II. Product Introduction

EV-YT-21 BMS is a new generation of BMS specially developed for mini-cars, light energy storage station and communication base station. The product integrates collecting, controlling and communication together, which has the functions of voltage/temperature collection, balance, charge-discharge control, SOC estimation, and alarm.

2.1 System Structure

EV-YT-21 BMS is composed of EV-YT-M2124 module which has functions of system management and information monitoring. The EV-YT-21 system through the current sensor to collect current data, determine the charging and discharging state, complete working current measurement, charge and discharge control of the battery pack, comprehensive utilization of the battery data to do SOC estimation and discrete evaluation.

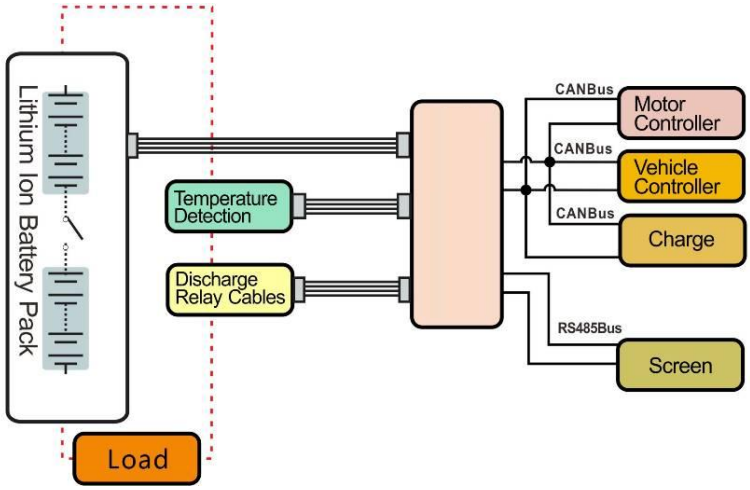

Figure 2-1 System Structure

2.2 System Components

Figure 2-2 System Components

2.3 Technical Parameters

Table 2-1 Technical Parameters of BMS

	Specification	Remarks
System Power Supply	DC12V/DC24	DC9~16V/DC16~32V
System Power Consumption	≤3W	Without Screen and other accessories
Accuracy of Monomer Voltage Detection	±10mV	
Current Accuracy	±1%	±500A
	±0.3A	≤30A
SOC Accuracy in theory	≥97%	
Accuracy of Temperature Detection	±1℃	-40℃~85℃
	±2℃	85~125℃
Rated Current of Relay	≤1A	Peak≤2A
Rated Current of Switching Signal	≤1A	
Working Temperature Range	-20℃～70℃	
Storage Temperature Range	-40℃～85℃	
Balance Current	250mA/Circuit at most	
Working Moisture Range	40%～90%	
Anti-electromagnetic Interference Range	400MHZ~1000MHZ	

III. Components

Table 3-1 Technical Parameters of BMS

Item	Name	Specification	Description	Remark
BIU	EV-YT-M2124		Integrated Management Module Max for 24 Strings (pcs)	
CS	Current Sensor	50～1000A	Current Detection	Range selected
Cables	Connection cables		Detection/Communication/Power/Control cables	
LCD	Touch Screen	3.5”/ 5.7”	Show detection data and alarm info; Parameter Setting and modification	Optional

3.1 EV-YT -M2124

Figure 3-1 EV-YT-M2124

EV-YT-M2124 is the core component of EV-YT-21. The main functions are as following:

Information Collecting Function

- Max.24 of single cell voltage real time high precision data collection and wave filtering processing
- Max. 4 of real time acquisition and processing to temperature sensor signal
- Collection and processing to charging and discharging current

Communication and Control Function

- 1 CAN-bus communication
- 1 communication mode of display screen LCD_485
- 1 RS485 communication mode to realize customers' requirement
- 2 relay control modes (charge and discharge)
- 2 switch signal control modes

Balancing Management Function

- The battery voltage real-time detection of consistency
- The 250mA charging balance
- The balanced failure protection function

System Management Function

- SOC high precision estimation
- The battery failure alarm
- Real time processing and distribution of battery pack and system information

3.2 Current Sensor

Figure 3-2 Current Sensor

As one of the important parts of BMS current collection and SOC estimation, current sensor is mainly used for collecting current value under the condition of battery charging and discharging, providing parameter reference for analyzing, calculating and judging by the system. The current sensor is Hall current sensor, and the detection range is ±500A.

Table 3-2 Selection Table of Current Sensor

Name	Current Number	Current Sensor Model
Current Sensor	01	50A
	03	100A
	04	200A
	05	300A
	07	500A

3.3 Cables

Table 3-3 Cables Types

Icon	Name	Application	Interface
	Voltage Detection Cables	Battery Pack	
	Temperature Detection Cables	2 cables for less than 16 strings 4 cables for 16-24 strings	
	Power Cables	Connect to System Power	
	Current Sensor Cables	Current Sensor	
	Discharge Relay Cables	Discharge Relay	
	Discharge CAN-bus	Motor Controller	
	Charge CAN-bus	Charger	
	Charge Relay Cables	Charge Relay	
	Screen Communication Cables	Screen	
	RS485 Communication Cables	DSM	
	Switching Signal Cables	Customer Specified Functions	

3.4 LCD

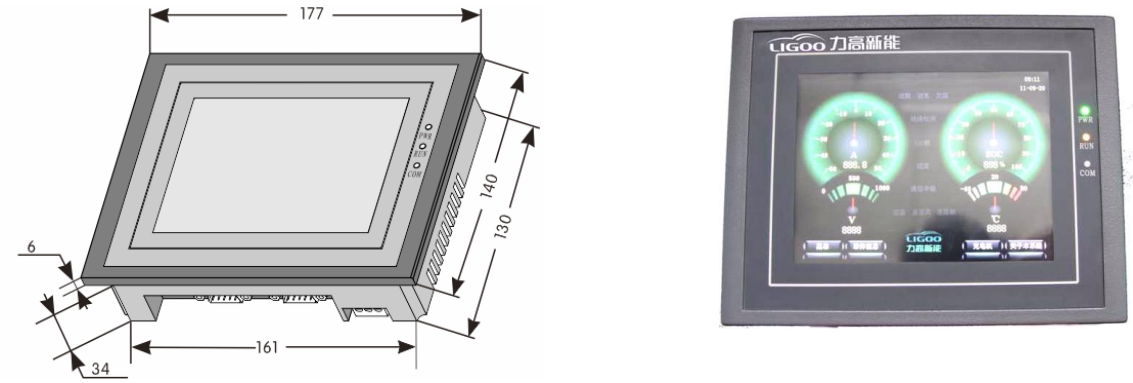

Figure 3-3 Touch Screen

Screen is the User Interface of system running situation. All types are designed by industry standard and suitable to various environments. The screen interface can display all kinds of operation data of the system, state estimation, alarming info and parameters configuration.

IV Installation

4.1 Dimensions

Table 4-1 Dimensions of EV-YT-21

Product Name	Product Model	Shape and Installation Size（Unit：mm）							Weight(KG)
		W	H	D	W1	H1	D1	d	
EKV-YT-M2124	KH20E02	296	107	31	283	60	12	4.5	0.89
3.5 Inch Screen	KX010001	96	81	46	90	73	4	4	0.186
5.7 Inch Screen	KX010002	177	140	40	161	130	6	4	0.5

Note)* W, H, D as the external structure size, W1, H1, D1 as the installation size of internal structure , d is width of installation hole

4.2 Environment and Requirements

- Avoid installing the BMS in mist, metal dust or heavy dust occasions.
- Avoid installing the BMS in places of hazardous gas, liquid, corrosive, flammable and explosive gas
- Reserve appropriate space for installation.
- Avoid touch any sharp objects when installing cables.
- Keep far away from strong electromagnetic interference environment
- All the accessories related to installation of the BMS should get confirmation from the manufacture.

4.3 System Installation

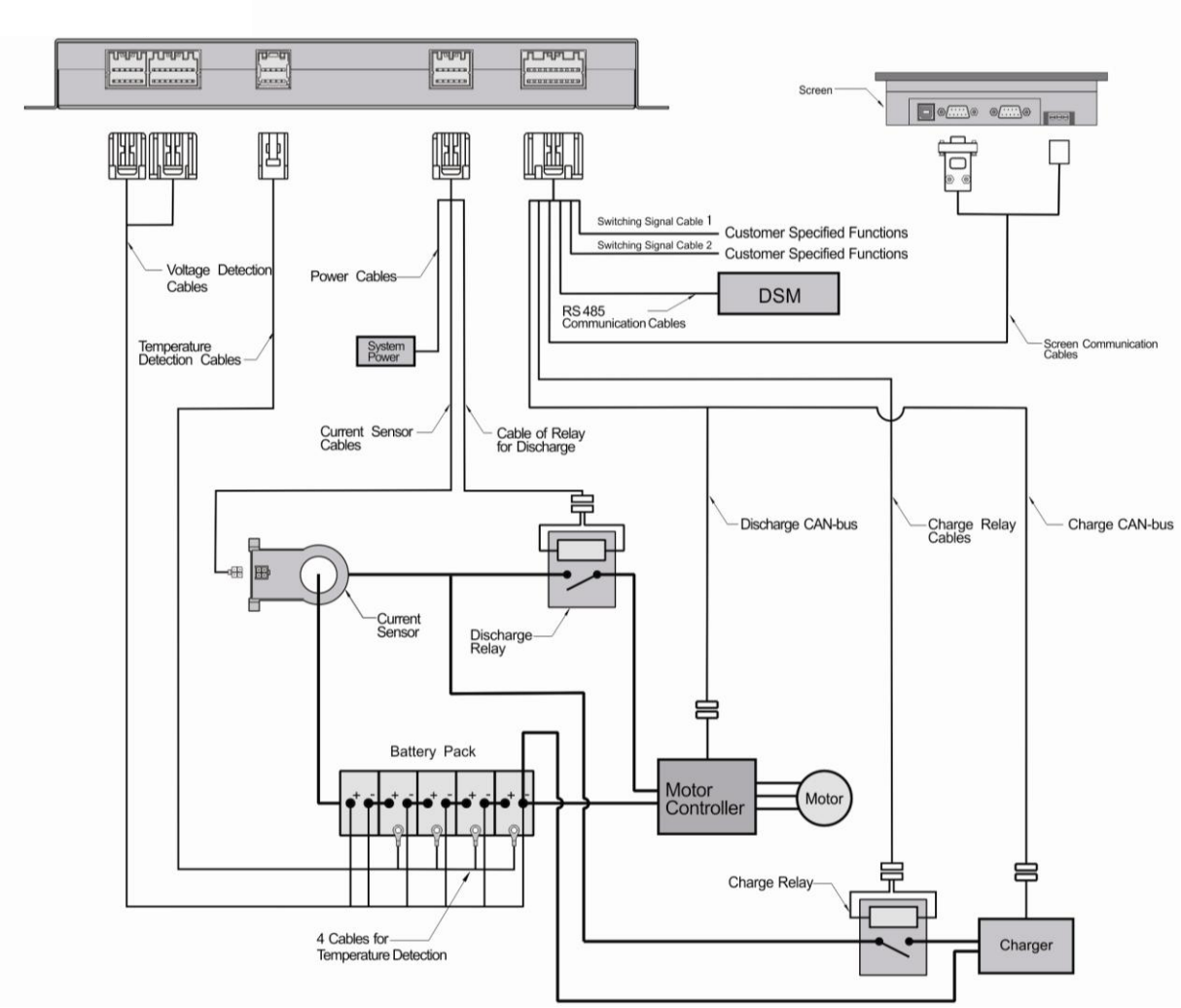

Figure 4-1 Installation Schematic Diagram

Note)* the functions and configurations of the products will vary due to different models. The installation instructions will be provided by us for the connection of any special cables and ports.

* Charger, battery, motor controller and motor for the customer system configuration.

* Charging and discharging relay is optional by customers (coil current ≤1A)