

User Manual

DIGITAL SPEED INDICATOR

SID250

MOTOR

- Thank you for purchasing SPG MOTOR products.
Please read this user manual thoroughly before installing and operating the motor, and always keep the manual where it is readily accessible.

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1. Precautions

This User Manual classifies the grade of precautions into 「Warning」 and 「Caution」.

⚠ Warning • If this warning is ignored, death or injury may be caused by fire or electric shock.

⚠ Caution • If this Caution is ignored, injury or physical damage may be caused by electric shock or other accidents.

And even in the case of **⚠ Caution** it is likely that there happen serious results according to situations. Please keep a watchful eye on the precautions, in either case.

⚠ Warning • There is a live in the back of the Indicator. Put it in the case lest a third should touch it. Otherwise, electric shock may occur.

- Be careful for water not to spatter. Otherwise, electric shock may occur.
- Do not use your wet hand to touch it. Otherwise, electric shock may occur.
- Take it off when the installation, movement and wiring is conducted. Otherwise, electric shock may occur.
- Do not connect the indicator with other products than the applied controller motor, which causes fire, electric shock and device damage.

⚠ Caution • Do not convert this product. The conversion is beyond of our warranty, which may cause electric shock and fire.

- If this product needs repairing, contact us or our branch office in which you bought it.
- The indicator has no protective device. Install a protective device such as a preventive device against excess current, an earth leakage breaker, a protective device against excess temperature. Otherwise, fire may occur.
- Do not use in a place in which a lot of static electricity occurs, which may cause malfunction and the resulting injury.
- Check whether the product is the same as that described on the order. Injury and fire may occur.
- Do not put any combustible around the motor. Otherwise, a burn or fire may occur.
- Do not touch with your hands and body during or just after running. The surface of the motor has a very high temperature and thus you may have a burn.
- Do not ride the motor or hang on it. Injury may occur.
- Take it off as soon as a problem is found. Electric shock, injury, or fire may occur.
- Do not put any combustible around the body. Fire may occur.
- Do not use it in a place where inflammable gas and corrosive gas occur. Fire may occur.

- When this product is destroyed, it should be treated as an industrial waste.
- Do not touch the terminals when the test of insulation resistance or of insulation internal pressure is conducted. Electric shock and injury may occur.

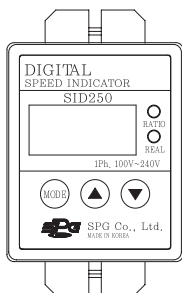
2. Checking the product

- ⚠ Caution** • Check whether the product is the same as that described on the order. If it is different, injury or fire may occur.

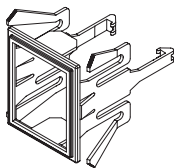
2.1 Checking whether the product is the same as that described on the order

Make sure that you have received all of the items listed below.

If an accessory is missing or damaged, contact the nearest SPG MOTOR office.



Body 1EA
(SID250)



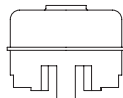
Adaptor for bracketing 1EA



Round socket 1EA



User manual 1 Copy



Socket Cover 1EA

- This is not a product that passes the standards for safety. When it is jointly used with a speed control motor that passes the standards for safety, the speed control motor is regarded as an exception to the standards for safety.

2.2 Applicable products

- UNIT Series
- SR Series
- SS Series
- X-TOR Series

※ See **6. Basic Power Wiring** on Page 8 for wiring.

3. Cautions before using

3.1 Cautions during installation

1. Do use it in a place where the ambient temperature is at 0°C~+40°C and the moisture is at lower than 85%. Avoid using it in a place where there are direct ray of light, moisture and something oily. If inevitable, use the cover.
2. Avoid using it in a place where there are a lot of vibration, dusts, inflammable gas, corrosive gas, and others.
3. The cover of the body is made of resin. So do not use the product in a place where there are methyl alcohol, organic solvent such as benzene thinner and ammonia, caustic soda, and strong alkaline materials.
4. Do not install the product in a place where there is a lot of noises in its surroundings, which may cause malfunction.
5. Ventilate or take other action when as the ambient temperature reaches over 40°C

3.2 Cautions during wiring

1. If it is jointly used with a device controlled in a high-capacity electric furnace or a thyristor for a welding machine, it may cause malfunction.
In this case, conduct the wiring after separating it from other power supply.
2. Use a cable more than AWG 18 (0.75mm²) for power supply, and a cable more than AWG 22 (0.325mm²) for input signal.
3. The work of installation, wiring, running and others should be conducted by a person with expertise on it. Otherwise, electric shock or injury may occur.
4. Do not wire the power and signal cables of the product on other power cable or in the same tube as that of the motor cable.
5. Separate the input signal cable more than 200mm from the inductive load such as the electromagnetic relay and wire the power cable or motor cable perpendicularly on it.
6. Insert the socket tightly. If the socket is not tightly inserted, malfunction or damage to the body may occur.

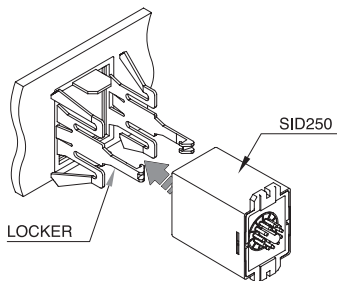
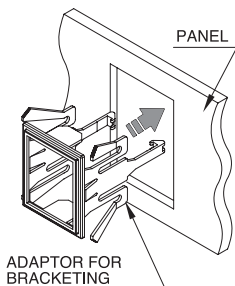
3.3 Cautions during running

1. Take it off when it stops for long.
2. It is impossible to use one set of indicator to connect multiple sets of motors.

⚠ Caution When the speed control motor is used (way of TG output), it may be that the motor rotates rapider than the set value by 3%~7%. Re-set the speed of the controller.

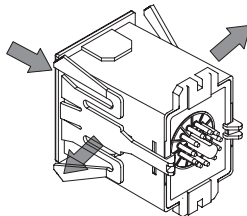
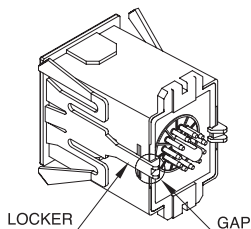
4. How to install

1. Insert the adaptor for bracketing in the panel.
Adaptor for bracketing
2. Insert SID250. A little widening of the area of the locker makes insertion easier.



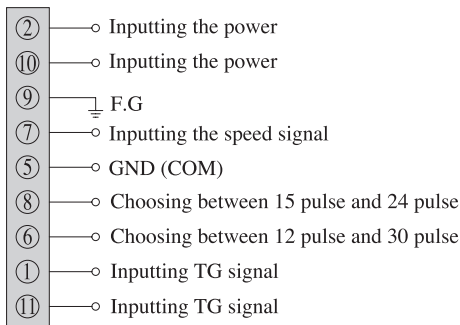
3. Insert the locker in the box of the backside SID250 and the gap of the cover.

※ If you want to separate SID250, loosen the area of the locker and then put it backward.



5. Names and functions of terminals

See the following figure for terminal wiring at the connecting parts.



5.1 Inputting the power

Single phase 100V~240V 50/60Hz, free voltage, is used for inputting the power.

5.2 F.G

Use the frame ground to earth to the box.

5.3 Inputting the speed signal

Connect the speed-out signal of the speed control pack or the controller (way of open collector).

5.4 GND (COM)

See **6. Basic Power Wiring** for use of the speed signal input terminal as signal ground.

5.5 Choosing between 15 pulse and 24 pulse; Choosing between 12 pulse and 30 pulse

The input of the pulse signal is chosen by means of the connection with the GND (COM) terminals of ⑥ and ⑧, and the open.

See **6. Basic Power Wiring** for wiring.

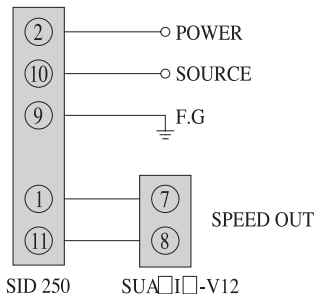
5.6 Inputting TG signal

Connect with the TG cable of the control motor. It is possible to use jointly with the applied controller.

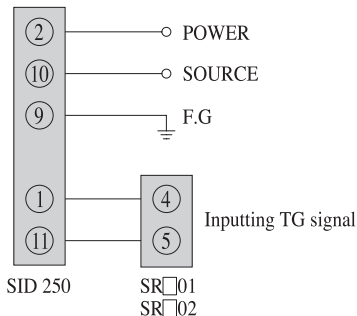
6. Basic power wiring

• See the User Manual of the applied speed controller for wiring.

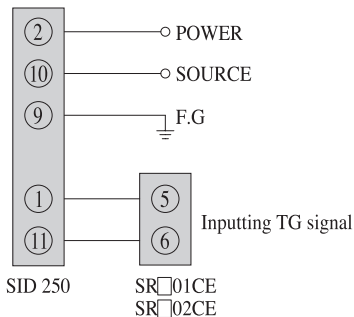
1. UNIT Series



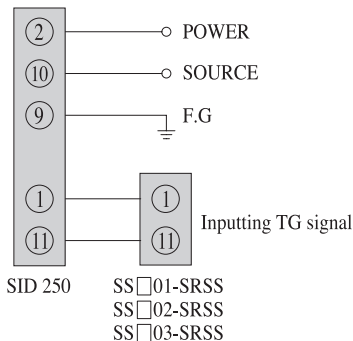
2. SR Series

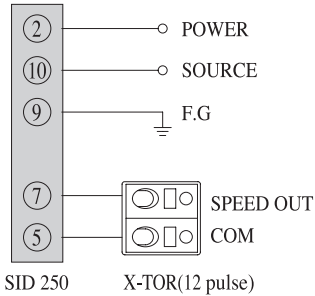
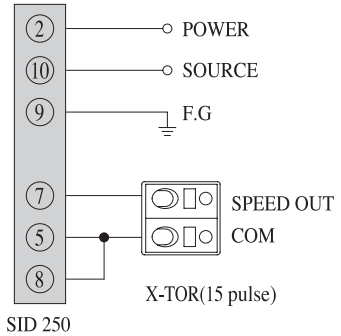
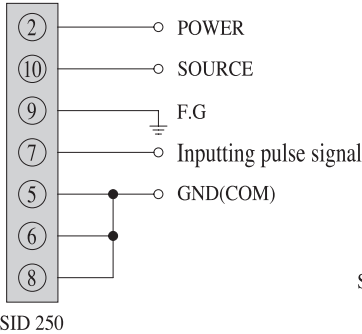
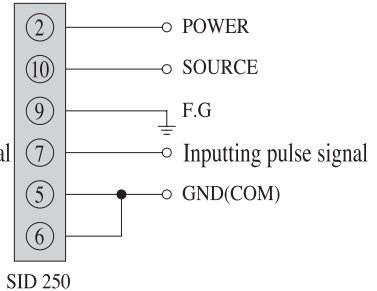


3. SR CE Series



4. SS Series



5. X-TOR Series (12 pulse/rotation)

6. X-TOR Series (15 pulse/rotation)

7. Inputting 24-pulse signal (Open Collector)

8. Inputting 30-pulse signal (Open Collector)


7. Descriptions of modes of motion

7.1 Ratio Mode (press the mode key to choose the “Ratio” mode.)

It is a display of the real speed of the motor; it is possible to calculate the speed of rotation of the output shaft and the carrier speed of the belt conveyer.

- (1) The set value of ratio of deceleration of the gear (when it is displayed in agreement with the speed of rotation of the output shaft of the gear head)
 (“Real” Displayed Value = Rotation Speed of Motor * Set Value of Ration of Deceleration of Gear)
 See **9. Table of ratio of deceleration** on Page 13.

1.000 ↔ 3 ↔ ... ↔ 100 ... ↔ 202 ... ↔ 1000 ... ↔ 2515

Ex) Because the ratio of deceleration of our company’s gear head is memorized, use the key ↑ or ↓ to choose the value.

- (2) The set value of multiplication magnification (when it is displayed in agreement with the carrier speed of the belt conveyer)
 (“Real” Displayed Value = Rotation Speed of Motor X Set Value of multiplication magnification)

Ex) Because the multiplication magnification is set ranging from 0.005 to 0.999, use the key ↑ or ↓ to set the value.)

1.000 ↔ 0.995 ↔ ... ↔ 0.015 ↔ 0.010 ↔ 0.005 (At intervals of 0.005)

7.2 Real Mode (press the mode key to choose the “Real” mode.)

The real mode is displayed by means of the multiplication of the real rotation speed to the displayed magnification.

- In the case of the displayed magnification 1,000, it is chosen at intervals of 5 rpm.

Ex) 0 ↔ 5 ↔ 10 ↔ ... ↔ 90 ↔ 95 ↔ 100 ↔ ... ↔ 1400 ↔ ... ↔ 1700 rpm

- In the case of other magnifications than 1,000, it is displayed according to the set values of the displayed magnification of the ratio mode.

Ex) The set value of the ratio of deceleration of the gear = 3

It is chosen at intervals of 5*3 rpm. The values lower than the second digit of decimal points is discarded.

0 ↔ 1.6 ↔ ... ↔ 29.9 ↔ 31.6 ↔ 33.3 ↔ ... ↔ 466.6 ↔ ... ↔ 566.6 rpm

Ex) The set value of multiplication magnification = 0.500

It is chosen at intervals of 5X3 rpm. The values lower than the second digit of decimal points is discarded.

0 ↔ 1.6 ↔ ... ↔ 29.9 ↔ 31.6 ↔ 33.3 ↔ ... ↔ 466.6 ↔ ... ↔ 566.6 rpm

7.3 Checking 12-pulse, 15-pulse, 24-pulse, or 30-pulse

Press the mode key to choose, and you can identify whether 12-pulse, 15-pulse, 24-pulse, or 30-pulse is chosen.

LED Display	Descriptions
12	Choosing the 12-pulse key to wire
15	Choosing the 15-pulse key to wire
24	Choosing the 24-pulse key to wire
30	Choosing the 30-pulse key to wire



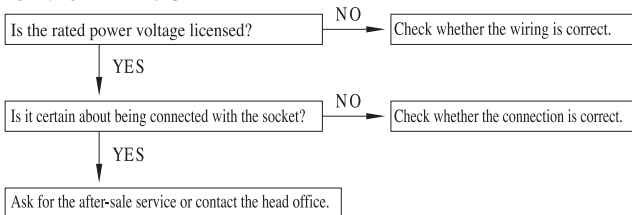
Caution Although power is licensed only on the electromagnetic brake, in the case of the electromagnetic brake speed control motor, it is possible that the rotation speed is displayed. Take action such as taking off power in advance, if the rotation speed is incorrectly displayed.

8. Reasons of hitch and resolutions

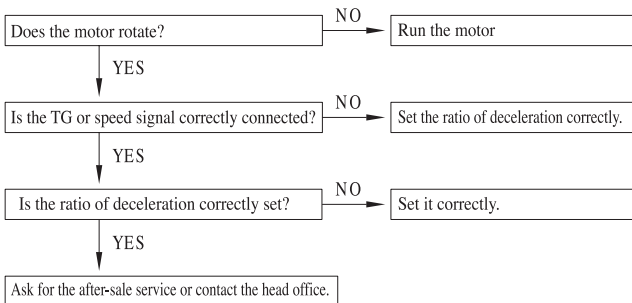
If the product has mechanical problems, conduct the resolutions for check according to the following figure.

If you find so, contact the branch or head office.

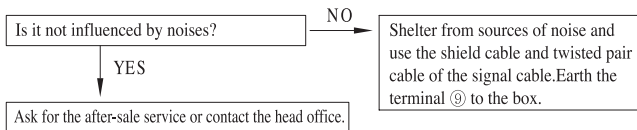
1. When the LED is off



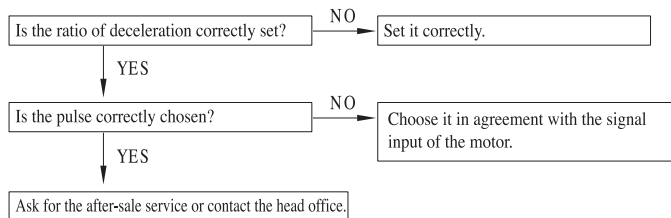
2. When the rotation speed does not change



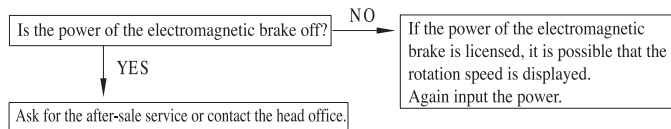
3. When the rotation speed is displayed in a unstable way



4. When the displayed value of rotation disagrees with the real value of rotation



5. When the rotation speed is displayed while the machine stops



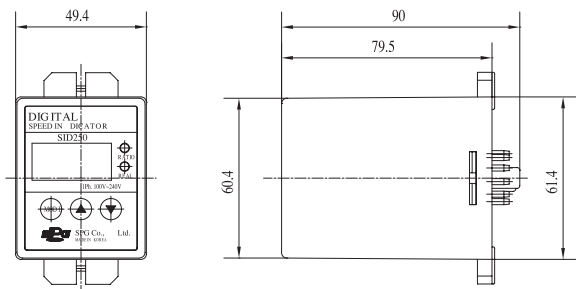
9. Table of the ratio of deceleration

Set the value after considering that there may be some gap between the real and nominal ratios. (But, the X-TOR Series of decelerator for BLDC has the same real and nominal ratios.)

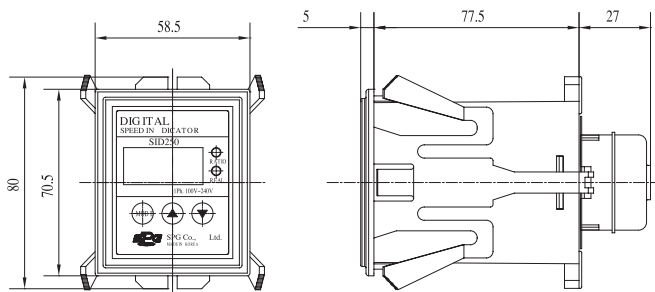
Nominal ratio of deceleration	Real ratio of deceleration							Mid-head gear
	□606W	□7015W	□8015W	□8025W	□9040W	□9060W	□9090W	
3	3.00	3.00	3.00	3.00	3.00	3.00	3.00	10
3.6	3.60	3.59	3.57	3.57	3.60	3.60	3.60	
5	5.00	5.00	5.00	5.00	5.00	5.04	5.04	
6	6.00	6.00	6.00	6.00	6.03	6.00	6.00	
7.5	7.50	7.50	7.50	7.50	7.50	7.50	7.50	
9	9.00	9.00	9.00	9.00	9.00	9.00	9.00	
10	10.00	10.29	10.00	10.00	10.00	10.00	10.00	
12.5	12.50	12.14	12.50	12.50	12.50	12.50	12.50	
15	15.00	15.00	15.00	15.00	15.00	15.00	15.00	
18	18.00	17.92	18.08	18.08	17.67	18.00	18.00	
20	19.90	20.00	20.00	20.00	20.00	20.19	20.19	
25	25.06	24.80	25.00	25.00	24.73	25.00	25.00	
30	30.25	30.00	30.00	30.00	30.00	30.00	30.00	
36	36.30	36.00	36.00	36.00	36.00	36.00	36.00	
40	40.80	40.36	40.11	40.11	40.36	39.68	39.68	
50	50.00	50.00	50.00	50.00	50.00	50.00	50.00	
60	60.00	60.00	60.00	60.00	60.00	60.00	60.00	
75	75.00	75.00	75.00	75.00	75.00	76.02	76.02	
90	90.00	90.67	90.00	90.00	90.00	90.00	90.00	
100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	
120	120.0	118.0	120.0	120.0	120.0	120.0	120.0	
150	150.0	154.0	150.0	150.0	150.0	149.9	149.9	
180	180.0	181.2	180.0	180.0	180.0	179.8	179.8	
200	198.9	194.8	200.0	200.0	201.8	197.2	197.2	
250	251.5	-	-	-	-	-	-	

10. Drawing of Appearance

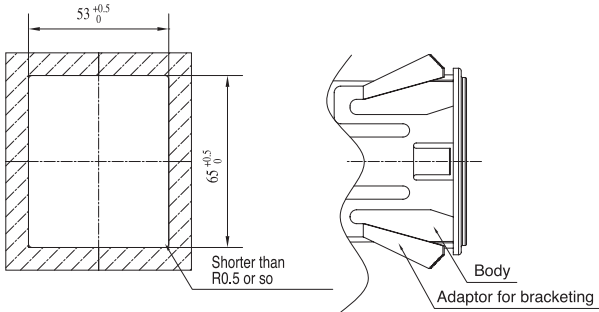
■ Body of the digital speed indicator



■ When the adaptor is bracketed



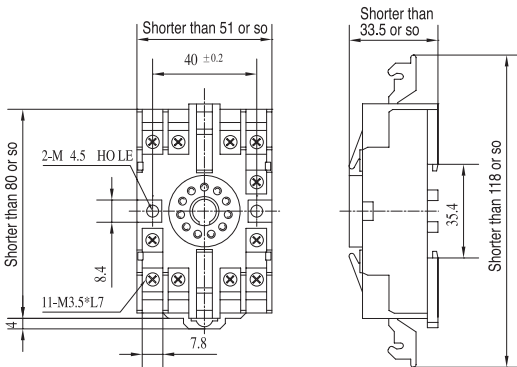
- Panel process criterion[unit : mm]
(PANEL THICKNESS : 1mm~3.2mm)



11. Option

- Socket for bracketing the DIN rail (additionally sold)

Product name: SB11-H



12. Specifications

Items	Specifications
Rated input power	Single phase 100V~240V 50/60Hz
Range of permitted input power	Single phase 85V~264V 50/60Hz
Current consumption	0.1A
Speed of rotation	4-DIGIT
Ratio of set deceleration	116 types and multiplication magnification (0.005 unit)
Ambient temperature	0°C ~ 40°C
Weight	About 200g
Insulation resistance	Higher than M Ω is the value measured with the 500V megger, between the power input terminal and FG, between the power input terminal and the case, and between the case and the FC terminal, at room temperature and in constant moisture.
Insulation internal pressure	Although 1500V 50/60Hz is licensed for one minute between the power input terminal and FG, between the power input terminal and the case, and between the case and the FC terminal, at room temperature and in constant moisture, it will present no problem.

21C, for world geared motor !



SPG Co., Ltd

<http://www.spg.co.kr>

■ HEAD OFFICE

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※ The product of specification or appearance can be changed without any announcement to customers caused by the reason, developing of the function.

Futher details are required, please contact to R&D or sales dept of sales branch office.