DEGSON

Inductive Proximity Sensors

User Manual

Thank you for choosing Degson products. Please read this manual carefully before using the product.

For your convenience, please keep this manual properly so that you can refer to it at any time.

symbol

The following symbols are important reminders in this manual. Please be sure to comply with the following.

	There is a risk of malfunction or fire. Please do not exceed the rated voltage when using.
	Do not use AC power as there is a risk of rupture.
	There is a risk of burns due to high temperatures.

Safety Tips

The following contents are necessary to ensure safe use, please be sure to comply.

- Do not use in an environment with flammable, volatile or explosive gases. Do not disassemble, repair or modify this product. About power
- supply voltage:
  Do not use the product beyond the specified voltage. If you use a voltage higher than the rated voltage or apply AC power to a product that can only use DC power, it may cause the product to explode or burn.
- For short circuit at load end:
  Do not short-circuit the load. Do not connect the load end directly to the power supply. Otherwise, the product may explode or burn.
- About wiring:
  Do not make mistakes such as mistaking the power polarity or miswiring. Otherwise, the product may explode or burn.
- Regarding wiring when there is no load:
  If the power is turned on without connecting a load, there is a risk of internal components rupturing or burning, so please connect the wires and turn on the power after connecting a load.

Instructions for use

- Do not use in the following places:
  Outdoor places with direct sunlight, rain, snow, water drops, etc.
  Chemicals, especially in solvent and acid vapor environments.
  In the presence of corrosive gases.
- When used near mobile phones, transceivers, etc., the proximity switch may malfunction, so please be careful.
- When mixed with high-voltage wires and power wires in the same wiring conduit or wiring trough, malfunction or damage may occur due to induction. Please separate or wire separately.
- Regarding cleaning work:
  Do not use solvent cleaners as they may melt the product surface.
- fixed:
  Please set the tightening torque of the fixing screws to no more than 0.95N·m.
- Influence of surrounding metal:
  If there is metal around, it may cause a reset failure, etc. Even if there is no reset failure, the detection distance may change due to the surrounding metal or temperature changes.

Confirmation of packaging contents

- Inductive Sensors one
- User Manual one

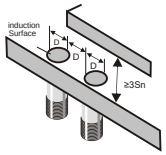
Installation

Proximity sensors can be divided into embedded type and non-embedded type according to the installation method. The embedded type can be used in metal. The non-embedded type cannot be used in metal, but the operating distance is longer than the embedded type.

Embedded

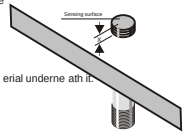
The sensing surface of the sensor can be flush with the metal surface when it is installed.

The distance from the switch surface to the metal object opposite it must be ≥3Sn and th e distance between two adjacent switches must be



Quasi-buried

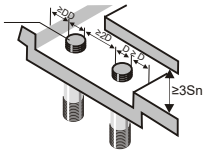
There needs to be a distance from the sensing surface to the mounting surface that is free of magnetic conductive material. When this condition is met, the switching distance is effectiveand unrestricted. Dimension "X" (see figure on the right) refers to the minimum distance from the sensing surface to the magnetic conductive mat erial underne ath it.



Non-flush

They can be identified by their heads. The area around the non-flush sensing surface has no metal housing. The distance from the Sensing surface sensing surface to the metal mounting medium must be ≥2Sn.

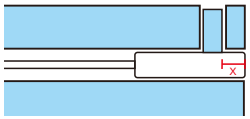
The distance from the sensing surface to the opposite metal object must be ≥3Sn.he distance between the other two adjacent proximity switches must be ≥2d.



Installation torque

Cylindrical

1. Use one screw to fix the sensor head at a position 7mm from the top for φ3/3.4/4;
2. For φ6.5 embedded type, fix the sensor head with one screw at a position 8mm from the top;
3. For φ6.5 non-embedded type, fix the sensor head with one screw at a position 12 mm from the top.



φ3/φ3.4/φ4: X=7mm φ6.5: X=8~12mm

Thread Type

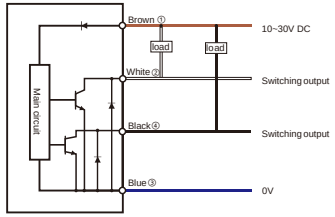
When installing threaded sensors, do not exceed the tightening torque listed in the table below.

model	Tightening torque N
M4*0.5	1.5
M5*0.5	1.5
M8*1	3.5
M12*1	16
M18*	28
M30*1.5	150

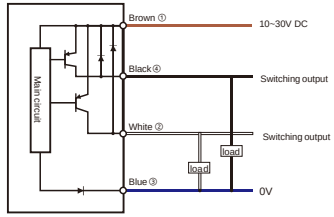
Output method

DC 4-wire

NPN

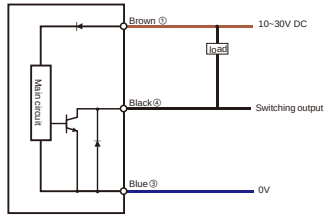


PNP

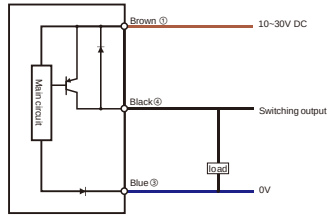


DC 3 lines

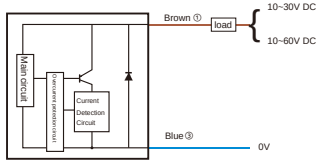
NPN



PNP



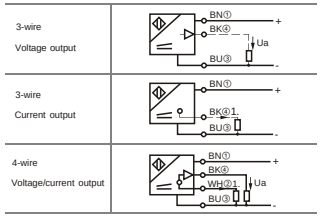
DC 2 lines



The load can also be connected between the blue wire and the negative pole of the power supply.

The M8 sensor does not include short circuit protection or current sensing circuitry. 1 and 4 in the wiring diagram show the connectortype's pinnumbers.

Analog



Connector type hole configuration

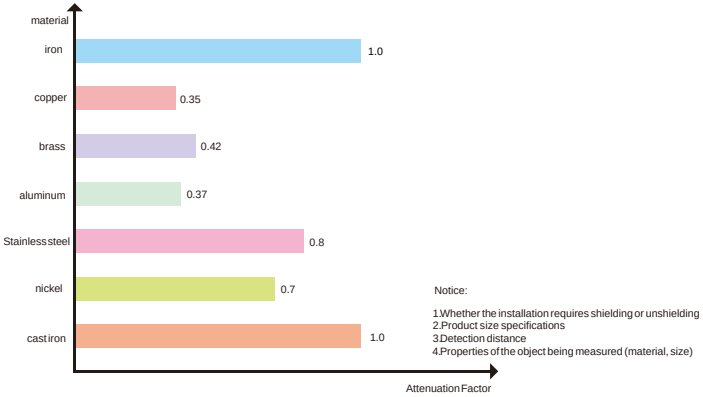
① and ④ in the wiring diagram indicate the hole numbers of the connector type.

M12 4-core

M8 3-core

Inductance attenuation coefficient

Detection distance = standard detection distance * attenuation factor



Notice:

1.Whether the installation requires shielding or unshielding
2.Product size specifications
3.Detection distance
4.Properties of the object being measured (material, size)

Capacitor relative dielectric constant

For capacitive sensors, the sensing distance and sensitivity are different for objects with different dielectric constants. The larger the dielectric constant of the material, the greater the sensing distance that can be obtained.

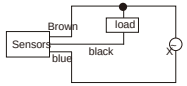
Table of dielectric constants of common materials

Material	Dielectric constant
Air	1
wood	2~7
Paper	2.3
polypropylene	2.3
Soft rubber	2.5
ceramics	4.4
Glass	5
water	80

Power Distribution Considerations

Supply voltage

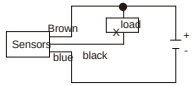
Do not use the product beyond the voltage range. Inputting voltage beyond the range or inputting AC power to a DC power type may cause the product to rupture or burn out.



Load short circuit

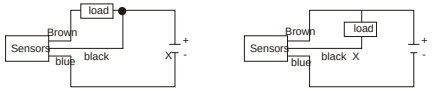
Do not short-circuit the load to avoid rupture or burning.

The load short-circuit holding function is a function used within the rated voltage with the correct polarity of the power supply.



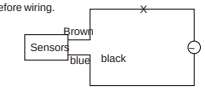
Miswiring

Do not mismatch the polarity of the power supply, as this may cause rupture or burning.



When no load is connected

If the power supply is directly connected to the internal element without load, it may cause cracking or burning. Therefore, please add load before wiring.



Regular maintenance inspection

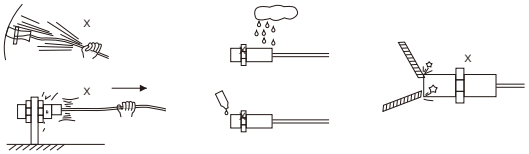
Proximity switches can maintain permanent life and stability under correct use, so regular inspection and maintenance during use is very necessary to ensure the normal operation of the machine. Regular inspection items are as follows:

- When detecting an object, check whether the switch is within the distance, whether it is loose, whether it is tilted,
- whether the detected object has changed. Check whether the wiring or connecting wires are in normal contact or there is no concern about disconnection.
- Check whether there is metal powder accumulation on the sensing surface.
- Check whether the operating temperature and surrounding environment are normal.
- Check the installation space for any abnormalities, such as vibration, electrical leakage, etc.

other:

After power is turned on, the switch needs a lead time of 100ms. In order to achieve stable output of the switch, please do not operate the switch during this period. Avoid using it outdoors (except when there is a shelter).

- Avoid direct contact with organic solvents.
- Avoid objects hitting the detection surface, as the sensing surface is very fragile.
- Do not pull or move the power supply excessively during installation or movement.



Precautions

- Please make sure to turn off the power before wiring.
- Please confirm that the power supply voltage varies within the rated range.
- If the power is provided by a commercial switching regulator, make sure that the frame ground terminal (FG) of the power supply is connected to ground. Be sure to connect the equipment ground terminal (FG) to ground.
- Do not use the device within a short period of time (0.5s) after the power is turned on.
- Do not run the wiring together with high voltage or power lines or in the same conduit as this may cause malfunction due to induction.
- Avoid dust, dirt and water vapor.
- Do not put the sensor in direct contact with water, oil, grease or organic solvents such as thinners.

Product Commitment

Degson's products undergo strict factory inspection. If a fault occurs, please contact the nearest Degson office and provide detailed information so that we can solve it as soon as possible.

Warranty

- The product warranty period is one year, starting from the date the product is shipped to the place designated by the purchaser.

Warranty coverage

(1)If a fault occurs during the warranty period stated above and caused byDegson,Degson will repair the product free of charge. However, the following situations are not covered by the warranty.

- Failure caused by improper operation or improper use under the conditions or environment not specified in the operating instructions, user manual or technical requirements specially agreed upon between the purchaser and Degson.
- The failure is not due to a product defect but is caused by the design of the purchaser's equipment or software.
- The failure is caused by modification or repair performed by someone other than Degson
- Failures that can be completely avoided by properly repairing or replacing wearing parts according to the operating instructions or user manual.
- After the product is shipped from Degson, it is caused by unforeseen changes in the level of science and technology and other factors
- Degson Corporation is not responsible for faults due to natural disasters such as fires, earthquakes, and floods, or external factors such as abnormal voltages

(2)The warranty covers only the situations specified in Article(1).Degson shall not be liable for any indirect losses (damage to equipment, loss of opportunity, loss of profits, etc.) or other losses caused to the purchaser by its equipment.

Product Suitability

Degson's products are designed and manufactured as general-purpose products for general industries. Therefore, Degson's products must not be used for the following applications and are not suitable for their use. However, if the purchaser consults Degson in advance about the use of the product with a responsible attitude and understands the technical specifications grades and performance of the product, and takes necessary safety measures, the product can be used. In this case, the product warranty scope is the same as above.

- Uses that may result in chemical contamination or electrical interference,or use under conditions or environments not described in the product catalog,instruction manual, etc.
- Atomic power control equipment, incineration equipment, railway, aviation, vehicle equipment, safety devices, and administrative agencies and equipment manufactured in accordance with the regulations of individual industries.
- Machinery, systems and devices that may endanger life or property.
- Gas, water, and electricity supply systems require highly reliable equipment that operates continuously 24 hours a day.