

STEPPER MOTOR-MODULE

TECHNICAL INFORMATICS LABORATORY

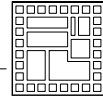
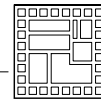


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STEPPER MOTOR-MODULE

1 OVERVIEW

1.1 Generalities

To have a moving part, the technical informatics laboratory offers a stepper motor. This motor is driven directly with digital signals to stay in the technical informatics problems.

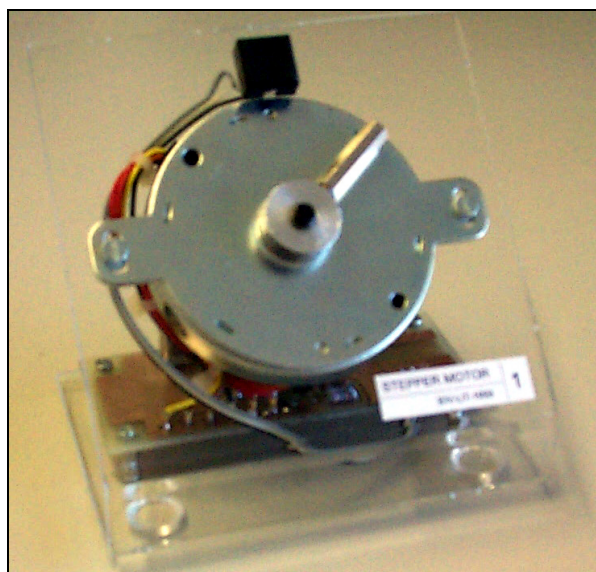


Figure 1: The stepper motor

1.2 Inside module

This motor-module consists of a stepper motor connected to a power driver. The power supply is driven by digital signals. An optical sensor returns a zero position information.

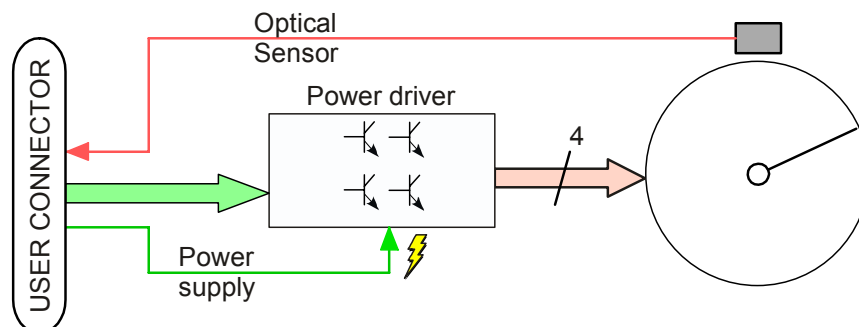
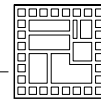


Figure 2: inside stepper motor module



2 POWER SUPPLY



The motor module needs a power supply of +9V. To drives the motor, a maximum voltage of +12V may be applied. For the laboratory use, the **+9V** voltage will be used for both power sources.

3 STEPPER MOTOR COILS

This stepper motor is equipped of 4 coils groups. These groups have to be driven separately to move the motor. The sequence is depending on the selected direction.

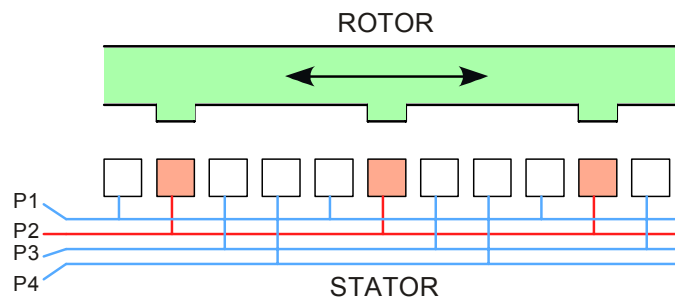


Figure 3: motor coils

3.1 Motor moving

To move the motor, the coils have to be enabled each one time in the selected order for the rotation. To execute one round, the motor needs 200 steps.

The maximal speed of this motor is depending on the power supply. With the 5V connected to the motor, the maximal speed is about one round/second.

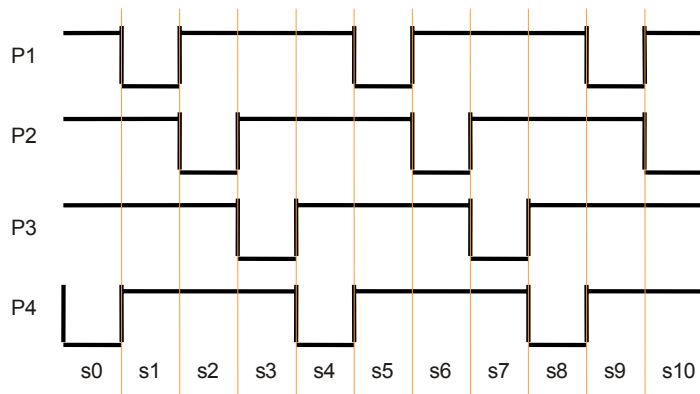
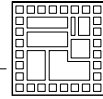


Figure 4: coils command

To drive the motor in the other direction, the coils sequence need to be inverted.



The motor may be driven in half step mode. This is useful for a more precise positioning system. In this case, the sequence is as described in the figure below and one round need 400 steps.

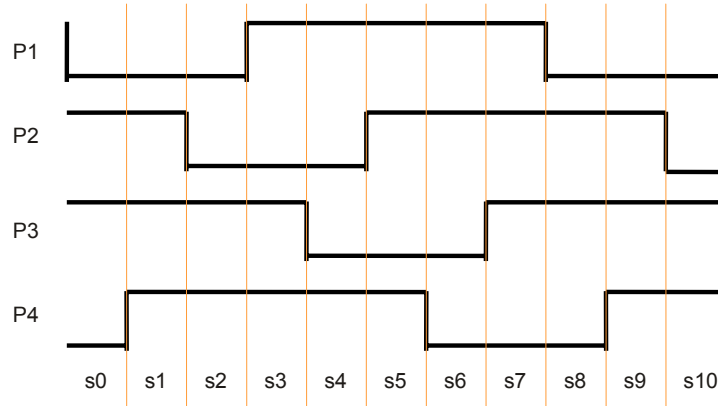
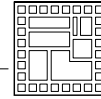


Figure 5: half step command

4 POSITION SENSOR

The absolute position of a stepper motor has to be known at power on system. In this case, the only solution is to get this position with a sensor placed on a fixed part near the motor. To perform this job, this motor module is equipped with an relay sensor. This sensor reflects when the hand comes over it. The sensor returns a 0 when the hand is over it, otherwise a 1 is returned.



5 USER CONNECTOR

The user may connect the motor with a standard 26-pin header connector. This connector offers all the motor module signals.

Pin number	Function	Pin Number	Function
1	nc	2	nc
3	nc	4	nc
5	nc	6	nc
7	nc	8	nc
9	P1 (coil group 1)	10	GND
11	P2 (coil group 2)	12	GND
13	P3 (coil group 3)	14	GND
15	P4 (coil group 4)	16	GND
17	Enable_motor	18	GND
19	Enable_motor	20	GND
21	/SENSOR	22	GND
23	Do not connect	24	GND
25	Do not connect	26	3.3V

6 GENERAL REMARKS

6.1 Connections

Before to use the motor, respect the power supply requirements. Be careful with this module because some plastic parts are glued together.

6.2 Opened questions

In any case of incertitude, don't hesitate to ask the laboratory responsible before to damage the system.

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