



# **Application of TFmini Plus IIC communication in Pixhawk**

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TFmini Plus can be used in Pixhawk for the purpose of obstacle avoidance.

### 1. TFmini Plus setting

Only higher version firmware is supported at the moment, please contact with Benewake FAE to obtain the firmware and upgrading tool.

Frame rate should be set to 250Hz, see details in chapter 7.4 “frame rate”.

The default communication of TFmini Plus is TTL, IIC and TTL are same cable, so please set TFmini Plus to IIC communication first, see detail commands in product manual.

We take two TFmini Plus as an example in this passage and set the address 0x10 and 0x11 separately.

### 2. Pixhawk connection

See detail cable definition in Pixhawk manual and TFmini Plus manual, we take Example for connecting Pixhawk:

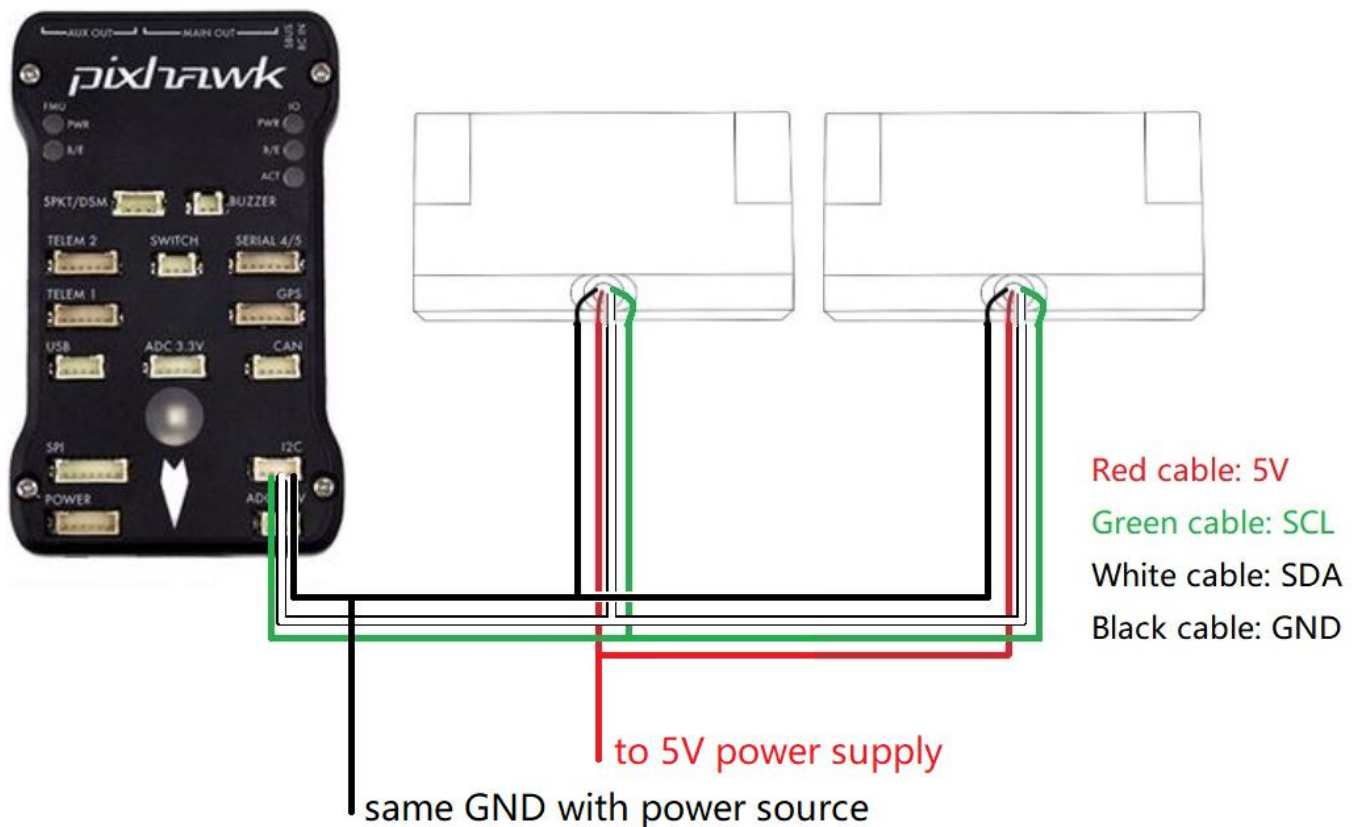


Figure 1 Schematic Diagram of Connecting TFmini Plus with IIC Interface of Pixhawk

#### Note:

- (1) Default cable sequence of TFmini Plus and Pixhawk are different, please change it as demand
- (2) IIC connector should be purchased by user

(3)If TFmini Plus face down,please take care the distance between lens and ground should be bigger than TFmini Plus's non-detection zone(10cm)

(4)If more TFmini Plus are applied,method is same

(5) Power source should meet the product manual demands: $5V \pm 0.5V$ ,bigger than  $140mA * \text{number of TFmini Plus}$

### 3. Firmware

Only testing firmware support TFmini Plus IIC communication at the moment,please contact with Benewake FAE for obtaining the firmware.

### 4. Parameters setting

AVOID\_ENABLE=3

AVOID\_MARGIN=4

PRX\_TYPE=4

RNGFND1\_ADDR=16 [Address of #1 TFmini Plus in decimal]

RNGFND1\_GNDCLEAR=15 [Unit: cm, depending upon mounting height of the module and should be bigger LiDAR than non-detection zone]

RNGFND1\_MAX\_CM=400 [It could be changed according to real demands but should be smaller than effective measure range of LiDAR,unit is cm]

RNGFND1\_MIN\_CM=30 [It could be changed according to real demands and should be bigger than LiDAR non-detection zone,unit is cm]

RNGFND1\_ORIENT=0 [#1 TFmini Plus's real orientation]

RNGFND1\_TYPE=25

RNGFND2\_ADDR=17 [Address of #2 TFmini Plus in decimal]

RNGFND2\_GNDCLEAR=15

RNGFND2\_MAX\_CM=400

RNGFND2\_MIN\_CM=30

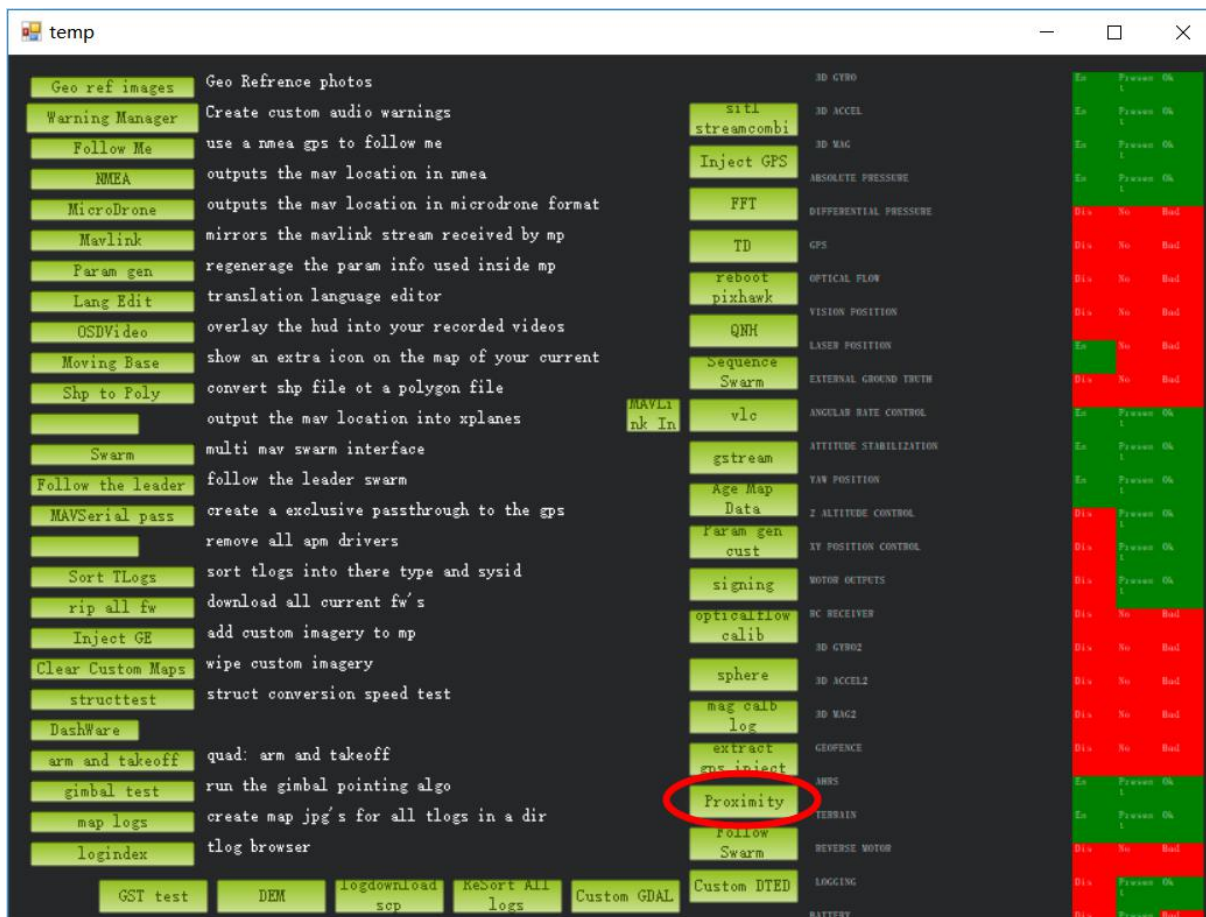
RNGFND2\_ORIENT=25 [#2 TFmini Plus's real orientation]

RNGFND2\_TYPE=25

Upon setting of these parameters, click [Write Params] on the right of the software to finish.

If the error message “**Bad Lidar Health**” appears, please check if the connection is correct and the power supply is normal.

How to see the target distance from the LiDAR:press *Ctrl+F* button in keyboard,the following window will pop out:



Click button *Proximity*,the following window will appear:

The number in green color means the distance from LiDAR in obstacle avoidance mode (the number only refresh when this window open,close,zoom in or zoom out,it doesn't mean the real time distance from LiDAR and will not be influenced in Mission Planner version under v1.3.48,the problem could be solved by updating Mission Planner)

