

Technical guide

HALL EFFECT SYSTEM

(3 wires version)

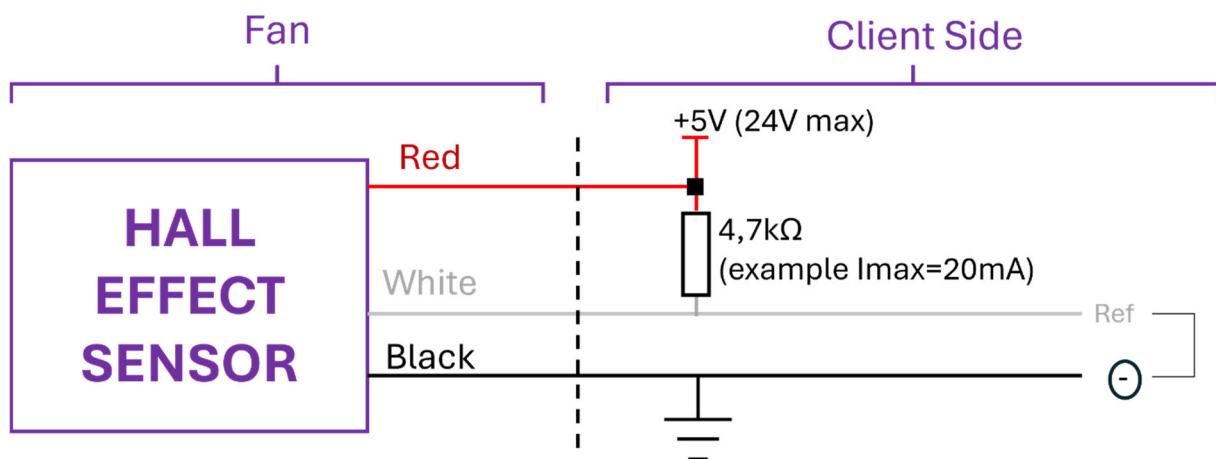
26/01/2017	a	Original
13/06/2017	b	ESD precautions are added
05/02/2021	c	Clarification on number of pulse per turn
05/09/2024	d	Operating constraints are added

1. Rotation indicator

This system is used to control the rotation of the motor. It includes two parts:

- a permanent magnet inside the rotor
- a hall effect sensor inside the stator

The electrical wiring is made according to the following drawing:



When the motor rotates, the sensor sends a signal to the points Ref and \ominus , with frequency and width T_s proportional to the rotation speed ($T_s = 60/n$).

The result is one pulse per revolution.

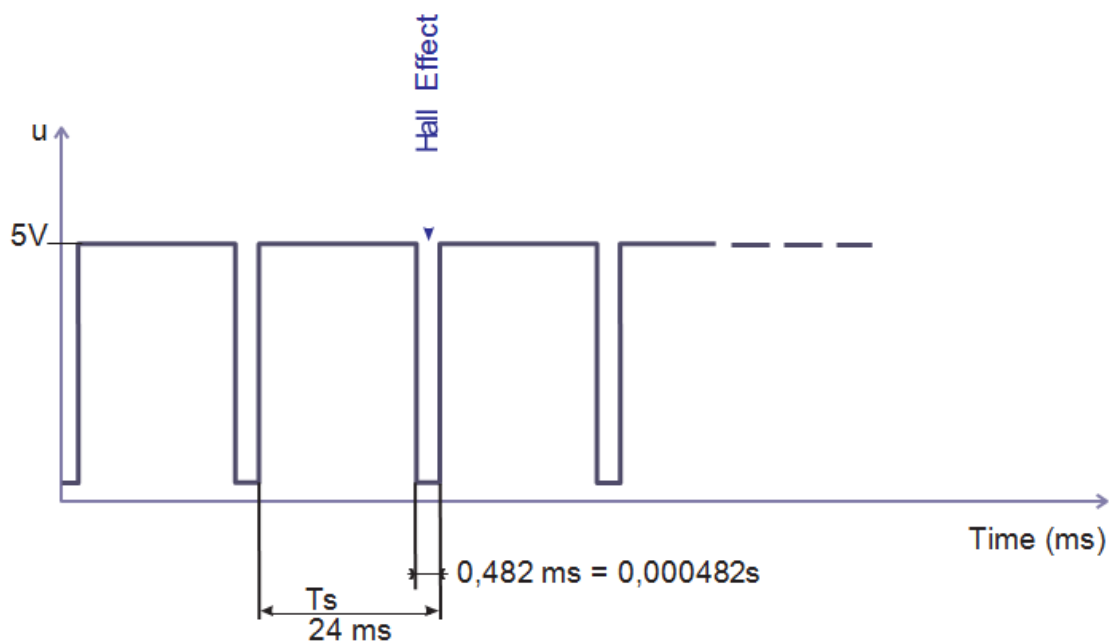
The amplitude of the square signal is the voltage (5VDC).

2. In details

Motor 2 pole

Speed 2500 RPM

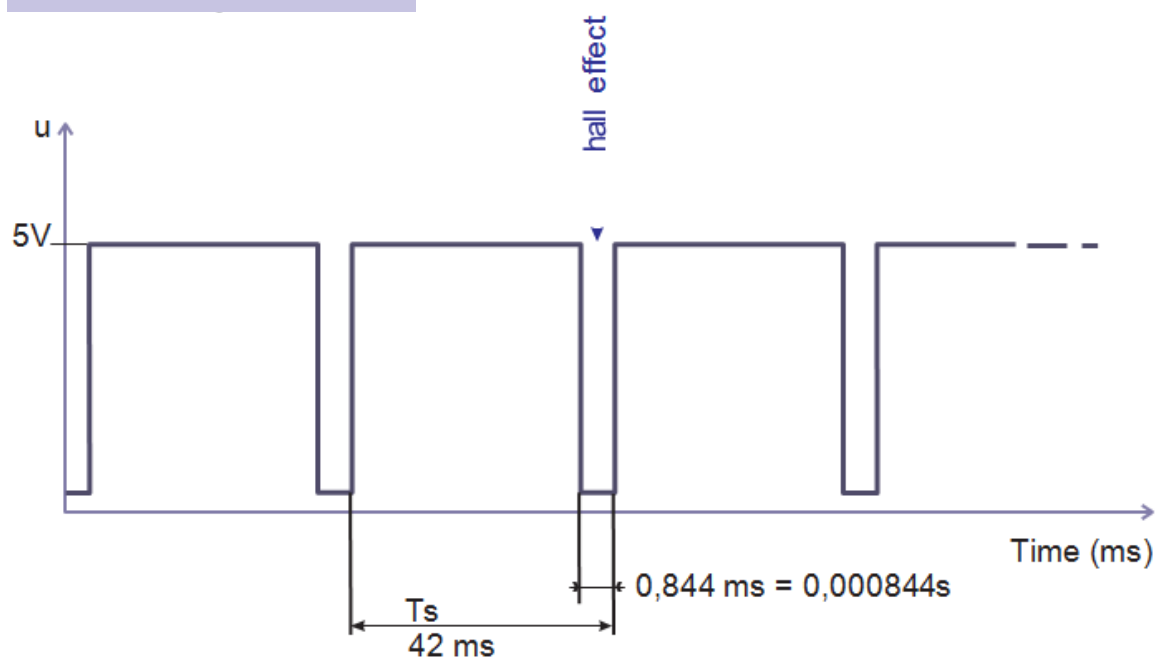
$T_s = 60/2500 : 0.024$ second



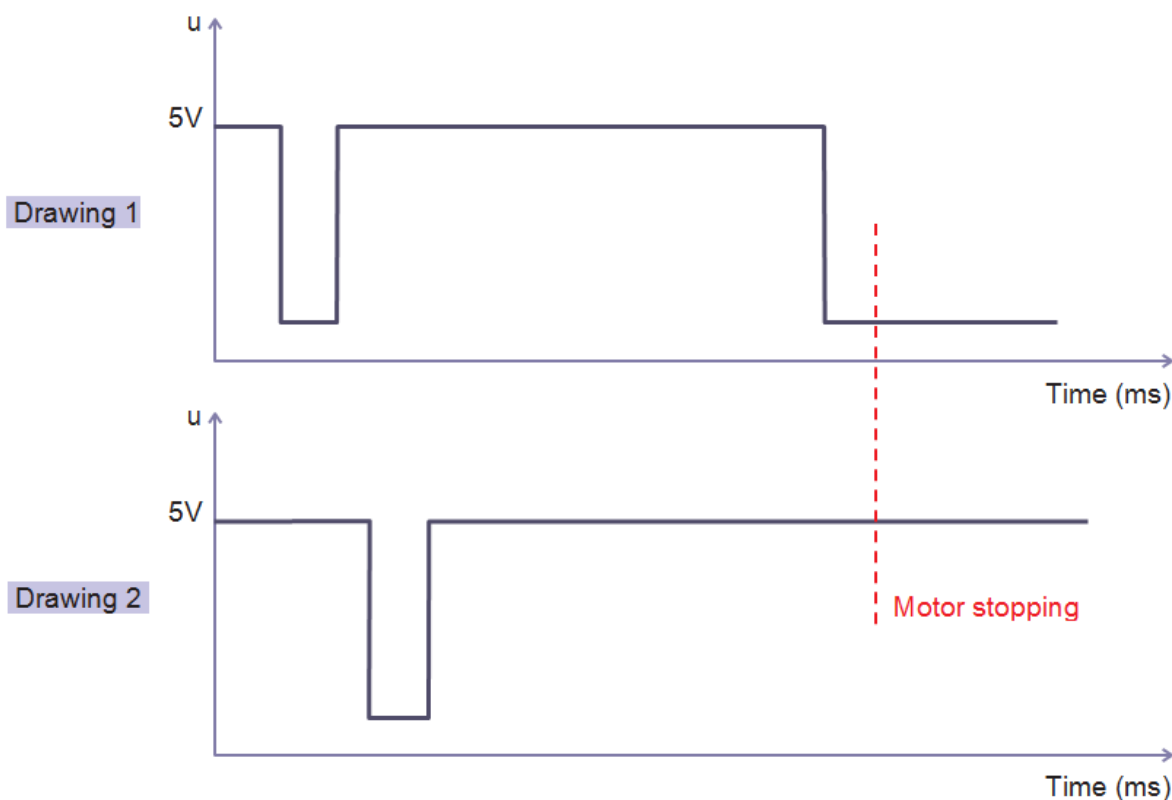
Motor 4 pole

Speed 1400 RPM

$T_s = 60/1400 : 0.042$ second



When the fan is not powered and stopped, the magnet can be **close** to the sensor (drawing 1) or **far** from the sensor (drawing 2)



Through a necessary interface, the signal from the sensor allows to:

- Control the rotation of the motor, and give an acoustic, visual or another signal.
- Measure the motor rotation speed.

3. Precaution of using



The AC motor-fan contains electronic device which can be sensitive to electrostatic discharge. Take appropriate care especially when handling the low voltage cable.

4. Operating constraints

A study on our “AC Fans with tachymeter” products revealed that speed feedback must not be used to detect a locked rotor. In the event of a locked rotor, it is not possible for the tachometer output to indicate whether the fan is rotating or not. To protect your equipment, our fans with tachymeter option are fitted with a thermal protective element that disconnects the fan from the power supply circuit in the event of abnormal overheating.