

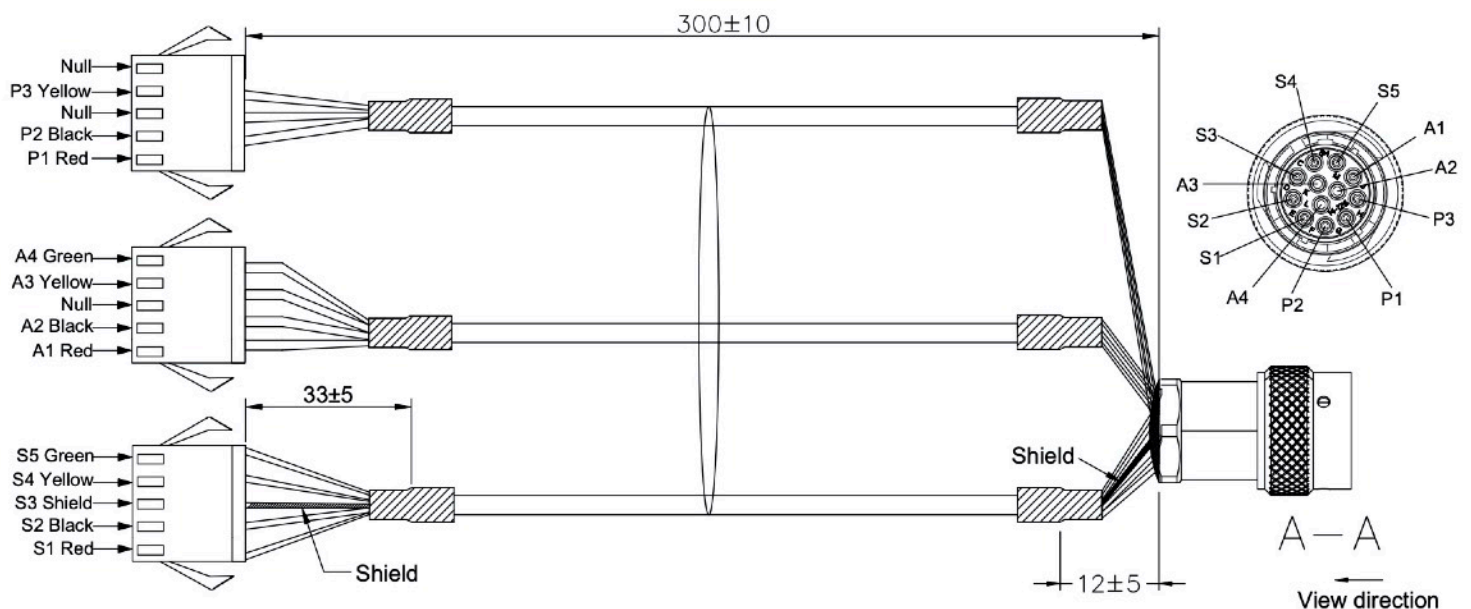
Definition of wires with connector for 12 pins socket -MP

Overview

Bestgo developed some models of battery packs which can offer on-off signal output. Battery packs can judge the running condition and send alert to outside via multi-pins socket, those are on-off state signal can be used as switches to turn on the alert of lighter, speakers, or relays and contactors. They are not only used in single pack application, but also very necessary to be used rightly in parallel configed battery systems.

Pins definition

Below is the definition of 12 pins connector with wires (offered along with pro-version battery packs), one end is for plugging into socket of battery pack, another end has 3 flat connectors, which we called as S connector, A connector and P connector.



The S connector,

The S connector included S1, S2, S3, S4, S5. This S connector is used to connect an optional second indicator panel if customer purchased individually, it can be located to another space for more convenient viewing of battery status. (S3 is a shield wire do not translate any signals)

The A connector,

The A connector is used for sending out the alert signal when voltage, current and temperature is abnormal.

The A1 (red) represent the voltage,

The A2 (black) represent the temperature,

The A4 (green) represent the current.

The A3 (Yellow) represent the COMMON.

When voltage or temperature or current became abnormal, the resistance from A1 to A3 (common), or A2 to A3 (common), or A4 to A3 (common) will be changed from infinite resistance (open circuit) to zero resistance (closed circuit). Their setting value in action are earlier than BMS cut-off value, they can be used to alert operator to stop the inappropriate usage or conditions before BMS trigger cut-off protection.

The detail on-off signal act as below,

For voltage, if value is in the good range, the resistance between A1 to A3 is effectively infinite (open circuit), while when voltage is too high or too low, resistance will become zero resistance (closed circuit).

For temperature, it is the resistance between A2 to A3 will be changed accordingly,

For current, it is the resistance between A4 to A3 will be changed accordingly.

Above characteristics can be treated as switches, can be manually wired by the operator using their own components to trigger any desirable combination of lights, speakers, or relays and contactors.

For example, above 3 types of switches can be wired to both an LED and a contactor, which can then stop the motor or machine which using battery packs, or can disconnect the input of an attached battery charging source, and thereby prevent the charging source and any connected load devices from experiencing a damaging transient voltage spike. The LED light on each switch combined will also provide an indicator to determine which individual pack triggered the alert. Operator can combine the A1, A2, A4 together, to detect their resistance to A3, if resistance became zero, it means any of volt or temperature or current has problem, should stop battery system usage.

In parallel configured system, operator should combine all battery pack's A1, A2, A4 together as one node, combine all pack's A3 together as another node, use those two nodes to control the contactor of main circuit, like to be able to jumper connect the coil volt of contactor, so can let contractor lose the coil volt to disconnect the main circuit. Installing an upstream LED light on each A1, A2, A4 before they are combined will also provide an indicator to determine which individual pack triggered what alert.

(Here is an important notice in parallel configured system. If one pack has the biggest current pass and triggered the switch, it means this battery pack is the best one. Operator have to deal with the worst battery pack which offering the smallest current when in parallel config, by replace the worst battery pack or add some resistance to the best pack, to keep the current value of every battery pack is in the good range suit to A4 to A3.)

Those pins and wires can allow max 50V voltage and max 1.5A current pass shortly. The A1, A2, A4 to A3 can be used as individually, or can be used as bind together, in both charging and discharging conditions, act as switches as resistance change between max and zero.

The P connector,

The P1 (red) represent the temperature that in high condition needs cooling required.

The P2 (black) represent the temperature that in low condition needs heating required.

The P3 (Yellow) represent the COMMON.

The P connectors have pins defined mainly for turn on the cooling or heating facility. So battery temperature can go back to normal temperature by the help of cooling and heating facility, but not trigger the alert that generated from A2 to A3 in A connector.