

Product Specification

Part Number: ANT20S-XXXXA-X



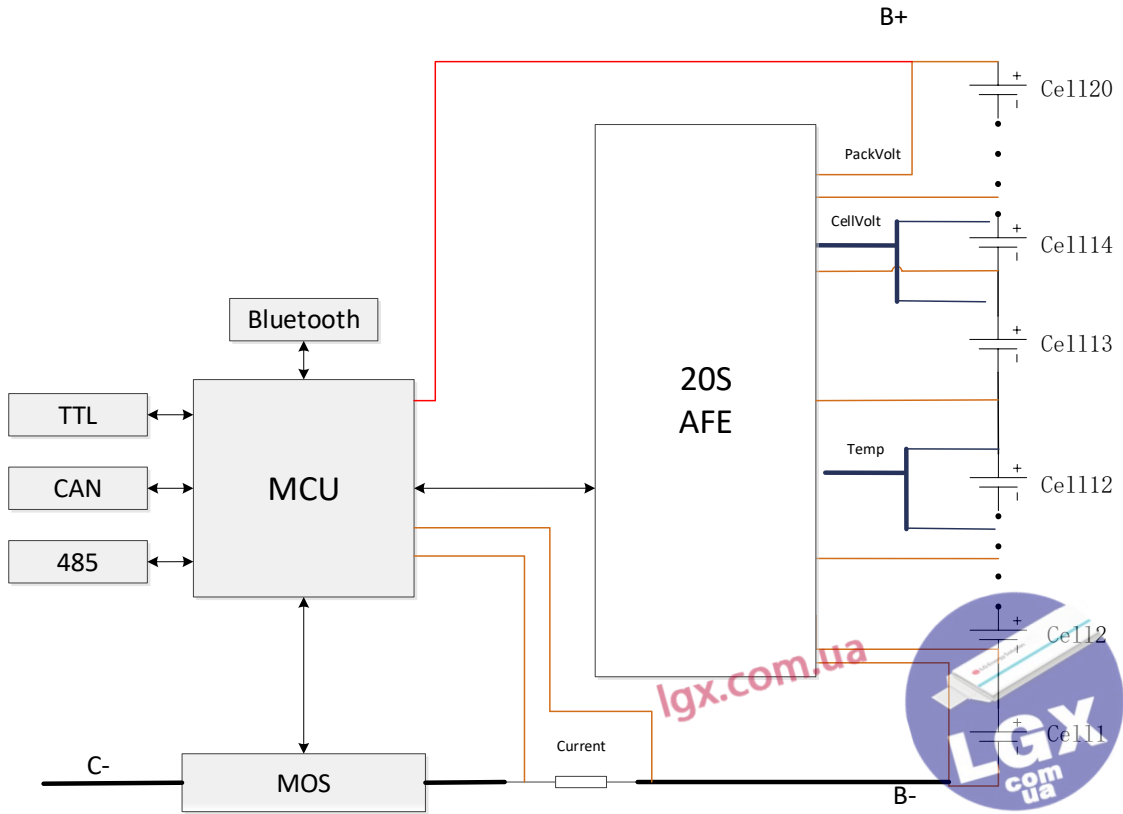
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Edition: V1.4
Date: 20200303

1.1 Introduction

ANT20S-XXXA-X is a smart BMS. Main function includes: cell voltage/ temperature/pack voltage/current measurement, passive balance control, CAN bus, RS485, TTL port, Bluetooth (APP supported), SOC calculation, MOS control.

1.2 System Topology



1.3 Function

1.3.1 CAN Bus

J N1939 protocol, CAN2.0A/B supported. 2500V isolated.

CAN /485/TTL can only choose one.

1.3.2 RS485 Bus

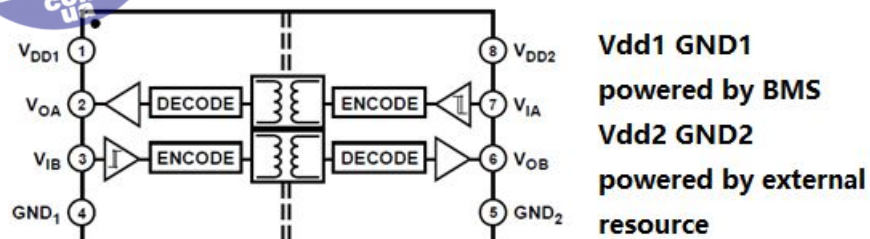
2500V isolated。 Typical baud rate is 19200.

CAN /485/TTL can only choose one.

1.3.3 TTL Port

2500V isolated。 Typical baud rate is 19200.

Need external isolated power. CAN /485/TTL can only choose one.



- 1.3.4 Cell voltage measurement
Measures Up to 16 Battery Cells in Series.
- 1.3.5 Temperature measurement
MOS, balance circuit, and external temperature measurement.
- 1.3.6 SOC
AH integral method with OCV calibration.
- 1.3.7 MOS Control
Drive charge & discharge MOS to protect the battery.
- 1.3.8 Pack voltage measurement
Pre-charge and pack voltage are get by this function.
- 1.3.9 Current measurement
Short-circuit, auto wake up, soc calculation.
- 1.3.10 Balancing
Passive cell balancing with programmable current.
100mA/ channel for maximum.

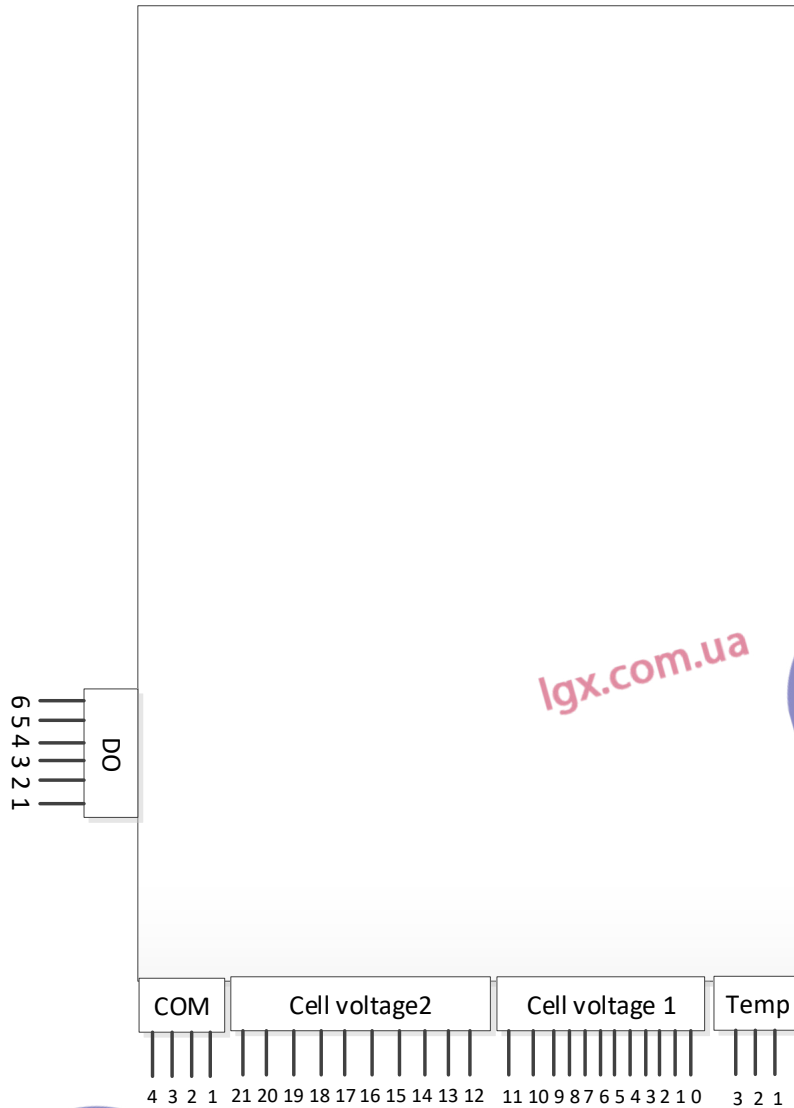


1.4 Electrical characteristics

| Index | Parameter | Detail | Remark |
|-------|------------------------------------|---|----------------------------|
| 1 | Total supply voltage | 20-80V DC from battery | Auto change to sleep state |
| 2 | Cell number | 8-20S | |
| 3 | Working state power consumption | < 10mA (72V) | |
| 4 | Sleep state power consumption | < 5mA (72V) | Auto wake up |
| 5 | Deep sleep state power consumption | < 20uA (72V) | Manual wake up |
| 6 | Working temperature | -40 ~ 85 °C | |
| 7 | Storage temperature | -40 ~ 95 °C | |
| 8 | Working humidity | 5% ~ 95% | Conformal Coating |
| 9 | Cell voltage measurement | 0-5V, measurement error< 10mV Typical is 5mV | Resolution 1mV |
| 10 | Open wire detection | Supported | |
| 11 | Passive balancing | Maximum 100mA/channel | |
| 12 | Temperature measurement | -30 ~ 125 °C , | 2 channels |
| 13 | Pack voltage measurement | 1 channel. 0-100V. error <0.5% FSR. | |
| 14 | Current measurement | -150A ~ 300A, error<0.5% FSR | 1channel |
| 15 | SOC | < 8% | |
| 16 | CAN | 1 channel, bootloader supported | Choose one in three |
| 17 | 485 | 1 channel, bootloader supported | Choose one in three |
| 18 | TTL | 1 channel, bootloader supported | Choose one in three |
| 19 | Current ability | Rated 100A, Pulse 300A (30s) The value depends highly on heat radiation. | |
| 20 | Short circuit | default 300A | |

| | | | |
|----|------------|-------------|----------------|
| 21 | System log | Support | FLASH |
| 22 | Bluetooth | Support | Connect to APP |
| 23 | IP level | IP30 | |
| 24 | Weight | < 400g | |
| 25 | Size | 130*70*16mm | |

2. Interface definition



2.1 Output negative:

C-, **Black wire**. Charge and discharge negative share the same port.

2.2 Battery negative:

B-, **blue wire**. Connect to pack negative.

B- must be connected to battery first, then cell voltage interface can be plugged in.

2.3 Cell voltage port

20 series cell voltage and BMS power wire.

| Index | Item | Details |
|-------|------|---|
| 0 | B- | Connected to pack negative |
| 1 | B1+ | Connect to positive terminal of cell 1 |
| 2 | B2+ | Connect to positive terminal of cell 2 |
| 3 | B3+ | Connect to positive terminal of cell 3 |
| 4 | B4+ | Connect to positive terminal of cell 4 |
| 5 | B5+ | Connect to positive terminal of cell 5 |
| 6 | B6+ | Connect to positive terminal of cell 6 |
| 7 | B7+ | Connect to positive terminal of cell 7 |
| 8 | B8+ | Connect to positive terminal of cell 8 |
| 9 | B9+ | Connect to positive terminal of cell 9 |
| 10 | B10+ | Connect to positive terminal of cell 10 |
| 11 | B11+ | Connect to positive terminal of cell 11 |
| 12 | B12+ | Connect to positive terminal of cell 12 |
| 13 | B13+ | Connect to positive terminal of cell 13 |
| 14 | B14+ | Connect to positive terminal of cell 14 |
| 15 | B15+ | Connect to positive terminal of cell 15 |
| 16 | B16+ | Connect to positive terminal of cell 16 |
| 17 | B17+ | Connect to positive terminal of cell 17 |
| 18 | B18+ | Connect to positive terminal of cell 18 |
| 19 | B19+ | Connect to positive terminal of cell 19 |
| 20 | B20+ | Connect to positive terminal of cell 20 |
| 21 | B+ | Connect to pack positive |

For application less than 16s, please refer to the wiring guidance!!!

2.4 Temperature port

| Index | Item | Details | Index | Item | Details |
|-------|------|-------------------|-------|------|---------------|
| 1 | GND | NTC common ground | 3 | T2 | NTC2 positive |
| 2 | T1 | NTC1 positive | | | |

2.5 Communication Port

| Index | Item | Details | Index | Item | Details |
|-------|------|--------------|-------|------|---------------------|
| 1 | CANL | CAN Low/485B | 3 | ACC- | Activation negative |
| 2 | CANH | CANHigh/485A | 4 | ACC+ | Activation positive |

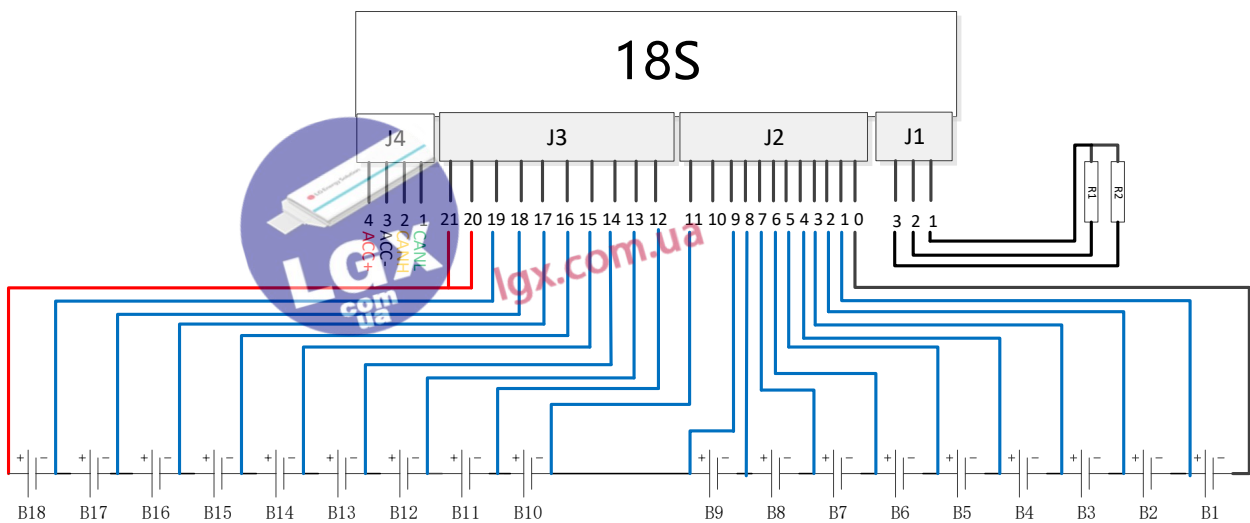
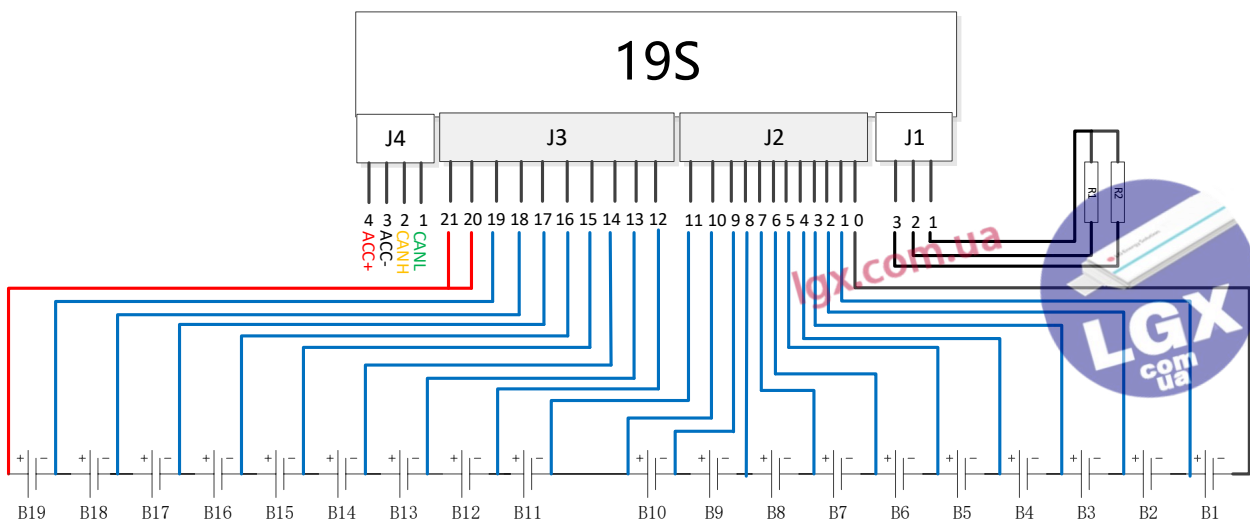
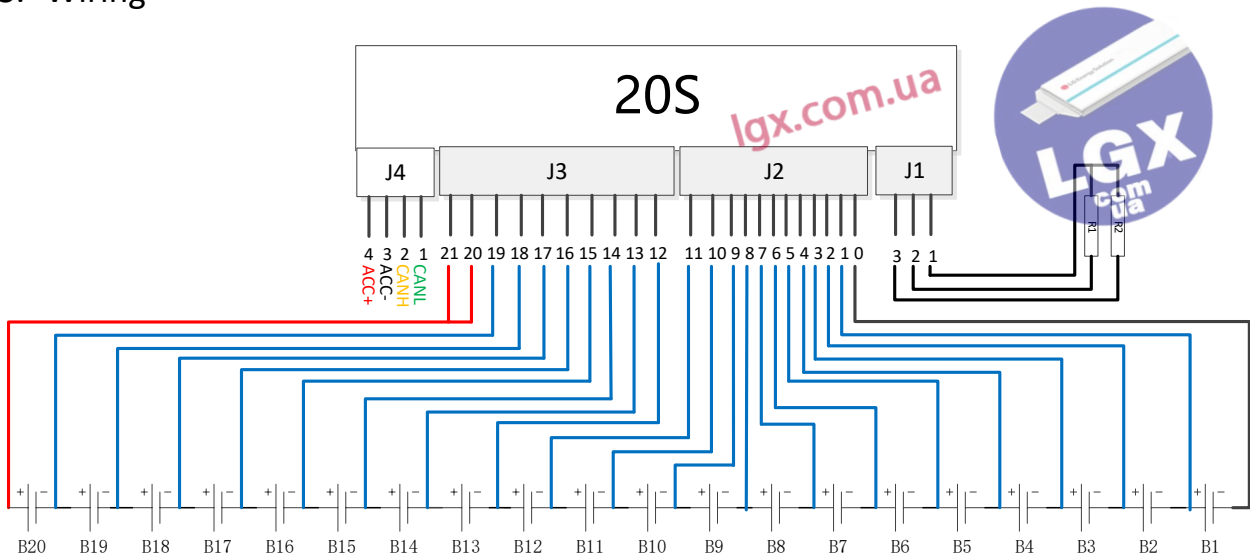
Remark: A Voltage source range from 3-12V can activate BMS via ACC + and ACC-.

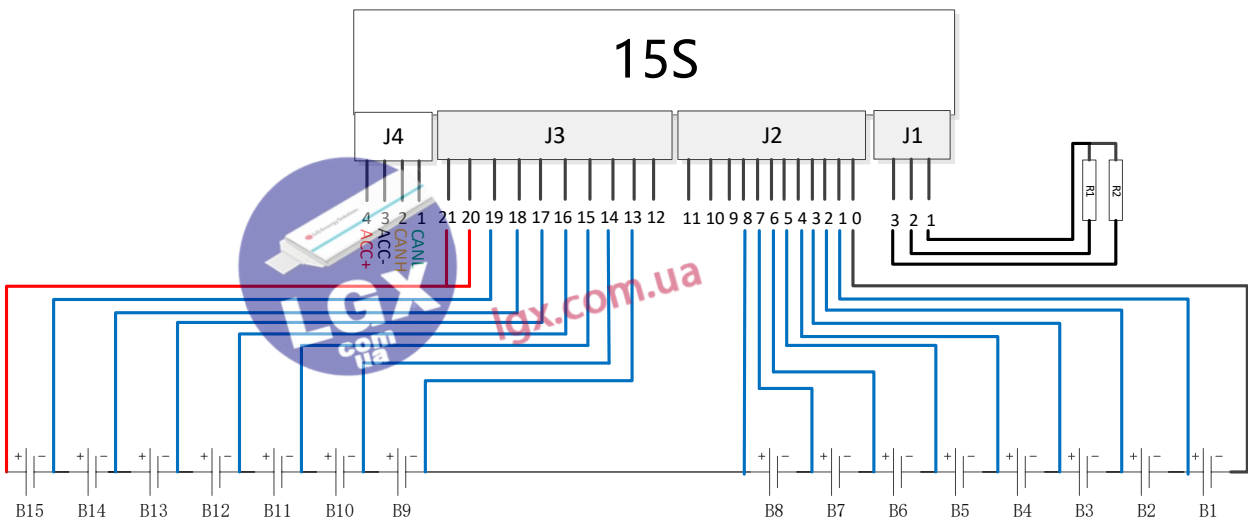
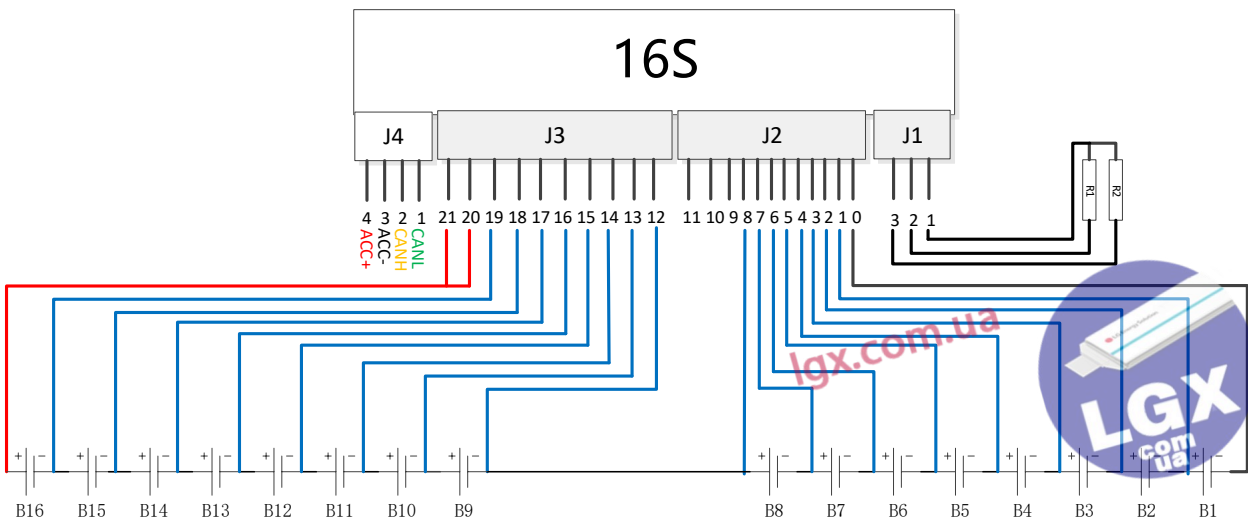
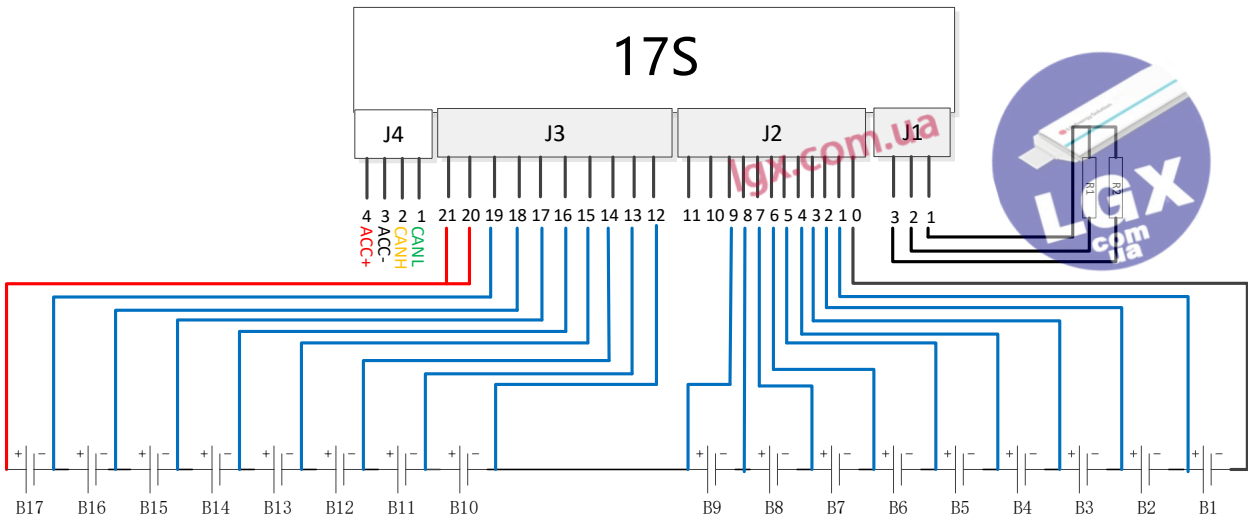
By the way, a charger can also activate BMS.

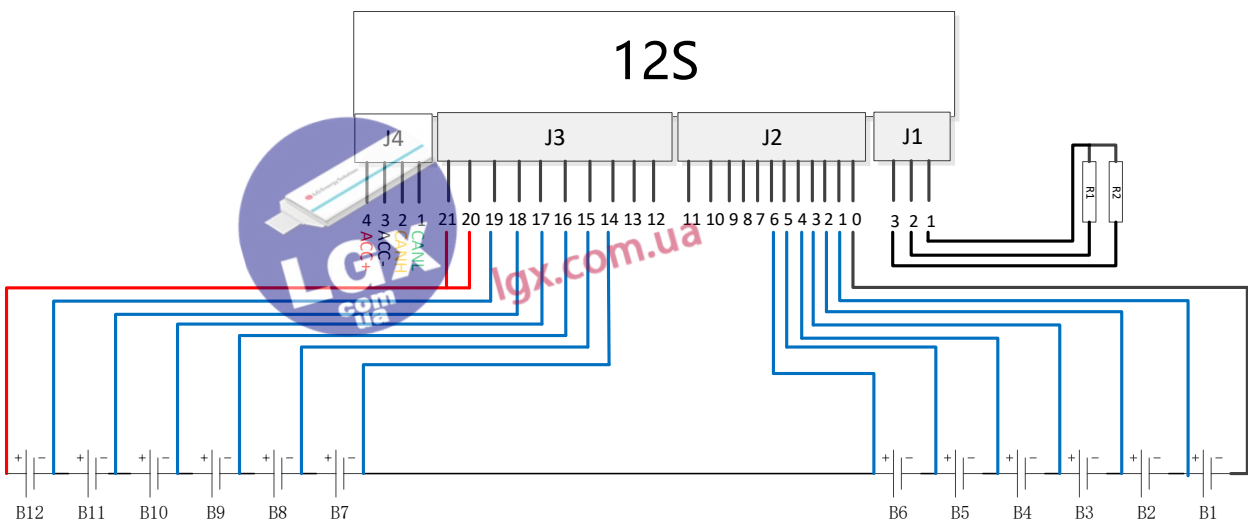
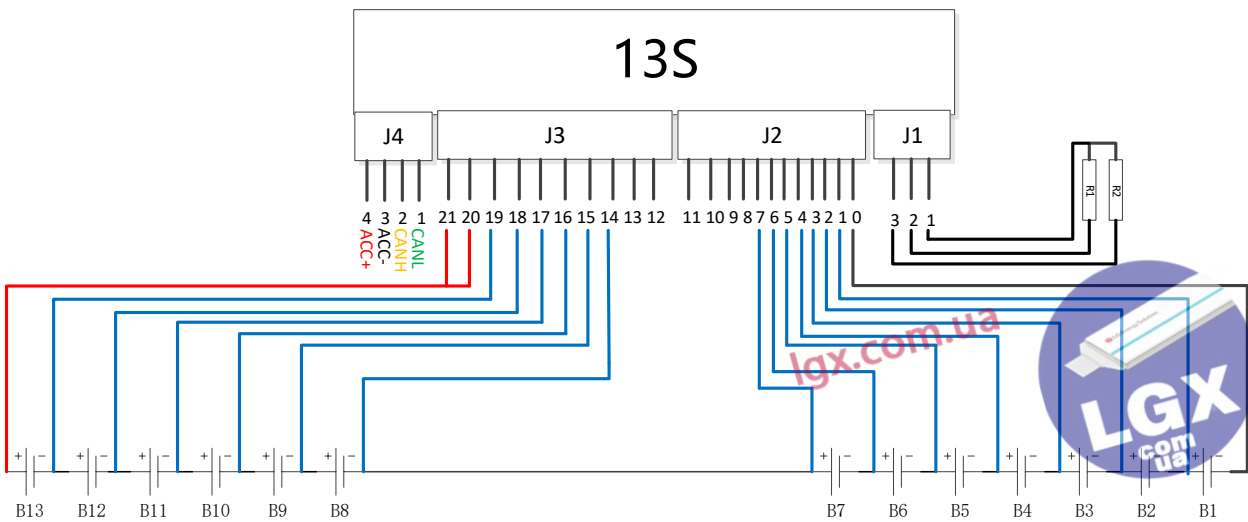
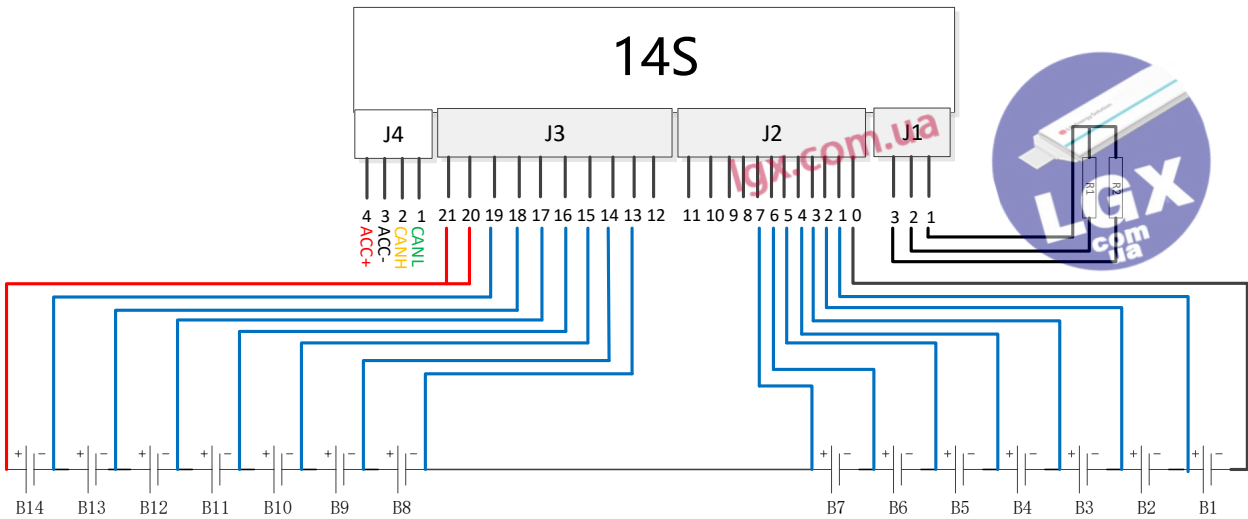
2.6 DO

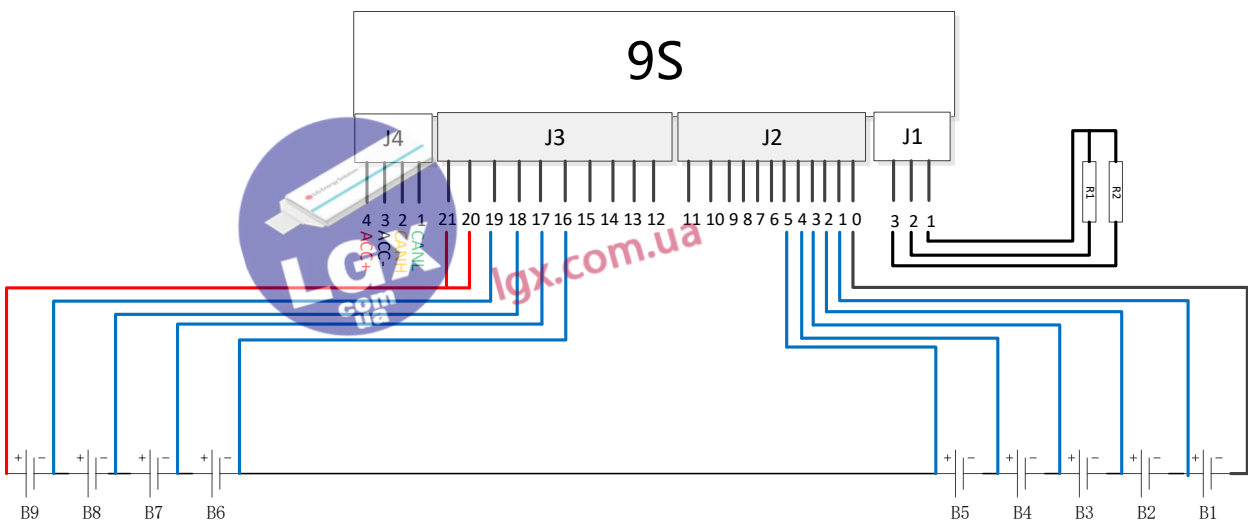
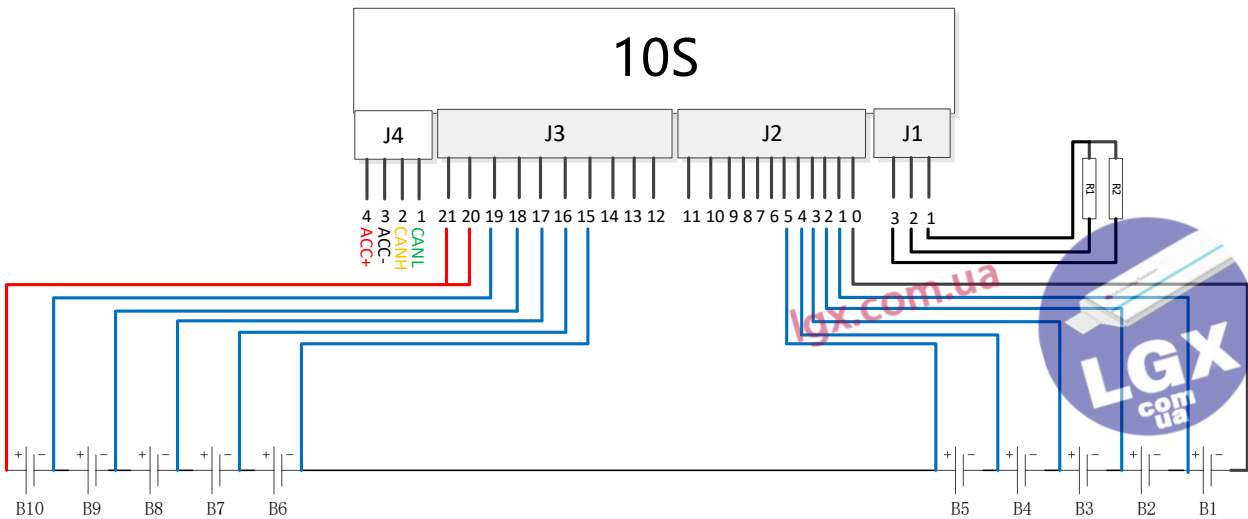
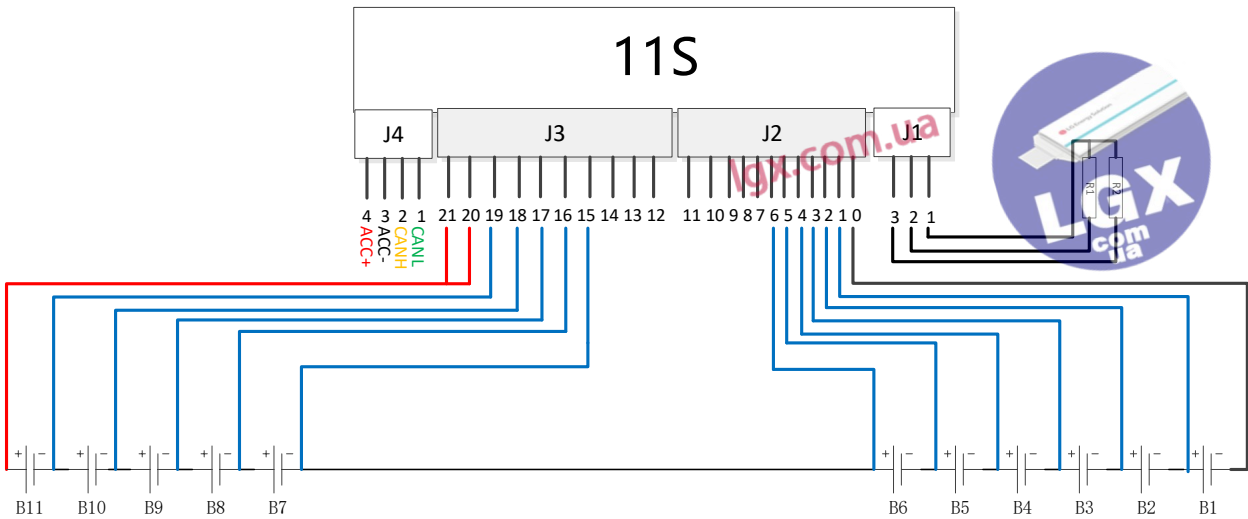
| Index | Item | Details | Index | Item | Details |
|-------|------|------------|-------|------|------------|
| 1 | DO1+ | DO1 output | 4 | DO2- | DO2 output |
| 2 | DO1- | | 5 | DO3+ | DO3 output |
| 3 | DO2+ | DO2 output | 6 | DO3- | |

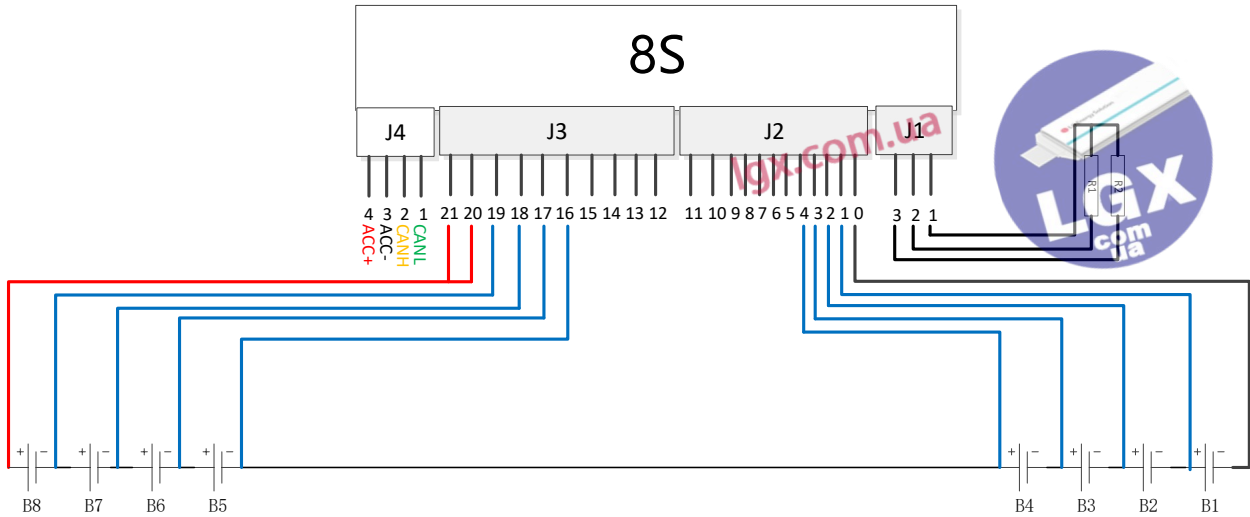
3. Wiring











4. PC software



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5. APP



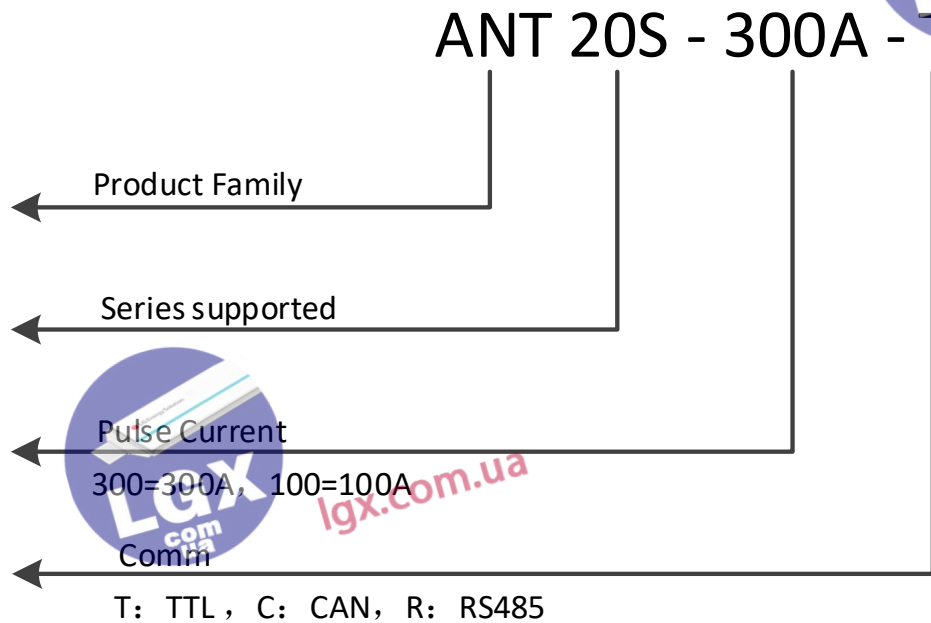
The screenshots show the BMS control app interface. The first screenshot shows the main control screen with buttons for '设置可见', '连接设备', and '系统日志 >>'. The second screenshot shows the 'BMS 系统参数设置' (BMS System Parameter Setting) screen, listing various parameters like '单体过压告警', '单体欠压告警', '总压过压保护', etc., with input fields and '设置' (Set) buttons. The third screenshot shows the 'BMS 实时状态' (BMS Real-time Status) screen, displaying a table of real-time data including voltage, current, capacity, and temperature.

BMS 控制

BMS 系统参数设置

BMS 实时状态

6. Part Number definition

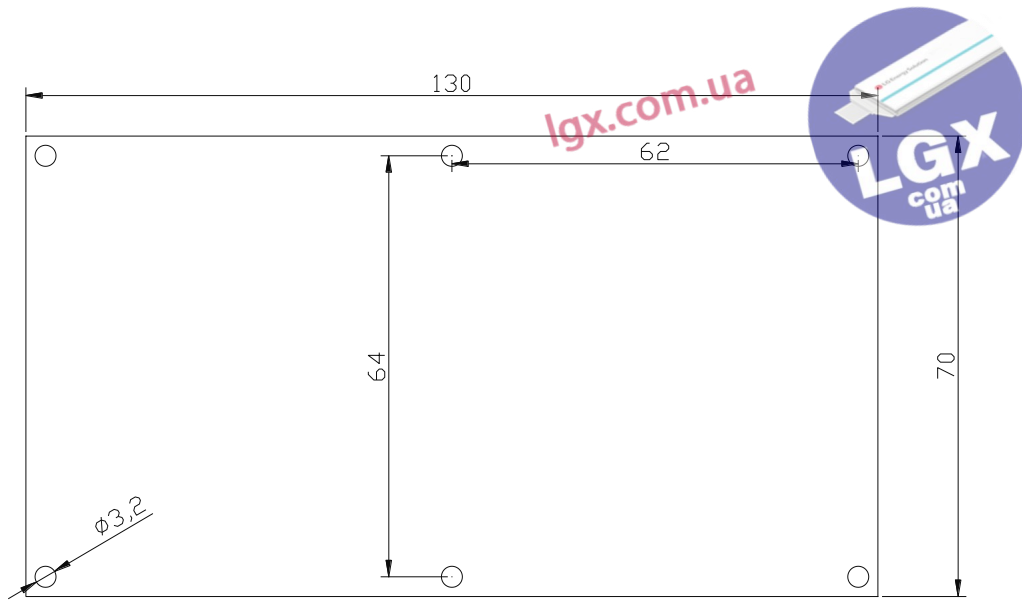


Remark: Pulse current support for 300A and 80A

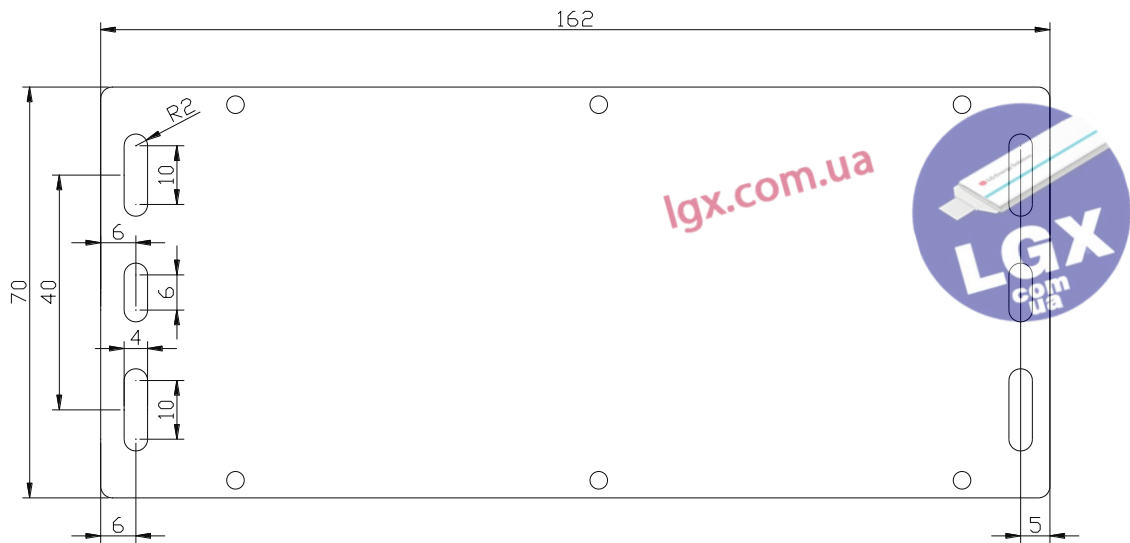
Example: ANT20S-300A-C means 20S pulse current 300A, CAN port

ANT20S-80A-T means 20S pulse current 80A, TTL port

7. Structure



Default without fixing hole



With fixing hole for option



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