

RSD-SUNMAX — Stepping Motor Driver DIP Switch Settings

RSD-SUNMAX Series
SUNMAX LASER

About this document: This is an English translation of the Japanese original prepared by SUNMAX LASER for reference purposes. In case of any discrepancy, the Japanese original shall prevail. Specifications are subject to change without notice.

RSD-SUNMAX — Stepping Motor Driver DIP Switch Settings

This technical document explains the DIP switch settings of the stepping motor drivers used in the following RSD-SUNMAX series machines:

- RSD-SUNMAX-GS series
- RSD-SUNMAX-RS series
- RSD-SUNMAX-RD series

Under normal circumstances, there is no need to change the DIP switch settings. However, the switch positions may shift when the laser machine is relocated, or as a result of vibration during shipping or a strong impact.

If the DIP switches are set incorrectly, the following symptoms may occur:

- A. The travel distance differs from the data (the X and Y scale does not match the data).
- B. The stepping motor torque becomes weak and the motor loses synchronization (stalls) easily.
- C. The stepping motor overheats.

If any of the above problems occurs, check the DIP switch settings of the stepping motor drivers as described below.

Location

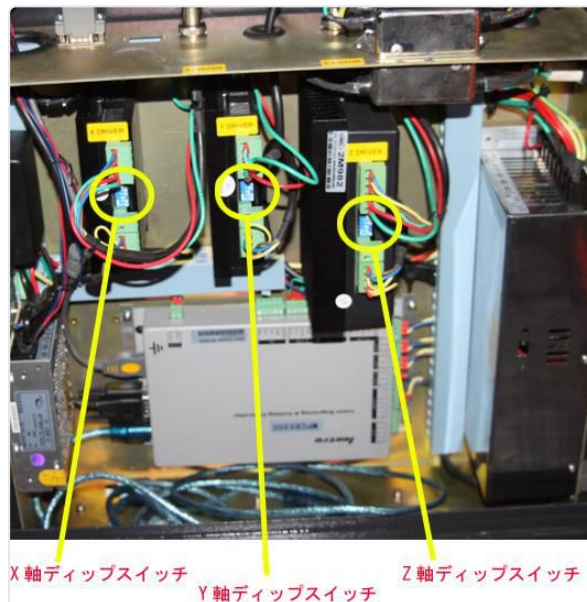
Open the lower door on the right side of the machine as viewed from the front.

Three black boxes are located toward the center as viewed from the right side of the machine. These are the stepping motor drivers for the X, Y, and Z axes, respectively.



Note that the mounting layout of the stepping motor drivers varies depending on the production lot of the machine. Labels indicating the X, Y, and Z axes are normally attached, so check these labels. If a label has peeled off, please contact us and we will check it for you.

Typical Layout Example



Depending on the production lot, one of the following four driver models is used for the X-axis and Y-axis drivers:

- 3ND583
- 3DM583
- 3DM580
- 3DM580S

The 3ND583 and 3DM583 are compatible and interchangeable with each other.

The 3DM580 and 3DM580S are compatible and interchangeable with each other.

Caution: Although all of these are functionally compatible, note that the wiring and the meaning of the DIP switches may differ between the 3ND583/3DM583 and the 3DM580/3DM580S.

Depending on the production lot, one of the following three driver models is used for the Z-axis driver:

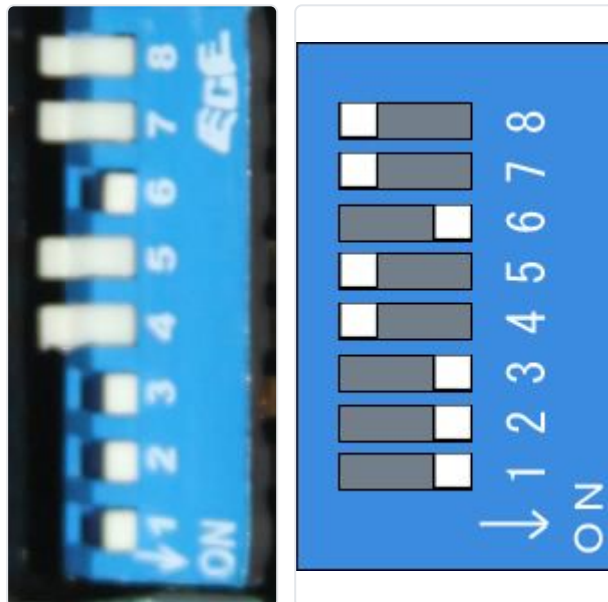
- 2M982
- DMA860H
- M860C

The DMA860H and M860C are compatible and interchangeable with each other.

Caution: Although all of these are functionally compatible, note that the wiring and the meaning of the DIP switches may differ between the 2DM982 and the DMA860H/M860C.

DIP Switches

The DIP switches look like the figure below.



The DIP switch block on the stepping motor driver is an 8-bit switch. Pushing a white switch toward the side marked with the numbers 1 to 8 turns it ON.

Setting Examples

Caution: These are examples only and may differ from your actual machine. If the machine is operating normally, do not change the settings.

X-Axis Stepping Motor Driver

3ND583 / 3DM583

SW	1	2	3	4	5	6	7	8
Setting	ON	ON	ON	OFF	-	ON	OFF	OFF

SW5 is not used. It may be set to either ON or OFF.

3DM580 / 3DM580S

SW	1	2	3	4	5	6	7	8
Setting	OFF	OFF	OFF	ON	-	ON	OFF	OFF

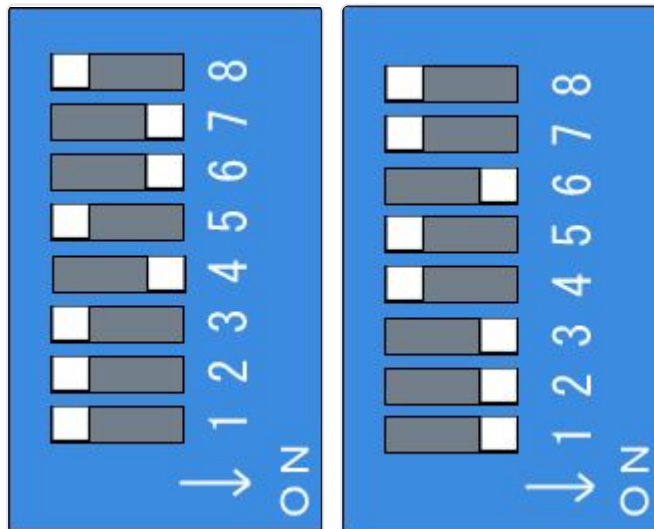
SW5 is not used. It may be set to either ON or OFF.

Y-Axis Stepping Motor Driver

3ND583 / 3DM583

SW	1	2	3	4	5	6	7	8
Setting	ON	ON	ON	OFF	-	ON	OFF	OFF

SW5 is not used. It may be set to either ON or OFF.



3DM580 / 3DM580S

SW	1	2	3	4	5	6	7	8
Setting	OFF	OFF	OFF	ON	-	ON	OFF	OFF

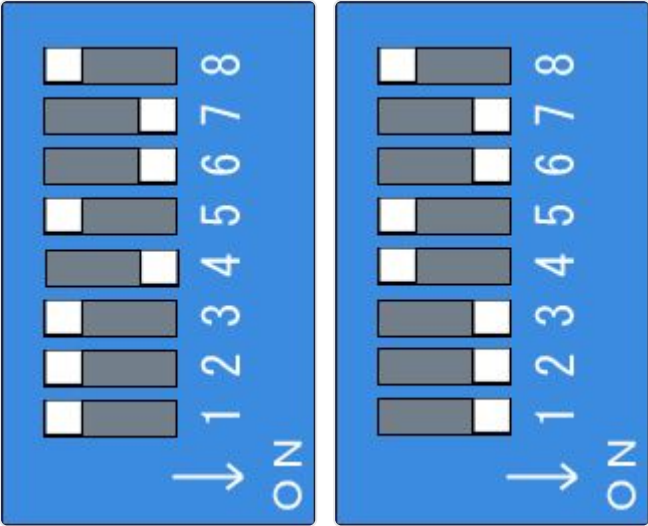
SW5 is not used. It may be set to either ON or OFF.

Z-Axis Stepping Motor Driver

2M982

SW	1	2	3	4	5	6	7	8
Setting	ON	ON	ON	-	OFF	ON	ON	OFF

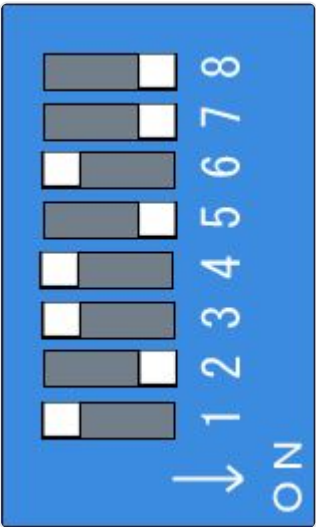
SW4 is not used. It may be set to either ON or OFF.



DMA860H / M860C

SW	1	2	3	4	5	6	7	8
Setting	OFF	ON	OFF	-	ON	OFF	ON	ON

SW4 is not used. It may be set to either ON or OFF.



Setting Reference

3ND583 / 3DM583

SW1 to SW3 set the drive current applied to the stepping motor. In general, a higher current produces more torque, but it also increases vibration during acceleration and deceleration, which can degrade the finish quality of the work.

Peak current [A]	RMS current [A]	SW1	SW2	SW3	SW4
2.1	1.5	OFF	OFF	OFF	OFF
2.5	1.8	ON	OFF	OFF	OFF
2.9	2.1	OFF	ON	OFF	OFF
3.2	2.3	ON	ON	OFF	OFF
3.6	2.6	OFF	OFF	ON	OFF
4.0	2.9	ON	OFF	ON	OFF
4.5	3.2	OFF	ON	ON	OFF
4.9	3.5	ON	ON	ON	OFF
5.3	3.8	OFF	OFF	OFF	ON
5.7	4.1	ON	OFF	OFF	ON
6.2	4.4	OFF	ON	OFF	ON
6.4	4.6	ON	ON	OFF	ON
6.9	4.9	OFF	OFF	ON	ON
7.3	5.2	ON	OFF	ON	ON
7.7	5.5	OFF	ON	ON	ON
8.3	5.9	ON	ON	ON	ON

SW5 to SW8 set the resolution of the stepping motor (the number of pulses required for one full revolution of the motor shaft). If this value is not set correctly, the laser machine cannot plot the data accurately.

Resolution (steps/rev)	SW6	SW7	SW8
200	ON	ON	ON
400	OFF	ON	ON
500	ON	OFF	ON
1000	OFF	OFF	ON
2000	ON	ON	OFF
4000	OFF	ON	OFF
5000	ON	OFF	OFF
10000	OFF	OFF	OFF

3DM580 / 3DM580S

SW1 to SW3 set the drive current applied to the stepping motor. In general, a higher current produces more torque, but it also increases vibration during acceleration and deceleration, which can degrade the finish quality of the work.

Peak current [A]	RMS current [A]	SW1	SW2	SW3	SW4
default		OFF	OFF	OFF	OFF
2.5	1.8	ON	OFF	OFF	OFF
2.9	2.1	OFF	ON	OFF	OFF
3.2	2.3	ON	ON	OFF	OFF
3.6	2.6	OFF	OFF	ON	OFF
4	2.9	ON	OFF	ON	OFF
4.5	3.2	OFF	ON	ON	OFF
4.9	3.5	ON	ON	ON	OFF
5.3	3.8	OFF	OFF	OFF	ON
5.7	4.1	ON	OFF	OFF	ON
6.2	4.4	OFF	ON	OFF	ON
6.4	4.6	ON	ON	OFF	ON
6.9	4.9	OFF	OFF	ON	ON
7.3	5.2	ON	OFF	ON	ON
7.7	5.5	OFF	ON	ON	ON
8	5.7	ON	ON	ON	ON

SW5 to SW8 set the resolution of the stepping motor (the number of pulses required for one full revolution of the motor shaft). If this value is not set correctly, the laser machine cannot plot the data accurately.

Resolution (steps/rev)	SW6	SW7	SW8
default	ON	ON	ON
6400	OFF	ON	ON
500	ON	OFF	ON
1000	OFF	OFF	ON
2000	ON	ON	OFF
4000	OFF	ON	OFF
5000	ON	OFF	OFF
10000	OFF	OFF	OFF

2M982

SW1 to SW3 set the drive current applied to the stepping motor. In general, a higher current produces more torque, but it also increases vibration during acceleration and deceleration, which can degrade the finish quality of the work.

Peak current [A]	RMS current [A]	SW1	SW2	SW3
1.8	1.3	OFF	OFF	OFF
2.5	1.8	ON	OFF	OFF
3.5	2.5	OFF	ON	OFF
4.3	3.1	ON	ON	OFF
5.2	3.7	OFF	OFF	ON
6.0	4.3	ON	OFF	ON
7.0	5.0	OFF	ON	ON
7.8	5.6	ON	ON	ON

SW5 to SW8 set the resolution of the stepping motor (the number of pulses required for one full revolution of the motor shaft). If this value is not set correctly, the laser machine cannot plot the data accurately.

Resolution (steps/rev)	SW5	SW6	SW7	SW8
200	OFF	OFF	OFF	OFF
400	ON	OFF	OFF	OFF
500	OFF	ON	OFF	OFF
800	ON	ON	OFF	OFF
1000	OFF	OFF	ON	OFF
1200	ON	OFF	ON	OFF
1600	OFF	ON	ON	OFF
2000	ON	ON	ON	OFF
2500	OFF	OFF	OFF	ON
3200	ON	OFF	OFF	ON
4000	OFF	ON	OFF	ON
5000	ON	ON	OFF	ON
6400	OFF	OFF	ON	ON
8000	ON	OFF	ON	ON
10000	OFF	ON	ON	ON
12800	ON	ON	ON	ON

DMA860H / M860C

SW1 to SW3 set the drive current applied to the stepping motor. In general, a higher current produces more torque, but it also increases vibration during acceleration and deceleration, which can degrade the finish quality of the work.

Peak current [A]	RMS current [A]	SW1	SW2	SW3
2.40	2.00	ON	ON	ON
3.08	2.57	OFF	ON	ON
3.77	3.14	ON	OFF	ON
4.45	3.71	OFF	OFF	ON
5.14	4.28	ON	ON	OFF
5.83	4.86	OFF	ON	OFF
6.52	5.43	ON	OFF	OFF
7.20	6.00	OFF	OFF	OFF

SW5 to SW8 set the resolution of the stepping motor (the number of pulses required for one full revolution of the motor shaft). If this value is not set correctly, the laser machine cannot plot the data accurately.

Resolution (steps/rev)	SW5	SW6	SW7	SW8
400	ON	ON	ON	ON
800	OFF	ON	ON	ON
1600	ON	OFF	ON	ON
3200	OFF	OFF	ON	ON
6400	ON	ON	OFF	ON
12800	OFF	ON	OFF	ON
25600	ON	OFF	OFF	ON
51200	OFF	OFF	OFF	ON
1000	ON	ON	ON	OFF
2000	OFF	ON	ON	OFF
4000	ON	OFF	ON	OFF
5000	OFF	OFF	ON	OFF
8000	ON	ON	OFF	OFF
10000	OFF	ON	OFF	OFF
20000	ON	OFF	OFF	OFF
40000	OFF	OFF	OFF	OFF