Siman

**SMW-15mm wave radar**

SMW-15 can detect various workpieces, is not limited by the installation site, and can be installed in various scenarios. The detection performance is more reliable and the use is more convenient.

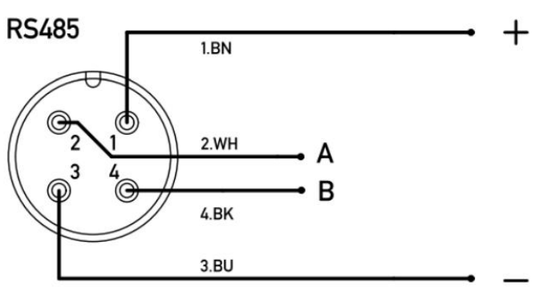
The SMW-15 series sensors feature dual-channel switch and analog outputs, compatible with RS485 and NPN/PNP interfaces. With a 15-meter measurement range, strong anti-interference capability, and ultra-high precision, they deliver stable performance and excellent cost-effectiveness. These sensors are ideal for high-precision applications including grain silo level detection, ore height measurement, liquid level monitoring, and industrial safety surveillance.

To view more product information, log in to www.siman.asia

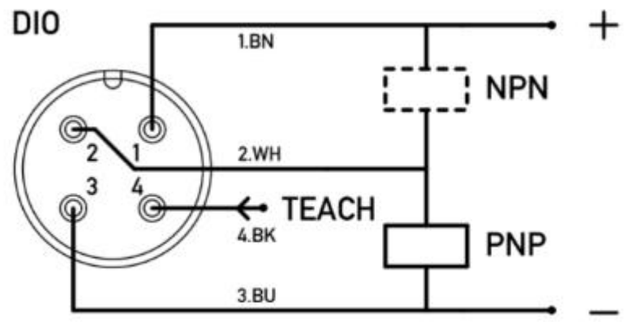
| | |
|---|---|
| warn | Follow the equipment usage guidelines! This product is not a safety sensor and cannot be used for personnel protection. |
| | ➢ This product has no explosion-proof structure, and it is forbidden to use in flammable and explosive environment.<br>➢ Do not remove this product.<br>➢ Be sure to turn off the power before operating. Do not connect wires while powered on!<br>1. Avoid use in dust/steam or corrosive gas environment;<br>2. Where corrosive gases are generated;<br>➢ Do not use this product in water.<br>➢ When used outdoors, pay attention to adding a waterproof cover. |

**Pin definition**

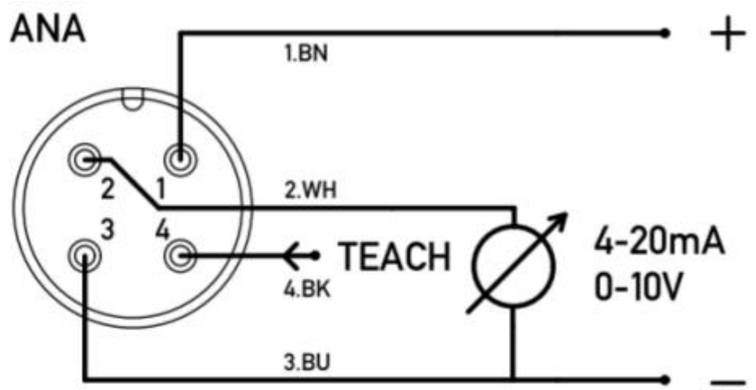
| pin | Definition / Wire color | customer interface |
|---|---|---|
| 1 | + ( palm ) | External power (9-30V) |
| 2 | - ( Lan ) | External power negative |
| 3 | B ( black ) | 485B |
| 4 | A ( white ) | 485A |



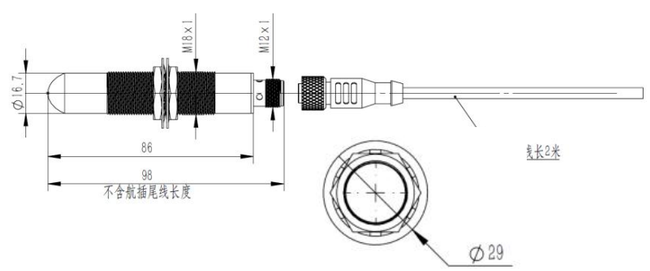

| pin | Definition / Wire color | customer interface |
|---|---|---|
| 1 | + ( palm ) | External power (9-30V) |
| 2 | - ( Lan ) | External power negative |
| 3 | TEACH ( black ) | Learning Line |
| 4 | NPN/PNP (White) | NPN/PNP |




| pin | Definition / Wire color | customer interface |
|---|---|---|
| 1 | + ( palm ) | External power (9-30V) |
| 2 | - ( Lan ) | External power negative |
| 3 | TEACH ( black ) | Learning Line |
| 4 | 4-20mA/0-10V (White) | 4-20mA/0-10V |




product size ：




Specifications:

| # | model | SMW-15P | SMW-15N | SMW-15D | SMW-15A |
|---|---|---|---|---|---|
| 1 | range | 0.2m ~ 15m | | | |
| 2 | Distance measurement frequency | 40～120Hz(110Hz@5m，85Hz@10m，40Hz@15m) | | | |
| 3 | absolute accuracy | ±5mm | | | |
| 4 | repeatability precision | 1mm | | | |
| 5 | angle | ±8° | | | |
| 6 | input voltage | 9～30VDC | | | |
| 7 | peak point current | 35mA@24V | | | |
| 8 | average current | 25mA@24V | | | |
| 9 | Average Power Consumption | <0.6W | | | |
| 10 | communication mode | PNP | NPN | RS485 | 4~20mA |
| 11 | levels of protection | IP67 | | | |
| 12 | Dimensions (length x width x height) | M18*98mm | | | |
| 13 | weight | 64g | | | |
| 14 | working temperature | -20℃-+55℃ | | | |
| 15 | Cable Specifications | 0.2mm M12 aviation-grade 4-core PVC cable, 2m length (customizable) | | | |
| 16 | Customize range | Supports customized output protocols | | | |

**Switch PNP/NPN output**

Before powering on, connect the teach line to +. The red light will remain on until the teach line is released, indicating successful NPN setup. If connected to-, the green light will stay on until the line is released, confirming successful PNP setup. The blinking light indicates the subsequent output type.

After powering on the product, the LED flashes to indicate the output type: red flashes for NPN and green flashes for PNP.

contact us:


Siman

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Phone: 0371-63383997


Order Model List:

| model | range | communication interface |
|---|---|---|
| SMW-15P | 0.2...15m | PNP |
| SMW-15N | | NPN |

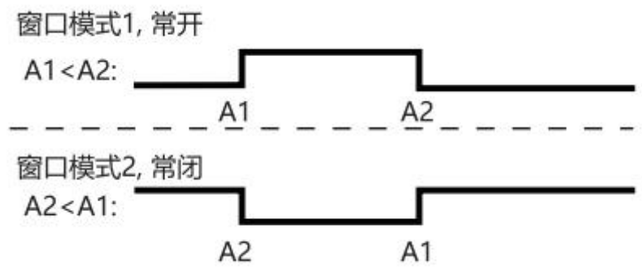
| | | |
|---|---|---|
| SMW-15D | | RS485 |
| SMW-15A | | 4~20mA |

**Switch PNP/NPN switch output**

Before powering on, connect the teach line to +. The red light will remain on until the teach line is released, indicating successful NPN setup. If connected to-, the green light will stay on until the line is released, confirming successful PNP setup. The blinking light indicates the subsequent output type.

After powering on the product, the LED flashes to indicate the output type: red flashes for NPN and green flashes for PNP.

**Set distance measurement parameters:**




| pattern | state | |
|---|---|---|
| Window Mode | normally open | Position the target object near the switch point. Connect the teach learning line to GND and set point A1 until the green indicator flashes three times or more. Disconnect the connection to confirm successful setup. |
| | | Position the target object at the far switch point. Connect the teach learning line to VCC and set point A2 until the green indicator flashes three times or more. Disconnect the connection to confirm successful setup. |
| | normal close | Position the target object at the far switch point. Connect the teach learning line to VCC and set point A2 until the green indicator flashes three times or more. Disconnect the connection to confirm successful setup. |
| | | Position the target object at the far switch point. Connect the teach learning line to GND and set point A1 until the green indicator flashes three times or more. Disconnect the connection to confirm successful setup. |

**Link to host computer:**

With adapter devices, you can directly configure parameters and upgrade programs.

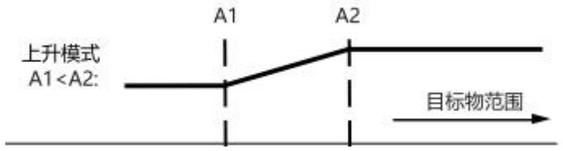
**SMW-15 Analog Output User Manual**

(1) Switch 4-20mA/0-10V analog output

Before powering on, connect the teach line to +. The red light will remain on until the teach line is released, indicating successful 0-10V configuration. If connected to-, the green light will stay on until the teach line is released, confirming 4-20mA setup. The blinking light indicates the subsequent output type.

When powered on, the product flashes LEDs to indicate the output type: red for 0-10V and green for 4-20mA.

(2) Set distance measurement parameters




1. Place the target object near the switch point. Connect the power to the TEACH terminal and set the minimum distance point A1 until the green indicator flashes more than three times. Then disconnect the connection.

2. Position the target object at the far switch point. Connect the power supply to the + terminal of the teaching unit and set the maximum distance point to A2. Wait until the green indicator flashes more than three times, then disconnect the connection.

(3) Connect to the host computer

With adapter devices, you can directly configure parameters and upgrade programs.

**RS485 communication protocol;**

Communication mode: RS-485

Synchronization method: Asynchronous

Data length: 8 bits

Stop bit: 2 bits (optional 1 bit)

Odd-even check: None

Communication protocol: Modbus-RTU

Supported storage areas:

Input register and hold register

Supported function codes:

0x03 (Read Hold Register)

0x04 (Read input register)

0x06 (writes to a single register)

0x10 (writes to multiple registers)

0x2B (MEI: 0x0E, Read Device ID code: 01/04, read device identifier)

**Register list:**

| Register Type | relative address | read-write | Byte count | data type | function | Windows default | Available value range |
|---|---|---|---|---|---|---|---|
| incoming register | 0x00 | RO | 2 | 16-bit integer | Distance to main peak | | Unit: mm. 0 or 65535 indicates out-of-range data (the nearest peak is considered the main peak by default). |
| | 0x01 | RO | 2 | 16-bit integer | Peak intensity | | Unit: db, 10x magnification, complement code |
| | 0x02 | RO | 2 | 16-bit integer | Secondary peak distance | | Use to penetrate the target object. The primary and secondary peaks depend on the sorting method: nearest or strongest. |
| | 0x03 | RO | 2 | 16-bit integer | Secondary peak intensity | | |
| | 0x01 | RW | 2 | 16-bit integer | Baud rate | 1152 | Default 1152; unit: 100 96à9600 192à19200 1152à115200 2560à256000 4608à460800 |
| | 0x02 | RW | 2 | 16-bit integer | Station address | 1 | 1-247 |
| | 0x03 | RW | 2 | 16-bit integer | Enable/Disable distance measurement | 1 | 0: Off, 1: On |
| | 0x04 | RW | 2 | 16-bit integer | Stop digit | 2 | Stop positions 1, 2 |
| | 0x05 | RO | 2 | 16-bit integer | frame rate | | Unit: Hz This version is not available |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | 0x06 | RO | 2 | 16-bit integer | temperature | | Unit: ℃×10 |
| | 0x07 | RO | 4 | 16-bit integer | product model | | Product main model code: corresponding two-digit ACSII code |
| | 0x08 | RO | 2 | 16-bit integer | Hardware version number | | BCD 0x010001, hardware version V1.0.1 |
| | 0x09 | RO | 2 | 16-bit integer | Software version | | |
| | 0x10 | RW | 2 | 16-bit integer | Restore default | | Write 1 to restore the default value |
| Advanced parameters: | | | | | | | |
| | 0x20 | RW | 2 | 16-bit integer | Distance from start | 200 | Start distance (mm): Keep the starting point at least 200mm away to avoid interference from nearby leaks. |
| | 0x21 | RW | 2 | 16-bit integer | End distance | 5000 | Maximum distance is 20,000. Actual performance is affected by other parameters and lenses. |
| | 0x22 | RW | 2 | 16-bit integer | Maximum step size | 0 | Maximum step size: 0 is unlimited. Set the step size as large as possible to reduce memory usage and measurement time. |
| | 0x23 | RW | 2 | 16-bit integer | configuration file | 5 | Configuration files 1-5 use the highest settings to achieve maximum overall power and time efficiency (without the need to resolve multiple objects) |
| | 0x24 | RW | 2 | 16-bit integer | signal quality | 15 | Signal quality (dB): -10 to 35. Negative values are transmitted using two's complement. |
| | 0x25 | RW | 2 | 16-bit integer | Threshold algorithm | 3 | Signal threshold<br>0: FIXED_AMPLITUDE<br>1: FIXED_STRENGTH<br>2: RECORDED<br>3: CFAR |
| | 0x26 | RW | 2 | 16-bit integer | Peak sort algorithm | 0 | Distance algorithm: 0: CLOSEST, 1: STRONGEST |
| | 0x27 | RW | 2 | 16-bit integer | Reflector shape | 1 | Mirror shape 0: Generic, 1: Planar |
| | 0x28 | RW | 2 | 16-bit integer | Calibration frame threshold | 100 | Use frames for calibration. The lower the value, the shorter the calibration time, and the higher the statistical significance. Range: 0-100 |
| | 0x29 | RW | 2 | 16-bit integer | Fixed amplitude threshold | 100 | Amplitude threshold (FIXED_AMPLITUDE) range: 0-100 |
| | 0x30 | RW | 2 | 16-bit integer | Fixed strength threshold | 0 | Strength threshold (FIXED_STRENGTH) range: -100 to 100, complement code |
| | 0x31 | RW | 2 | 16-bit integer | Threshold sensitivity | 0.5 | Threshold sensitivity (CFAR) is measured in units of 100, where a higher value indicates a lower detection threshold. Range: 0.00-1.00 |
| | 0x32 | RW | 2 | 16-bit integer | Close-range suppression | 0 | Close proximity switch: 0 (disabled), 1 (enabled). Reduces interference from close-range radiation and lowers frame rate. |

Use example:

The machine address is 1 (default)

Read the main peak measurement distance:

Host sent: 01 04 00 00 00 01 31 ca

| Machine address | FC | Register address | Number of registers | CRC verification |
|---|---|---|---|---|
| 01 | 04 | 00 00 | 00 01 | 31 ca |

Machine response: 01 04 02 0B DF 60 80 Distance measurement = 256*(0x0B)+(0xDF)=3039mm Machine response: 01 04 02 0B DF 60 80 Distance measurement = 256*(0x0B)+(0xDF)=3039mm

| Machine address | FC | Byte count | Register value | CRC verification |
|---|---|---|---|---|
| 01 | 04 | 02 | 0B DF | 60 80 |

Quick test:

Test equipment: RS485 to USB adapter board, 9-30V DC power supply, or our proprietary universal

RS485 test kit with Type-C data cable, plus host computer/serial port assistant.

After properly connecting the SMW-15, select the appropriate baud rate and click to open the serial port. The serial port assistant will display the following:

Send: 01 04 00 00 00 01 31  CA

Return: 01 04 02 0B DF 60 80

The data frame test command is as follows: