Akusense

Ultrasonic sensors

MD18 series

V1.0

User's manual

Thank you for choosing Akusense products. Please read this manual carefully before using the product. For your convenience, please keep this manual in a safe place so that you can refer to it at any time.

PROPER USAGE

- The following functional principles must be observed when using this Akusense product.
- Reflective analog output.
  Reflective type analog output ultrasonic sensors can be controlled externally via teach or IO-Link interface, and synchronous mode can be selected if several reflective sensors are used next to each other. In synchronous mode, all sensors emit ultrasonic pulses at the same time, and the object detection range may be extended as a result.
- Safety precautions.
  - These operating instructions are part of the product and should always be kept intact for the duration of use.
  - Please read the operating instructions carefully before using the product.
  - Installation, operation and maintenance of this product should only be performed by trained personnel.
  - Do not alter or modify the product.
  - Protect the product from contamination during operation.
  - In accordance with the EU Directive on non-safe parts of machinery.

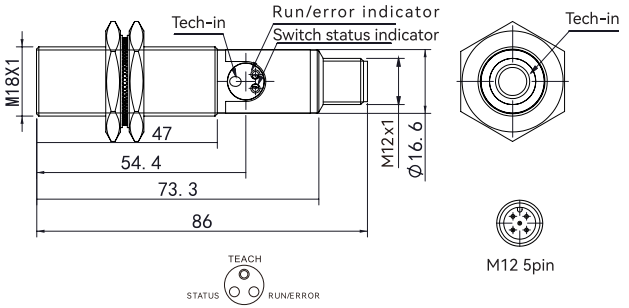
PACKAGE CONTENT CONFIRMATION

- Sensor 1 piece
- Instruction manual 1 piece

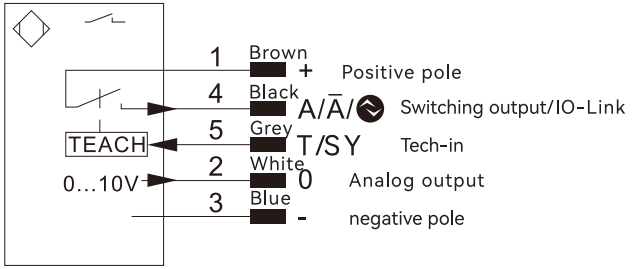
TECHNICAL SPECIFICATIONS

Model	MD18-35V
Detection method	Diffuse
Work range	50~400mm
Detect range	350mm
Repetition accuracy	1mm
Linearity error	5mm
Resolution	0.1mm
Ultrasonic frequency	300 kHz
Opening angle	<12°
Service life(Tu=+25℃)	100000h
Switching lag	2mm
Supply voltage	18~30VDC
Current consumption(Ub=24V)	<30mA
Switching frequency	20Hz
Response time	25ms
Temperature Range	-25~60℃
Switching output meter type	Single circuit PNP
Switching output voltage drop	<2.5V
PNP Switching current at the switching output	100mA
Analog Outputs	0~10V
Synchronous mode	Up to 40 sensors
Short circuit/reverse polarity/overload protection	Yes
Lockable	Yes
Interface	IO-Link
IO-Link type	1.0
Protection category	III
Adjustment method	Key Instruction / External Instruction
Material	Stainless Steel
All-cast type	Yes
Protection level	IP67
Interface Type	M12*1;5针
PNP NC/NO(switchable)	Yes

SIZE CHART



WIRING DIAGRAM



INSTALLATION INSTRUCTIONS

- The installation and operation of the sensor must be carried out in strict compliance with the corresponding electrical and mechanical regulations and safety regulations.
- The sensor must be protected against mechanical damage.
- This product must be installed well so that the installation position does not change。
- Ensure that this sensor is mounted in a way that is mechanically safe.
- If the object has a smooth surface, the angle between the axis of the acoustic wave and the surface of the object should be 90° ± 3°. Assuming the object has a rough surface, the angle can be larger.
- There must be no other objects under the working area.
- There must be no other objects under the working area.
- The sensor sensing surface must not be in contact with any other mechanical parts.

Demonstration and teaching functions

Note: Only valid for switching output status, cannot teach analog output value

P1: Closer to the sensor position; P2: Farther from the sensor position

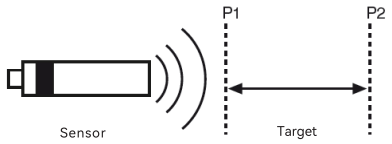
1.Fix the sensor position, and ensure that the distance between the target is within the effective range, the normal state after power on is green LED light is always on.

2.Long press the teaching key for about 5s (or connect the teaching cable to the positive side of the power supply), until the yellow LED light begins to flash slowly.

3.Move the target to the near end of the sensor, short press the teaching key (or touch the teaching cable to the positive side of the power supply), the time should be less than 1s, at this time the yellow LED flashes quickly to obtain the P1 position.

4.Move the target to the far end of the sensor, short press the teach key (or the teach line touch the positive power supply), the time should be less than 1s, at this time the yellow LED no longer flashing, get P2 position.

5. First teach P1 position and then teach P2 position will output normally closed signal, first teach P2 position and then teach P1 position will output normally open signal



Locking function

Connect the teaching line all the way to the positive terminal of 18V-30V power supply the sensor will be in the locked state, if you need to unlock, you should use the, teaching line to teach, otherwise the button is not available.

IO-Link Function

A type port IO-Link master station must be used, and the 5th pin cannot be connected

- External teaching
- Disable teach key/lock
- NO/NC switch
- Sound cone adjustment
- Temperature interface
- Filter settings
- Restore default settings
- Switch value hysteresis adjustment

Error condition (red LED on)

- The reflected sound wave is too small
- The target within the detection range is too small, or the target is a highly absorbing object wrong installation method
- The target object is not within the effective range
- Strong ultrasonic source interference within the range of the acoustic axis
- Strong air turbulence

PRODUCT COMMITMENT

Akusense products undergo strict factory inspection. In case of malfunction, please contact your nearest Akusense office with details of the malfunction so that it can be resolved for you as soon as possible.

Warranty Period

- The product warranty period is one year from the date the product is sent to the location specified by the purchaser.

Warranty Coverage

(1) If there is a failure caused by Akusense within the above-mentioned warranty period, Akusense will repair the product free of charge. However, the following conditions are not covered by the warranty.

- Failure to comply with the conditions specified in the operating instructions, user instructions or technical requirements specifically agreed between the purchaser and
- Akusense, improper operation under the environment, or incorrect use may be a malfunction.
- The failure is not caused by a product defect, but by the purchaser's equipment or the purchaser's software design.
- Failure caused by modification or repair by non-Akusense personnel.
- Failures that can be completely avoided by correct maintenance or replacement of wearing parts in accordance with the operating instructions or user instructions.
- After the product is shipped from Akusense, failures caused by unforeseen changes in the level of science and technology and other factors.

Akusense is not responsible for the warranty for failures caused by natural disasters such as fires, earthquakes and floods, or external factors such as abnormal voltages.

(2) The scope of the warranty is limited to the conditions specified in Article (1), and Akusense shall not be liable for any indirect losses (equipment damage, loss of opportunity, loss of profit, etc.) or other losses caused by the purchaser of its equipment.

Product suitability

Akusense products are designed and manufactured for general use in the general industry. Therefore, Akusense products shall not be used and are not suitable for the following applications. However, the products may be used if the purchaser has consulted Akusense in advance about their use in a responsible manner and is aware of the technical specifications, rating and performance of the products, and has taken the necessary safety measures. In this case, the product warranty coverage is the same as above.

- Applications with potential chemical contamination or electrical hazards or under conditions and environments not specified in catalogs, instruction manuals, etc.
- Atomic force control equipment, incineration equipment, railway, aviation, vehicle equipment, safety devices, and equipment manufactured by administrative agencies and according to the regulations of individual industries.
- Machinery, systems, and devices that may endanger life and property.
- Equipment requiring high reliability, such as 24-hour continuous operation systems for gas, water, and electrical supply systems.