

the Instruction with TFmini for Avoiding Car Break During Passing Through the Barrier Gate

1 Functions:

Tfmini-ip65 and S2R adapter plate are used on the barrier gate at the entrance of parking lot and expressway toll station, mainly replacing geomagnetic coil to prevent the brake rod from hitting cars and people. With easy installation, high reliability, all-weather and other advantages.

2 Principle

The advanced infrared laser radar module can accurately monitor whether there is an obstacle within the detection range, and it can be accurately judged by both vehicles and pedestrians. TFmini is based on TOF, namely, Time of Flight principle. To be specific, the product transmits modulation wave of near infrared ray on a periodic basis, which wave will reflect after contacting object. The product obtains time of flight by measuring round-trip phase difference and then calculates relative range between the product and the detection object, the radar feeds back the detection range to the switch board, and the central control board outputs signals to the barrier gate according to the set threshold value to control whether the barrier gate falls or not.

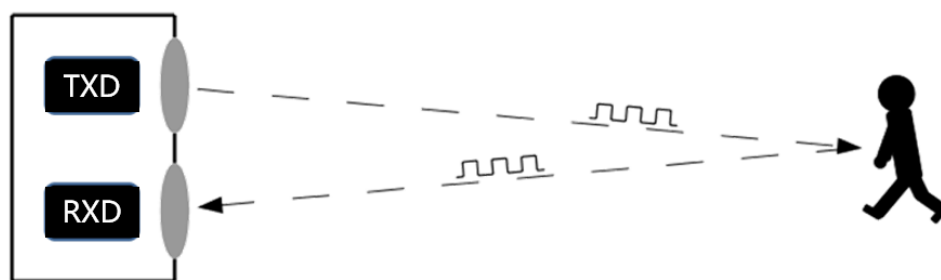


Fig.1 Time of Flight principle

3 Features

This product converts the serial data of TFmini and TF02 into on-off signals output through relays, mainly used to replace the geomagnetic coil in the application of gate. The main features are as follows:



1 it supports 6-24VDC power supply;

2 it can connect 1 or 2 TFmini, all can work normally;

3 The threshold value of the corresponding radar can be adjusted by rotating multi-turn potentiometer, without connecting to the computer;

4 Equipped with OLED display screen, which can display the radar distance value and current threshold status in real time;

4 S2R Switchboard description:

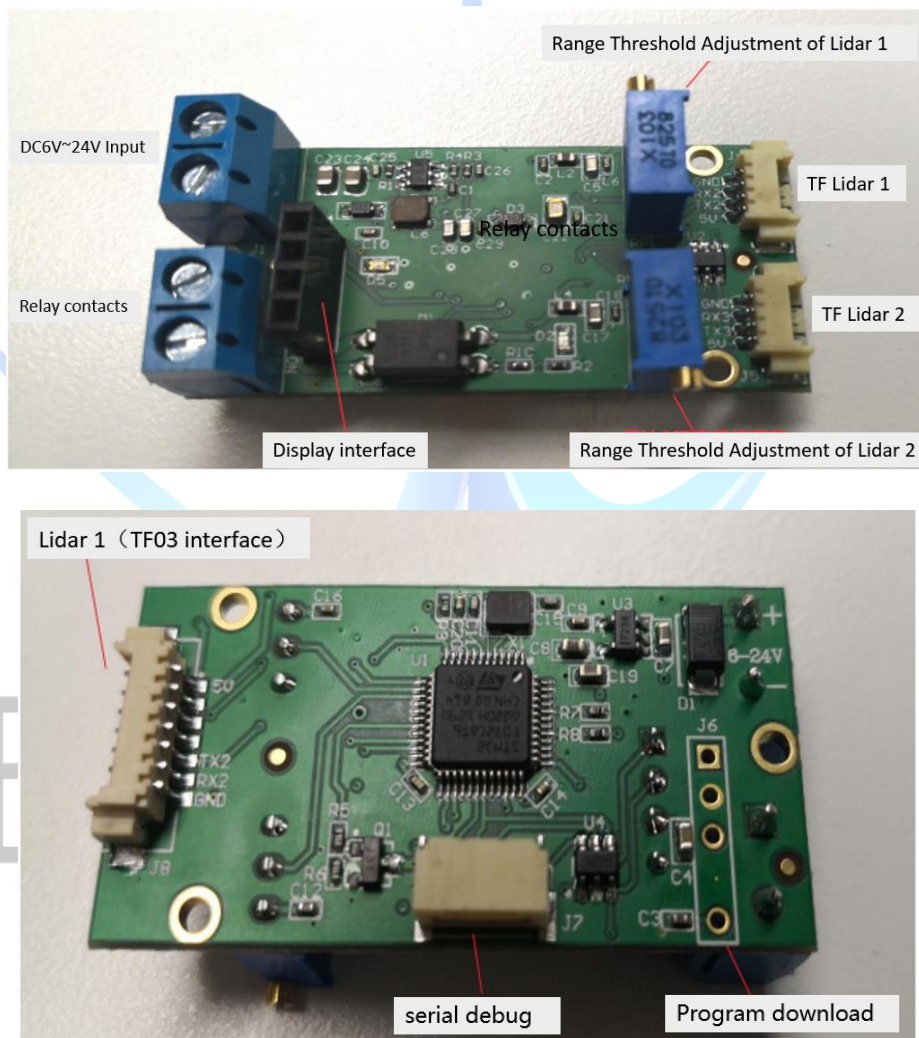


Fig.2 miniS2R_V2.1

DC-005 5.5/2.5MM interface: Connect 5V/2A power adapter. Connect 5V/2A power adapter.

KF301-2P: Relay output, connected to the gate control board GND and ground inductance, without dividing the line sequence.

Relay Contact Capacity: 0.55A/60V AC/DC

Frontal GH1.25-4P interface: To connect TFmini, one or two can be used. If two are connected, the relationship between the two radars is "with" and the relay state will be disconnected only if they are larger than the set distance value.

The GH1.25-4p connector connected to TFmini1 and the JST1.25-4p connector on the back are interlinked. They are only used to connect radar with different connectors. These two connectors can only connect one radar at a time. If GH1.25-4P is connected, JST1.25-4P cannot connect to the equipment, and vice versa.

Multi-loop potentiometer: set two thresholds, corresponding to one TFmini.

OLED Interface: Connect 0.91 inch OLED to facilitate adjusting threshold and viewing ranging information.

The reverse GH1.25-4P interface: debug the serial port, 3.3V LVTTTL level, if software developers want to obtain relevant information, they can choose TTL-USB board to connect to the computer.

structure:

The plate is 48 mm long and 24 mm wide. It has three fixed holes with a diameter of 2.1 mm.

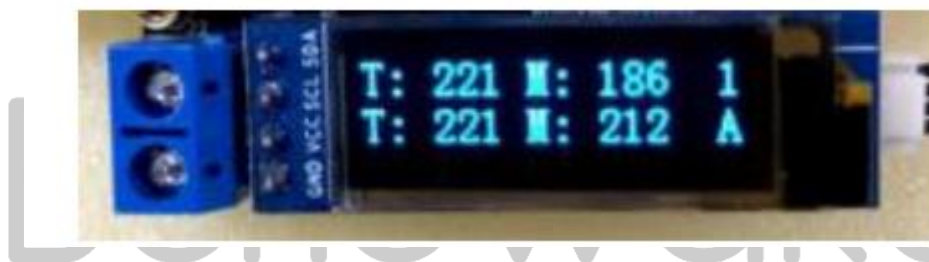


图 3 MiniS2R_V2.1 with OLED

OLED Display Content:

Behind "T" (Threshold) on the left is the threshold set by the multi-loop potentiometer, in cm.

Behind "M" (Measure) in the middle is the actual test distance of TFmini, in cm.

"1" in the upper right corner means the relay is connected, and "0" means the relay is disconnected. When the gate

is connected, the rod will drop after 1->0.

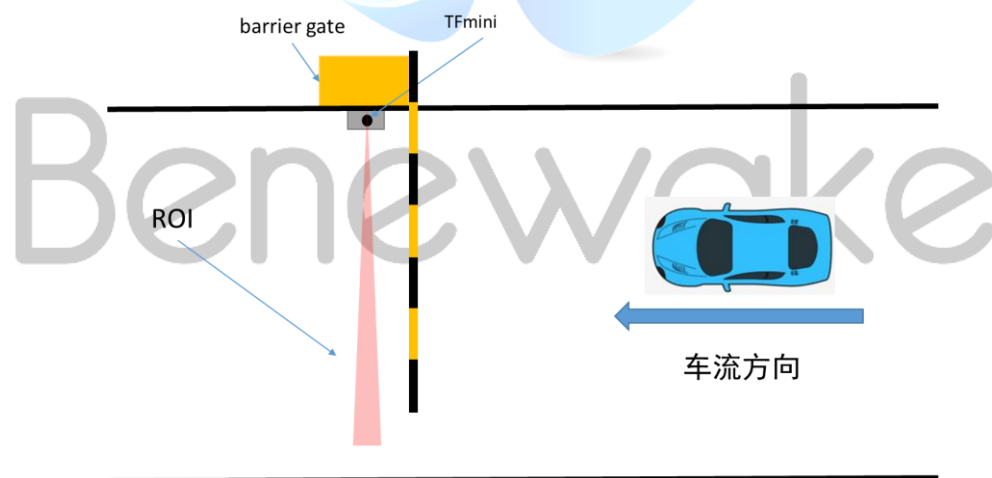
The "A" in the lower right corner represents the current software version number.

Control logic: when the detection distance of any TFmini is less than (the set threshold -10cm), the relay closes; When the detection distance is greater than the set threshold in the connected state, the relay is disconnected. As long as one of the two Lidar works properly, or only one Lidar is used, the barrier gate can be normally controlled. The delay time of the barrier gate falling after the vehicle passes the detection range of Lidar is 800ms.

Threshold setting

The threshold value of multi - turn potentiometer is closely related to the length of barrier bar. The distance between the railing that separates the driveway from the sidewalk and the detector is greater than or equal to the length of the barrier gate, generally, the threshold value of potentiometer can be set as the length of barrier gate - 15cm. It is not appropriate to be too large or too small. If it is too large, pedestrians outside the railing may be detected; if it is too small, pedestrians inside the edge of the railing may not be detected. The threshold setting range of potentiometer is 0~1200cm, but for TFmini, it is recommended to set the threshold between 30~400cm. In other words, it can only be used if the barrier gate is no longer than 4 meters long, otherwise you need to replace the radar for TF02, see <http://benewake.com/tf02.html>.

Use and installation



If one TFmini is used as the sensing part, it is recommended to install the TFmini behind the barrier gate, and ensure that the cars pass through the gate completely before the gate starts to fall down.



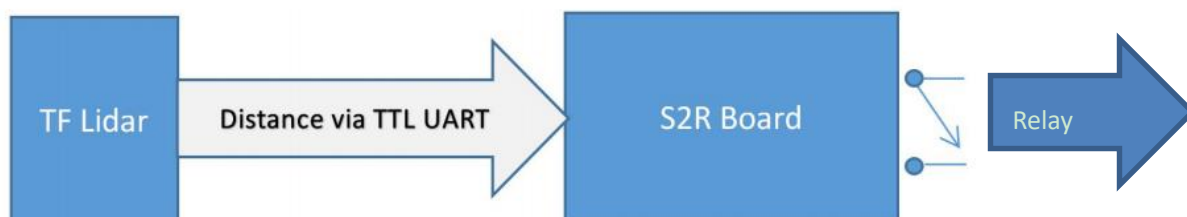
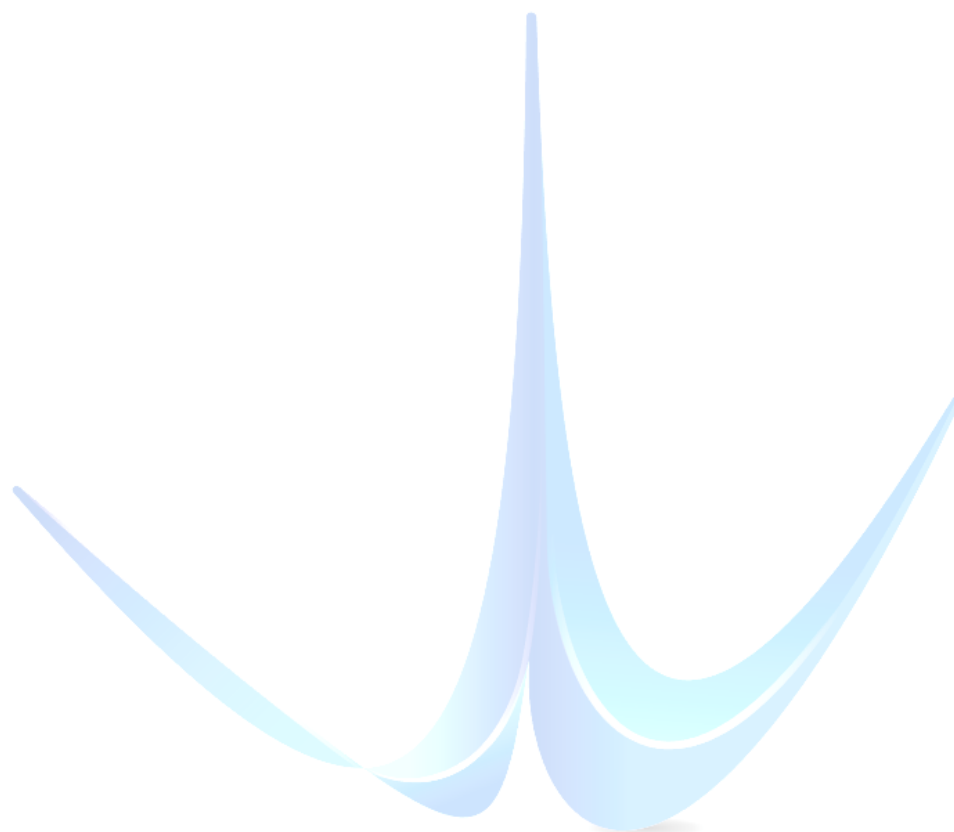


Fig.4 Principle



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