours	15184 hours	9610 hours
	106.36 years	67.32 years	42.61 years	26.97 years	17.07 years	10.80 years	6.84 years	4.33 years	2.74 years	1.73 years	1.10 years
35°C	2888391 hours	1828095 hours	1157022 hours	732293 hours	463476 hours	293339 hours	185658 hours	117505 hours	74370 hours	47070 hours	29791 hours
	329.72 years	208.69 years	132.08 years	83.60 years	52.91 years	33.49 years	21.19 years	13.41 years	8.49 years	5.37 years	3.40 years
25°C	8954011 hours	5667096 hours	3586770 hours	2270107 hours	1436777 hours	909352 hours	575539 hours	364265 hours	230548 hours	145916 hours	92352 hours
	1022.15 years	646.93 years	409.45 years	259.14 years	164.02 years	103.81 years	65.70 years	41.58 years	26.32 years	16.66 years	10.54 years

"IEI Supercapacitor Management Tool" The original setting of the capacitor is 10 years of life, when adjusting the temperature, the operating voltage will be automatically adjusted to match the voltage of 10 years of life, and then the time of supplying power to the load will be reduced.

The user can unbind the time by adjusting the operating temperature and voltage to get a new life expectancy. At this time, the load power supply time will be maintained at the highest state.

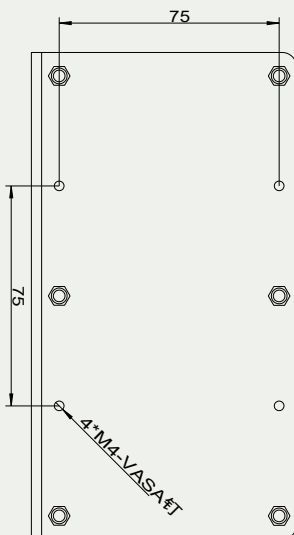
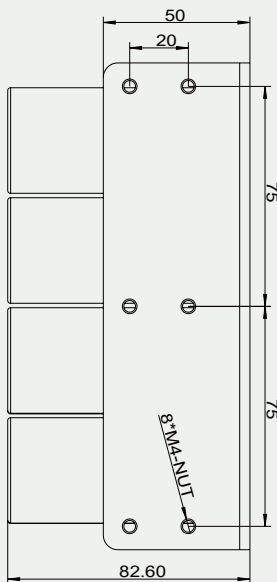
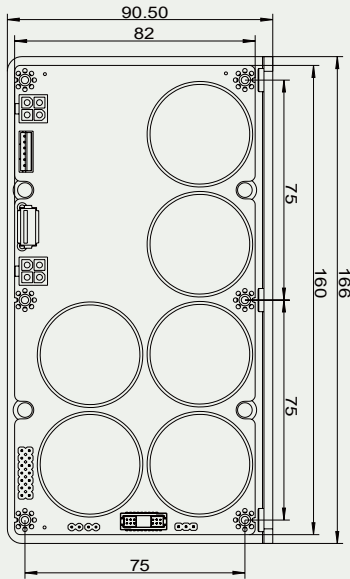


## Block Diagram





### Dimensions



### Specifications

Model	RHEA-I660A
Battery Type	Super Capacitor
Capacitance	6 x 600F@3V
Service life	>10 years (when the capacitor works at 3V and 25 temperature)
Life cycle	500000 charge and discharge cycles
Input voltage	12V or 19V or 24V ±10%
The output voltage	The output voltage is equal to the input voltage: Input 12V ±10%, output 12V Input 19V ±10%, output 19V Input 24V ±10%, output 24V Output power 150W
Light Green	Green
Backup time	60 sec. (under 150W load at 3V@25°C) 180 sec. (under 60W load at 3V@25°C)
I/O interface	1 x LED display interface (2x10 Pin) 1 x DC in (2x2 Pin) 1 x DC out (2x2 Pin) 1 x relay (1x6 Pin) 1 x USB2.0 Type-A 1 x Debug (1x3 Pin) 1 x FW flash (2x7 Pin) 2 x Power btn (1x2 Pin)
Protect	Reverse protection Overload protection Overvoltage protection
Dimensions (mm)	166 x 90.5 x 82.6
Weight	0.9/1.2kg
Working temperature	-40°C ~ 60°C
Storage temperature	-40°C ~ 70°C

### Packing List

- 1 x USB Cable (Type-A to Type-A 500mm, P/N: 32001-006105-200-RS)
- 1 x LED Cable (Header 2\*10P P=1.27 Female \*2, 200mm, P/N: 32133-038600-100-RS)

### Ordering Informaiton

RHEA-I660A-R10	150W DC/DC Supercapacitor backup board, 12/19/24V Input and Output, 6 x 600F@3V Supercapacitor, with L-shaped holder, Internal
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### Optional Accessories

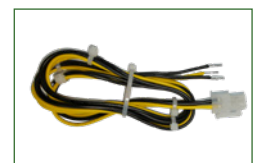
19T00-002500-100-RS	Power input cable, Terminal block module; 60mm/70mm/280mm; 20AWG (A) DC jack 5.5*2.5mm; (B) MOLEX 5557-0400 P=4.2 (C) Ring Terminal-3.2mm (D) Terminal block 3P P=5.08 male (E) Terminal block 3P P=5.08 female
32102-030000-200-RS	Power output cable, DC power cable; 150mm;1 (A) MOLEX 5557-0400 P=4.2 *2
32102-018804-100-RS	Power cable, 500mm (A) MOLEX 5557-0400 P=4.2; Wire color: 1,2 black; 3,4 yellow



19T00-002500-100-RS



32102-030000-200-RS



32102-018804-100-RS