Y29&Y34 of LCD Protocol

This protocol is a programmatic application protocol for the transmission of operating status and faults between the LCD and the electric vehicle controller.

1. Adopting the international standard SIF communication protocol, the interface is universal and convenient.

2. The master-slave mode adopts single-wire unidirectional transmission, that is, only one transmission thread is needed, the electric vehicle controller is the sender, and the multi-function display

The indicator is the receiver.

3. The transmission baud rate has a wide adaptive range, and the host can use the idle time to send data.

4. One frame of data is transmitted at a time, including 97 Bits: a start bit, 12x8 data bits, the line idle status bit is required to be low after the transmission is completed.

5. 32us <Tosc <320us.

6. The level of the data complies with the TTL specification.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Synchronize | DATA0 | DATA1 | DATA2-DATA1  0 | DATA11 |
| Signal | Low High Level | 8 bits Low high level | 8 bits Low high level | 8 bits Low high level | 8 bits Low high level |
| Content | Meaningless | Equipment code 8 bits | serial number bits 8 | Data bits 8 | Checksum 8bits |
| Name |  | Device\_Code | Seq\_Code |  | checksum |

Synchronization:

>992 Tosc

>32 Tosc

DATA(0)

64Tosc

32Tosc

DATA(1)

32Tosc

64Tosc

7. Frame format

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Name | Start sync signal | Device\_Code | Seq\_Code | Data content | Checksum |
| Content |  | DATA0 | DATA1 | DATA2-DATA10 | DATA11 |
| Length |  | 1Byte | 1Byte | 9Byte | 1Byte |
| Note |  | Fixed Fill  0x08 | Fixed Fill  0x61 | Detailed description of data content | Detailed description of data content |

8. Detailed description of the data content (if the specified state exists, the specified Bit position is 1, otherwise it is set to 0, and the reserved items are filled with the value 0);

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DATA2 | | | | | |
| D7 | Standby | | | | |
| D6 | Standby | | | | |
| D5 | Standby | | | | |
| D4 | Standby | | | | |
| D3 | Side support instructions | | | | |
| D2 | Standby | | | | |
| D1 | Parking instructions | | | | |
| D0 | Standby | | | | |
| DATA3 | | | | | |
| D7 | 6KM push cart logo | | | | |
| D6 | Hall fault | | | | |
| D5 | Handlebar failure | | | | |
| D4 | Controller fault | | | | |
| D3 | Undervoltage protection | | | | |
| D2 | Cruise | | | | |
| D1 | Boost | | | | |
| D0 | Motor phase loss | | | | |
| DATA4 | | | | | |
| D7 | Fourth gear indicator | | | | |
| D6 | Motor running (1 running 0 stop) pwm output or not | | | | |
| D5 | Brake | | | | |
| D4 | Controller protection | | | | |
| D3 | Coasting charging | | | | |
| D2 | Anti-skid protection | | | | |
| D1 | Three speed | 1 | 1 | 0 | 0 |
| D0 | 1 | 0 | 1 | 0 |
| High speed | Medium speed | Low speed | No 3-speed controller |

|  |  |
| --- | --- |
| DATA5 | |
| D7 | 70% current mark |
| D6 | Enable push-to-talk |
| D5 | Enable EKK standby power |
| D4 | Overcurrent protection |
| D3 | Locked-rotor protection |
| D2 | Reverse |
| D1 | Electronic brakes |
| D0 | Speed limit |
| DATA6 | |
| D7-D0 | Running current (unit A) (The high bit of negative current is 1 The high bit of positive current is 0) |
| DATA7 | |
| D7-D0 | Speed double byte, high byte, the number of three Hall changes within 500 milliseconds |
| DATA8 | |
| D7-D0 | Speed double byte, low byte, the number of three Hall changes within 500 milliseconds |
| DATA9 | |
| D7-D0 | Battery capacity: 0-100% current ratio value |
| DATA10 | |
| D7-D0 | Current: 0-100% current ratio |

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1. Device code Device\_Code is a constant constant, LCD device code is DATA0 = Device\_Code = 0X08;

2. The serial number Seq\_Code is a constant constant, and the serial number code is DATA1 = Seq\_Code = 0x61;

3. Checksum DATA11(8Bit), 8Bit exclusive OR value of DATA0-DATA10.

DATA11=

DATA0^DATA1^DATA2^DATA3^DATA4^DATA5^DATA6^DATA7^DATA8^DATA9^DATA10

4. Send in order according to the sending format

Sync code DATA0 ~ DATA11

5. The standard 0,1 high level time and low level time ratio are 1:2 and 2:1.

6. Speed ​​information: The speed information includes the change information of the HALL sensor inside the motor. This parameter can get the current speed of the motor.

Degree value.

N: The number of halls that the motor has rotated per hour

P: the number of pole pairs of the current motor

D: The diameter of the current motor

V: current speed

*V* = (*N* \**D*\*π )/ 6*P*

The unit is converted into KM/H. In this protocol, the controller provides a hall number N\_Tx that the motor has rotated within 500ms, then (N = N\_Tx\*7200); P is the number of motor pole pairs, D is the motor diameter, which needs to be provided by the vehicle manufacturer Or fill in an approximate value, such as 23 pairs of poles, 16 inches.

Vehicle status: fault information simulation conditions

Undervoltage: battery undervoltage

Controller failure: Power on after the power line and the motor line are short-circuited.

Motor Hall failure: unplug the Hall wire

Handle failure: unplug the handle

Brake failure: stop the car and power on

Cruise: At this time, the vehicle is in cruise mode

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