

AR-B2020 Quick Manual V1.0

1. Introduction

AR-B2020 is a cost effective power control board with the basic power control function for AR-V5430FL In-Vehicle computer. With PHET C-LiFePO4 12V 4.8Ah Battery Pack, it works as a UPS function.

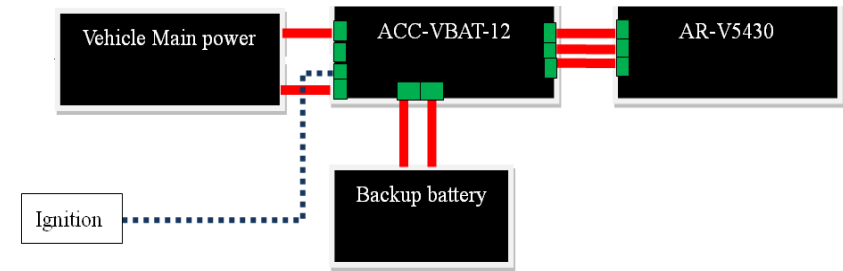
The basic functions of AR-B2020 are to control 12V/24V main battery power output to In-Vehicle computer and charging the backup battery at the same time. Customers could select function control by ignition or main battery power ready using a jumper.

When the ignition turned-on (or the main battery power is ready), The AR-B2020 will let the main battery supplies power to In-Vehicle computer and charging the backup battery at the same time. Once the ignition turned- off (or main battery power off), The AR-B2020 will let the back up battery supplies power to In-Vehicle computer only. Mean while the connection between main battery and In-Vehicle computer will be cut off. This function is to prevent the main battery drained out when ignition is off.

Besides the main function, it also has LED to indicate the backup battery capacity (High / Middle / Low).

Customer can refer to the LED light status to know the backup battery capacity. Once the battery is low, it will need to be charged soon (ignition on). By the way, it will give alarm when the battery capacity is very low. Customer should charge the backup battery right away or the beep will keep on warning.

■ Connection drawing (Concept)

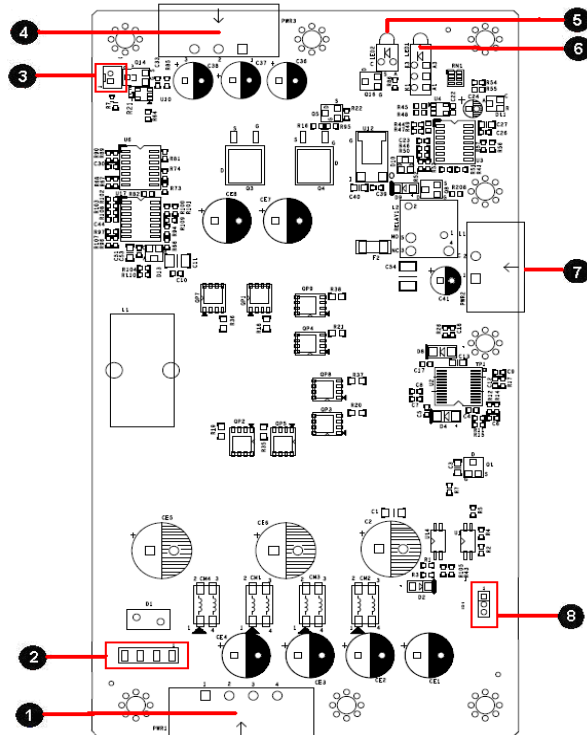


■ Battery reference

通用型電池組









型號	通稱容量 (放電效率等同 鉛酸電池容量)	磷酸鐵鋰電池 實際容量	尺寸 (長寬高 mm)	重量 (KG)
	12V 6Ah	12V 4.8Ah	120*60*105	0.96

2. Board illustration (Top Side)



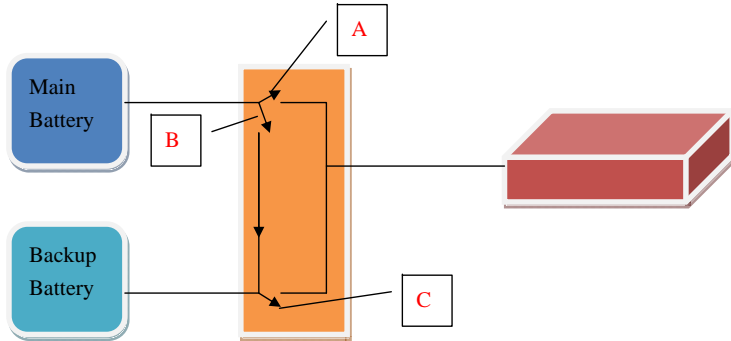
<p>1 PWR1 Car DC power input (DC +9V~+32V).</p>	<p>5 LED2 Battery charging LED.</p>
<p>2 FUSECLIP1 Connect to fuse default is 15A.</p>	<p>6 LED1 Battery residual capacity display LED.</p>
<p>3 CN1 Connect to the backup battery low-voltage warning buzzer.</p>	<p>7 PWR2 Backup battery connector.</p>
<p>4 PWR3 ACC-VBAT-12 DC power output.</p>	<p>8 JP1 Select ACC-VBAT-12 power on/off control by using ignition or directly power input.</p>

3. Connector and Jumper Setting Table

<p>1. PWR1 DC power input (DC +9V~+32V)</p>  <table border="1" data-bbox="1415 370 1621 497"> <thead> <tr> <th>PIN</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DC_IN (V+)</td> </tr> <tr> <td>2</td> <td>N.C</td> </tr> <tr> <td>3</td> <td>Key switch</td> </tr> <tr> <td>4</td> <td>GND (V-)</td> </tr> </tbody> </table>	PIN	Signal	1	DC_IN (V+)	2	N.C	3	Key switch	4	GND (V-)	<p>2. FUSECLIP1 Input protect fuse default is 15A</p>  <p>Connect to fuse default 15A</p>		
PIN	Signal												
1	DC_IN (V+)												
2	N.C												
3	Key switch												
4	GND (V-)												
<p>3. CN1 Connect to backup Battery Low voltage warning buzzer</p>  <p>Battery Low voltage warning buzzer Note: DC 11.2V till DC 10.6 V (Keep beep)</p>	<p>4. PWR3 Main Power +14.6V (Max 5A) output</p>  <table border="1" data-bbox="1899 657 2101 762"> <thead> <tr> <th>PIN</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>DC_OUT (V+)</td> </tr> <tr> <td>2</td> <td>Key switch</td> </tr> <tr> <td>3</td> <td>GND (V-)</td> </tr> </tbody> </table>	PIN	Signal	1	DC_OUT (V+)	2	Key switch	3	GND (V-)				
PIN	Signal												
1	DC_OUT (V+)												
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3	GND (V-)												
<p>5. LED2 1 Yellow LED to present Battery is charging.(always light when charging)</p>  <p>Battery charging display LED</p>	<p>6. LED1 3 Green LED to present the Battery capacity status</p>  <p>Power level: a. High 100%-76%-->3 LED lighting.(battery voltage $\geq 12.8V$) b. Middle 76%-36%-->2 LED lighting.(battery voltage $\geq 11.8V$) c. Low 36%~2%-->1 LED lighting.(battery voltage $\geq 10.6V$) Note: Capacity LED only lighting when Discharging</p>												
<p>7. PWR2 Backup battery connector</p>  <table border="1" data-bbox="1415 1300 1621 1401"> <thead> <tr> <th>PIN</th> <th>Signal</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Battery +</td> </tr> <tr> <td>2</td> <td>Battery -</td> </tr> </tbody> </table>	PIN	Signal	1	Battery +	2	Battery -	<p>8.JP1 AR-B2020 power on/off control</p>  <table border="1" data-bbox="1863 1308 2132 1439"> <thead> <tr> <th>PIN</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>1-2</td> <td>Power on/off by ignition</td> </tr> <tr> <td>2-3</td> <td>Power on/off by directly power input</td> </tr> </tbody> </table>	PIN	Description	1-2	Power on/off by ignition	2-3	Power on/off by directly power input
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1	Battery +												
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※ Note: All the voltages are $\pm 5\%$ tolerance except any annotation.

■ **AR-B2020 function:**



A. Without Ignition control:

Control by Power on/off. (When engine stop, there is no power input for battery backup.)

Vehicle Generator on:		
A	B	C
Connected (V5430 consume power from car Main bat. only)	Connected (Backup battery charging only)	Disconnected (Backup battery charging only)
Vehicle Generator off:		
A	B	C
Disconnected (V5430 consume power from Backup battery only)	Disconnected (stop charging)	Connected (V5430 consume power from Backup Battery)

B. With ignition control

Ignition on:		
A	B	C
Connected (V5430 consume power from car Main bat. only)	Connected (Backup battery charging only)	Disconnected (Backup battery charging only)
Ignition off:		
A	B	C
Disconnected (V5430 consume power from Backup battery only)	Disconnected (stop charging)	Connected (V5430 consume power from Backup Battery)

■ **AR-B2020 protection functions:**

- A. 15A power input fuse.
- B. Power input protect by Varistor.
- C. Battery discharge low-voltage warning buzzer when battery output voltage <11.2V, keep beep till 10.6V.
- D. Battery discharge low-voltage cut-off power output, when battery output voltage < 10.6V.

※ Note: All the voltages are ±5% tolerance except any annotation.

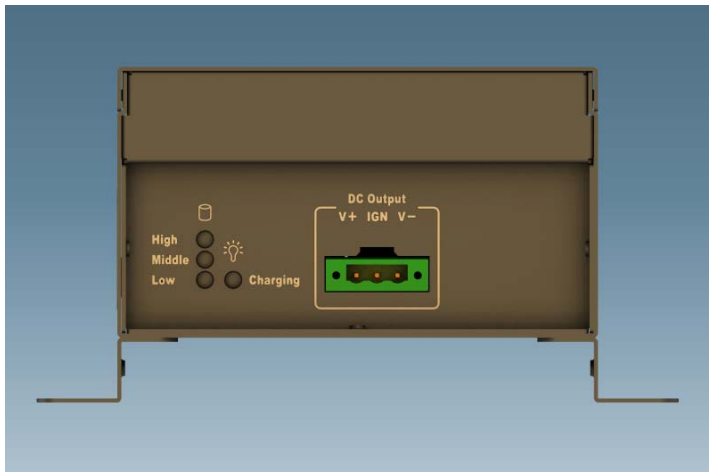
■ **AR-B2020 specification:**

- A. Widely DC power input from +9V ~ +32V.
- B. Maximum output DC power : +14.6V±5% 5A for AR-ES5430FL (in battery charging state).
- C. Backup battery charge power: DC +14.6V (constant-voltage charge, CV).
- D. Backup battery maximum charging current limited at 4A.
- E. After battery has been discharge to low-power condition, the recommendatory battery charging time needs minimum 2 hours to return to high voltage level.

※ Note: All the voltages are ±5% tolerance except any annotation.

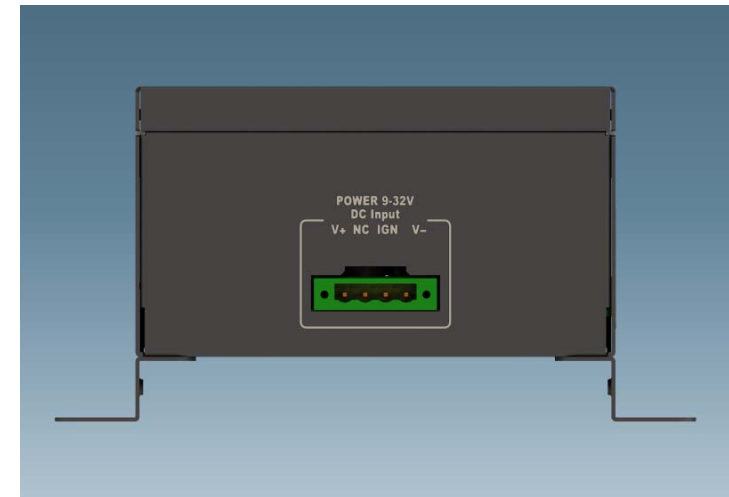
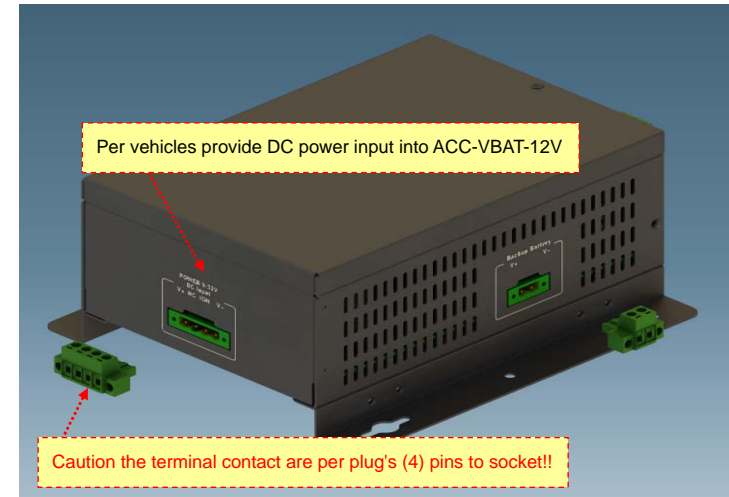
4. ACC-VBAT-12 assembly guide

- 1. ACC-VBAT-12 power output: (3PIN terminal block 5.08mm)



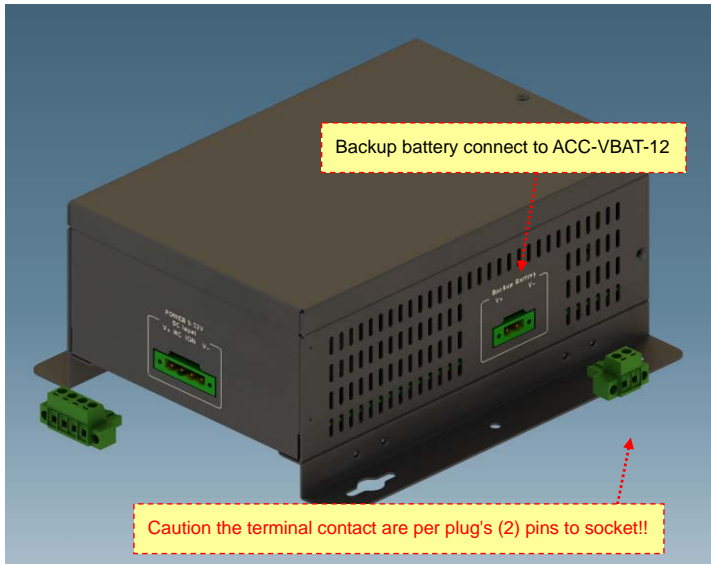
DC power output printing view

- 2. Main battery power supply input: (4PIN terminal block 5.08mm)



DC power input printing view

3. Backup battery (12V/6Ahr) input: (2PIN terminal block 5.08mm)



Backup battery connector printing view