

## AS5600 Register

Address	Name	R/W	Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
Configuration Registers <sup>(1), (2)</sup>										
0x00	ZMCO	R							ZMCO(1:0)	
0x01	ZPOS	R/W/P					ZPOS(11:8)			
0x02			ZPOS(7:0)							
0x03	MPOS	R/W/P					MPOS(11:8)			
0x04			MPOS(7:0)							
0x05	MANG	R/W/P					MANG(11:8)			
0x06			MANG(7:0)							
0x07	CONF	R/W/P			WD	FTH(2:0)			SF(1:0)	
0x08			PWMF(1:0)		OUTS(1:0)		HYST(1:0)			PM(1:0)
Output Registers										
0x0C	RAW ANGLE	R					RAW ANGLE(11:8)			
0x0D		R	RAW ANGLE(7:0)							
0x0E	ANGLE	R					ANGLE(11:8)			
0x0F		R	ANGLE(7:0)							
Status Registers										
0x0B	STATUS	R			MD	ML	MH			
0x1A	AGC	R	AGC(7:0)							
0x1B	MAGNITUDE	R					MAGNITUDE (11:8)			
0x1C		R	MAGNITUDE(7:0)							
Burn Commands										
0xFF	BURN	W	Burn_Angle = 0x80; Burn_Setting = 0x40							

### Note(s):

1. To change a configuration, read out the register, modify only the desired bits and write the new configuration. Blank fields may contain factory settings.
2. During power-up, configuration registers are reset to the permanently programmed value. Not programmed bits are zero.

Read Register with button "AS5600 Reg". Same as button Read CONF but jumps to Table to see all register values for verification.

To read values from data registers click on "AS5600 Cyc" (Read cyclic).

## Yuneec settings (without magnet)

<b>Conf Register:</b>	0000 0000 1110 0000	
Power mode:	00	NOM
Hysteresis:	00	OFF
Output stage:	01	Analog (reduced range from 10% to 90% between GND and VDD)
PWM frequency:	11	920Hz
Slow filter:	00	16x
Fast filter threshold:	00000	Slow filter only
Watchdog:	0	OFF
n/a:	00	
<b>Status Register:</b>	0000 0000	Sensor without magnet near by
n/a:	011	(factory settings? Ignore)
MH:	0	AGC minimum gain OK
ML:	1	AGC maximum gain overflow, magnet too weak
MD:	0	Magnet was not detected
n/a:	00	

## Magnet Detection

As a safety and diagnostic feature, the AS5600 indicates the absence of the magnet. If the measured magnet field strength goes below the minimum specified level (Bz\_ERROR), the output is driven low, without regard to which output mode has been selected (analog or PWM) and the MD bit in the STATUS register is 0.

## Maximum angular range

MANG = 0x0000

## Start and end position

ZPOS = 0x0000    MPOS = 0x0000

## DIR pin

GND                      CW (clockwise)

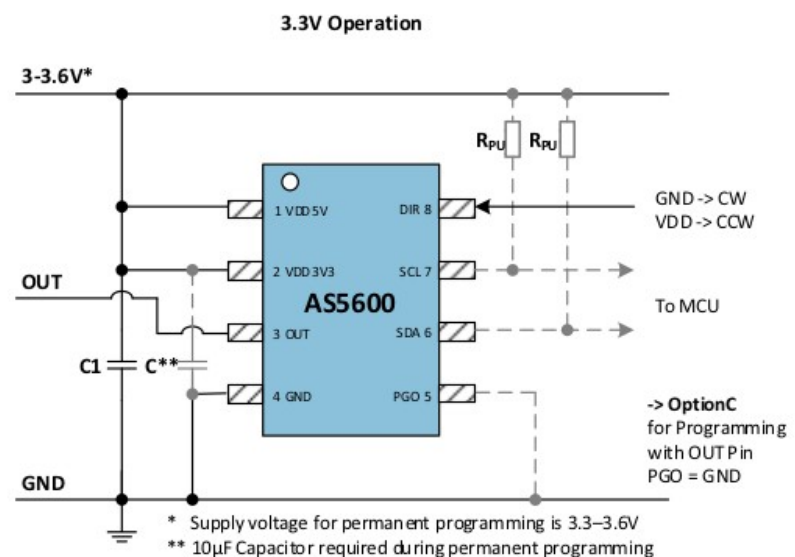
**Note:** To change Conf register do not change n/a bits. Those may contain factory settings.

## Programming (Option A with I<sup>2</sup>C)

Use the correct hardware configuration (Option A and C).

Option A: Write CONF register  
Option C: Set Maximum Angle

Burn: Permanently save both.



Connect AS5600 to Raspberry Pi with I<sup>2</sup>C interface and power up the AS5600. Start the tool "IMU\_test". Go to Page "AS5600". It will go to "AS5600" page if this is the only detected sensor on I<sup>2</sup>C bus.

Read/write register from I<sup>2</sup>C AS5600

MPU Reg Comp Reg Write table Save Quit

MPU cyc Comp Cyc Stop reading I<sup>2</sup>C address: 0x36

Table Chart Accel Chart Gyro Chart Mag ADC PCF8591 AS5600 Tools/Settings

0x36

AS5600 Reg

Status

☐ MH

☒ ML

☐ MD

Configuration

Power Mode NOM

Hysteresis OFF

Output Stage digital PWM

PWM Frequency 920Hz

Slow Filter 16x

Fast Filter Threshold slow filter or

Watchdog OFF

Write

Maximum Angle

Hex High Hex Low

00 00

360°

Be careful!

Burn C

Read CONF

Calibration

Reg	High	Low
Raw Angle	00	00
Zero Pos	00	00
Max Pos	00	00

1. Turn magnet to start position

2. Set Zero Pos

3. Rotate magnet to stop position

4. Set Max Pos

5. Burn A

6. Read OTP

Read the register of AS5600.

- Button "AS5600 Reg" or button "Read CONF"

### Calibration procedure:

**Step 1:** Turn the magnet to the start position.

**Step 2:** Read the RAW ANGLE register. Write the RAW ANGLE value into the ZPOS register. Wait at least 1 ms.

- Button "2. Set Zero Pos"

**Step 3:** Rotate the magnet in the direction defined by the level on the DIR pin (GND for clockwise, VDD for counterclockwise) to the stop position. The amount of rotation must be greater than 18 degrees.

**Step 4:** Read the RAW ANGLE register. Write the RAW ANGLE value into the MPOS register. Wait at least 1 ms. Proceed with Step 6 to permanently program the configuration.

- Button "4. Set Max Pos"

**Step 5:** Perform a BURN\_ANGLE command to permanently program the device. Wait at least 1 ms.

- Button 5. Burn A

**Step 6:** Verify the BURN\_ANGLE command: Write the commands 0x01, 0x11 and 0x10 sequentially into the register 0xFF to load the actual OTP content. Read the ZPOS and MPOS registers to verify that the BURN\_ANGLE command was successful.

- Button "6. Read OTP"

**Step 7:** Read and verify the ZPOS and MPOS registers again after a new power-up cycle.

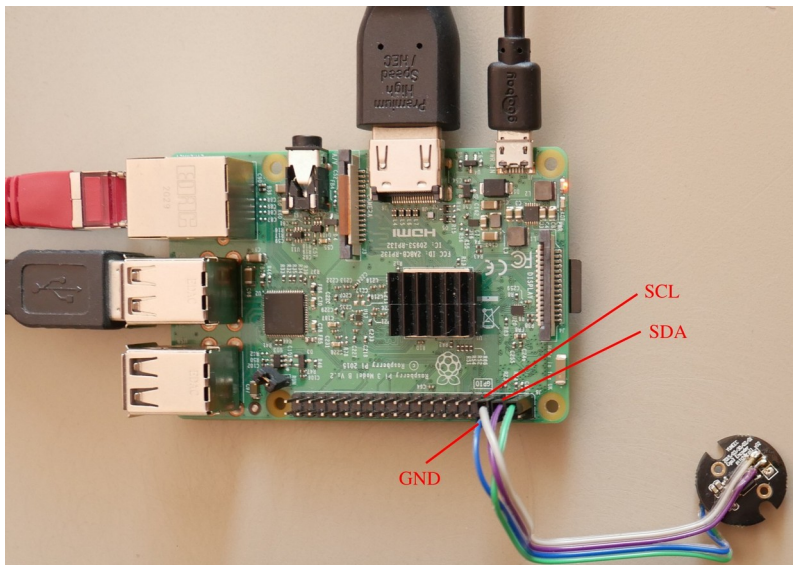
- Button "AS5600 Reg"

**Note:** Do not touch Configuration, at least do not burn config.

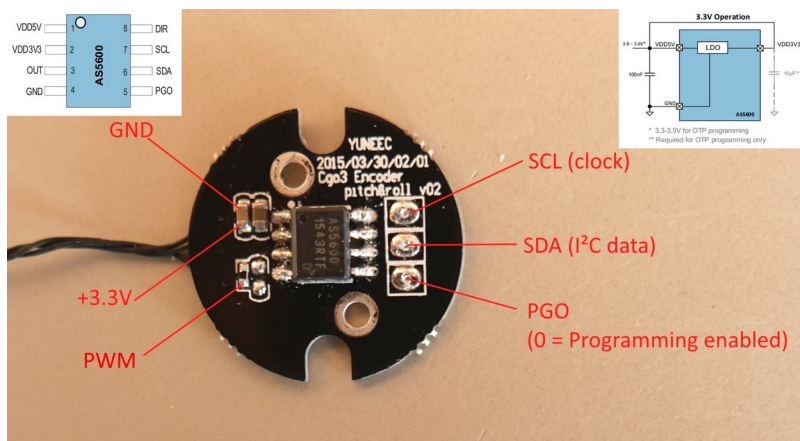
Basically, do only something when you exactly know what you are doing, especially "Burn" actions.

Before perform a burn-command read carefully the **rules and restrictions** for the OTP mentioned in AS5600 datasheet.

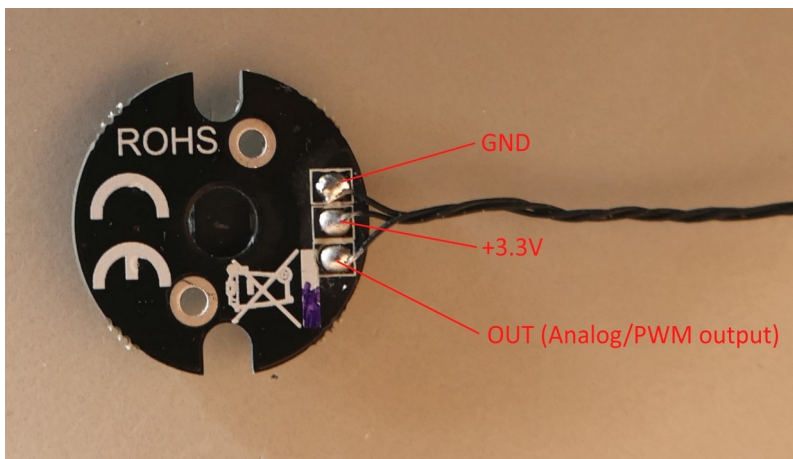
## HW settings



Sensor connected to Raspberry Pi by I<sup>2</sup>C interface.



I<sup>2</sup>C bus SCL and SDA is 3.3V signal.  
PGO pin is not needed when programming via I<sup>2</sup>C.



Power supply is 3.3V. It can be done by camera or Raspberry Pi.  
GND must be connected to Raspberry Pi.