The manual for the power manager

 一. the electrical parameters：

1 the range of the power supply input voltage ：24V-60V

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| --- | --- | --- | --- | --- | --- | --- | --- |
| Engine No. | DLA32 | DLA 58 | DLA64 | DLA116 | DLA180 | DLA232 | DLA360 |
| Input voltage | 24-60V | 24-60V | 24-60V | 24-60V | 28-60V | 36-60V | 48-60V |

2 the peak bus current when start：<80A

3 the max generator voltage input to the manager：74V(AC)

The highest PRM：

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Item no. | DLA32 | DLA58 | DLA64 | DLA116 | DLA180 | DLA232 | DLA360 |
| The highest RPM | 8000 | 8000 | 8000 | 6500 | 6200 | 6200 | 6200 |

4 start time：<=3 second

5 the output from power manager： for 28V, the output is 28+-1V,

for 24V, the output is 24.5-24.7V

The biggest output current： 28V 600W <20A

24V 400W <17 A

 6 the temperature range for work：the lowest is -20℃, the the highest is 60℃

二 operation method

 1 when the power manager contected with the power, the green light and red light will come on on same time for one second, and then the green light will on all the time, it means that can start. If the green light is off, while the red light is on, it means there is something wrong the power modules, and can’t start.

If the red light flashes 5 times and goes out for 2 seconds, there are two possible reasons: one is the damage of the Hall element of the motor; the other is the connection between the Hall sensor of the motor and the power manager

2 Start: When the green light of the manager is always on and no fault is indicated, after pressing the start button or sending a PWM start signal, the manager will start the motor to drive the engine, and the maximum duration is 3 seconds, and the manager will automatically quit the start. If the start is not successful in 3 seconds, the start operation needs to continue.

 The time between the two times to start operation should be more than 3 seconds, if it is less than 3 second, the power manager will be not responded to the startup command.

Two kinds of efficient start signals

 \*\*\*One is level signal, the low level signal is valid, or you can press the start button directly

 \*\*\*The other is PWM signal, with the period 2000US, The pulse duty factor is effient when more than 1500US and less than 2000US. It will be noeffient when less than 1500US.

 When start the power manger, the green light will flash to indicated the start operation. Note: When the engine is running, and the speed is lower than 3000RPM, if the power manager receives the start command , it will continue to re start, but if the engine speed is more than 3000RPM, the manager will not perform the start operation.

1. the output: when the engine start, for engine DLA32, DLA58,DLA64 , the RPM is more than 4000, and for the engine DLA116, DLA180, DLA232, DLA360, the RPM is more than 2300, the regulated power supply start working . At the same time, the green light will flash slowly to indicate the generator state.

 **NOTE**:1. for the 28V manager, the load current should be less than 20A

 For the 24V manager, the load current should be less than 17A.

1. If you want to conntect the battery to the output port directly, the diode must be added to protect the manager, if you don’t add the diode, it will no output or the manager will be damaged.

 三 The meaning of LED light：

 The green light on all time: the manager is normal waiting state

The green light flash slowly: the starting state

The green light flash quickly: generator state

The red light on all time: something wrong with the manager

The red light flash for 5 times, and off for 2 second: something wrong with the motor sensor

The red light continue flash slowly: for 24V, of the supply power is lower than 22V, and for 28V, the supply power is lower than 26V, the red light flash slowly means that the battery is under voltage. Don’t start the engine in this situation, otherwise, it will influenct the work life of the battery.

四：Connection port defination

