DADISICK®

# TECHNICAL DATA SHEET

## LASER RANGING SENSOR
## **DA-Y & DB-Y series**


Figure can vary

### Contents



CE


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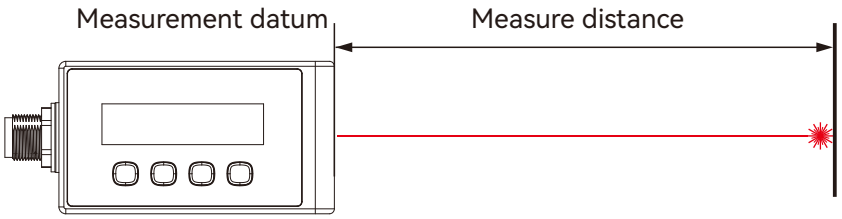
# DA-Y & DB-Y series

## Product description

DA-Y/DB-Y series industrial-grade laser sensors provide accurate and stable distance measurement and can be integrated into various industrial applications. The red laser beam hits the reflective surface and non-contact measurement is performed based on the return signal.



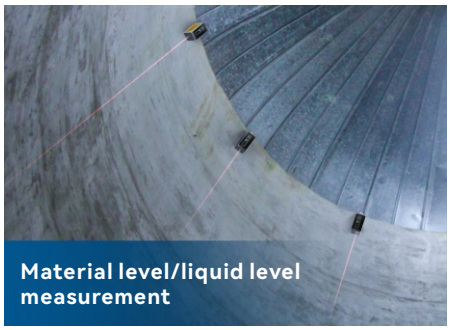

## Features

- ⊙ Phase method distance measurement, high accuracy and fast speed;
- ⊙ It comes with a screen and built-in menu, and can be set up without connecting to a computer;
- ⊙ Output interface:
  RS232/RS485,2 switching outputs plus voltage/current output;
- ⊙ Supports 64 units online networking and PLC programming;
- ⊙ IP67 protective metal die-cast body ensures stability even outdoors and in harsh environments.

## Application Cases

- ◇ Industrial measurement of position, displacement, thickness, distance, etc.
- ◇ Industrial automation and production intelligent management
- ◇ High-altitude cable erection measurement, railway catenary measurement
- ◇ Material level/liquid level detection
- ◇ Slope and dam deformation monitoring
- ◇ Building security monitoring


Displacement/distance measurement




40Hz high-frequency fast refresh


Multiple outputs can be connected to alarms

## Technical Parameters

| Item | Type A | | | | |
|---|---|---|---|---|---|
| Model | DA-Y10 | DA-Y20 | DA-Y30 | DA-Y50 | DA-Y100 |
| Measuring distance | 0.2-10m | 0.2-20m | 0.2-30m | 0.2-50m | 0.2-100m |
| Voltage/current output | / | | | | |
| Voltage output error | / | | | | |
| Current output error | / | | | | |
| Output mode | Digital quantity+switch quantity | | | | |

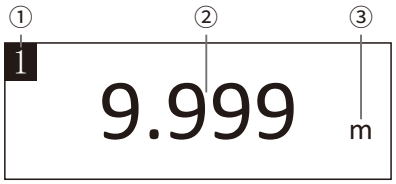
| Item | Type B (With voltage and current output) | | | | |
|---|---|---|---|---|---|
| Model | DB-Y10 | DB-Y20 | DB-Y30 | DB-Y50 | DB-Y100 |
| Measuring distance | 0.2-10m | 0.2-20m | 0.2-30m | 0.2-50m | 0.2-100m |
| Voltage/current output | Can be set to 0~5V / 0~10V / 4~20mA / 0~20mA /0~24mA output *Note 2 | | | | |
| Voltage output error | 0.2%+0.5mV | | | | |
| Current output error | 0.2%+0.005mA | | | | |
| Output mode | Digital quantity+switch quantity+analog quantity | | | | |

| | |
|---|---|
| Communication interface | RS232/RS485 (switchable) |
| Measuring frequency | 1Hz-40Hz |
| Laser type | Class II, 660±15nm, ≤1mW |
| Measurement resolution | 1mm |
| Measurement error | ±(2mm+d * one ten thousandth) *Note 1 |
| Indicator light | Red laser |
| Spot size | @1m∅6mm;@10m∅8mm;<br>@20m∅12mm;@30m∅16mm; |
| Display | 128x32 dot matrix screen |
| Backlight off time | 30 minutes (can be set to normally on) |
| Operating mode | Off measurement, continuous measurement |
| Transistor switch output | 2 channels (cannot exceed DC36V 0.5A) *Note 3 |
| Power supply | DC15~30V |
| Power consumption | < 3.0W |
| Protection grade | IP67 |
| Shell material | Die-cast zinc alloy |
| Working temperature | -10°C~50°C |
| Storage temperature and humidity | -20°C~60°C, 20%~85%RH |
| Overheating protection | When the body temperature is higher than 70°C, the measurement will be shut down and when the temperature is lower than 70°C, the measurement will be resumed |
| Body size | 88.45x40x59.3mm (including connection base) |

*Note 1: When [Speed Level] is 1.
"d" represents the actual distance. In harsh environments, such as when the sun is too strong and the ambient temperature fluctuates too much, there will be a large error in the measurement results. In this case, the effect is better when used with a target reflector.
*Note 2: Current and voltage can't be output at the same time.
*Note 3: If the external DC output of the transistor switch exceeds the limited voltage or current, it may cause permanent damage to the instrument.

## Display and Buttons

- Display

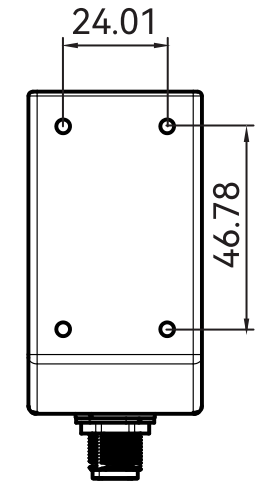



① Station number
② Measuring distance
③ Unit of measurement distance

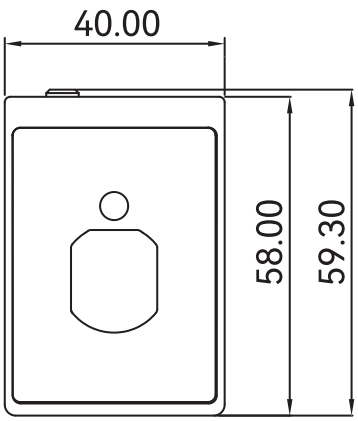
- Buttons

| Button | Press | Hold |
|---|---|---|
| SET | Confirm in setting mode | Enter parameter setting mode |
| ESC | Return to setting mode | Backlight switch setting |
| ▲ | Adjust option content | Adjust position forward |
| ▼ | Adjust option content | Adjust position backward |

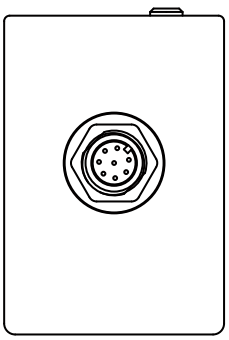
## Installation Dimensions



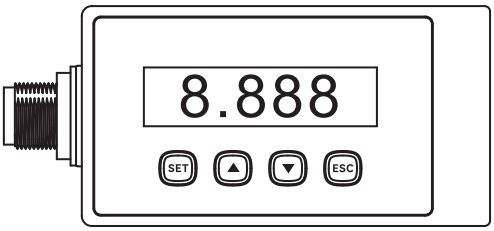

(Bottom of the main body)



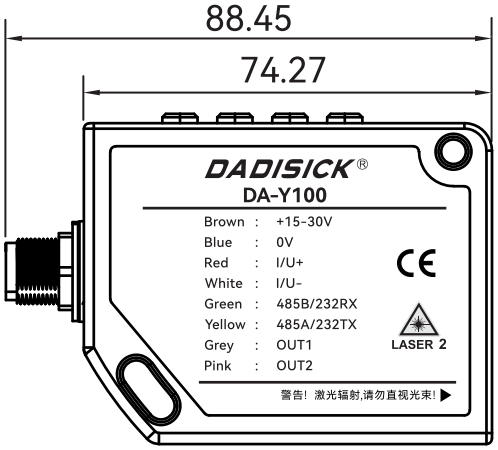

(Laser emitting surface)



(Joint surface)




(Joint surface)




(Side view of main body)

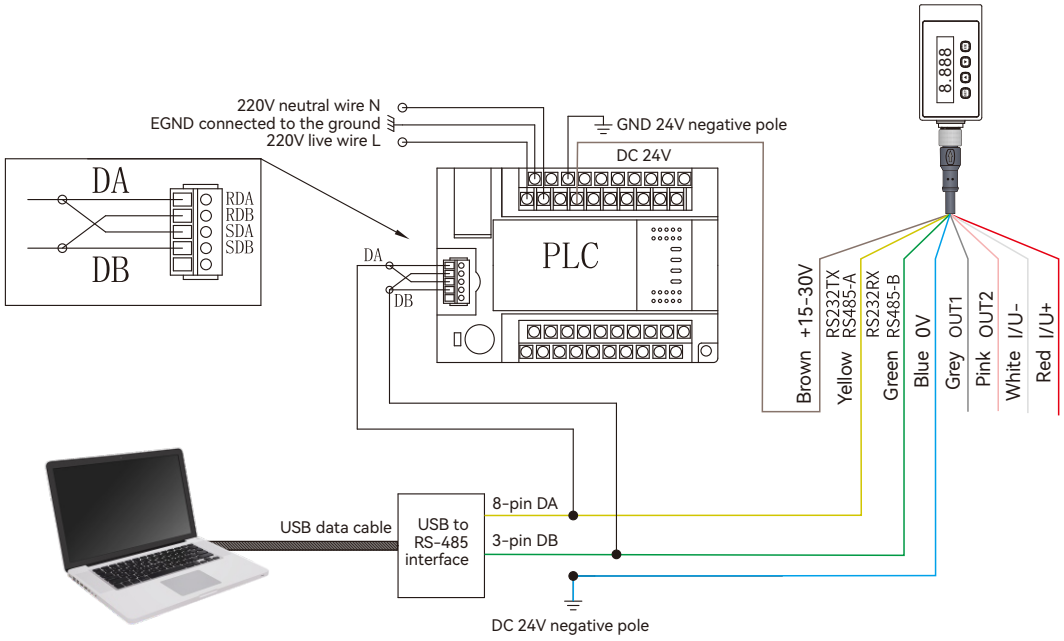
# Wiring method

## 1.Main Unit Wiring and Networking Instructions

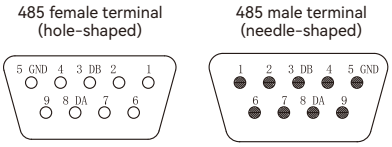
| No. | Wire color | Interface definition | Description |
|---|---|---|---|
| 2 | Brown | DC +15-30V | Positive pole of external power supply<br>DC 15~30V (input) |
| 7 | Blue | DC -0V | Power- (input) |
| 8 | Red | AO+ (type B only) | Analog output+ 4~20mA / 0~20mA / 0~24mA<br>0~5V / 0~10V |
| 1 | White | AO- (type B only) | Voltage/current output dedicated ground terminal |
| 3 | Green | RS232RX/RS485-B | 232 or 485 communication line |
| 4 | Yellow | RS232TX/RS485-A | 232 or 485 communication line |
| 5 | Gray | Q1 | Switching output 1 |
| 6 | Pink | Q2 | Switching output 2 |
| | Shielded wire | EARTH | Connected to the ground |

## 2.RS485 Wiring Method

For example, the following figure is the wiring diagram for joint commissioning of Mitsubishi PLC (FX3U-16M), computer and ranging sensor.
Note: The power supply for the instrument in the figure is provided by the 24V of the PLC. In the absence of PLC 24V power supply, an additional 15~30V DC power supply can be connected.



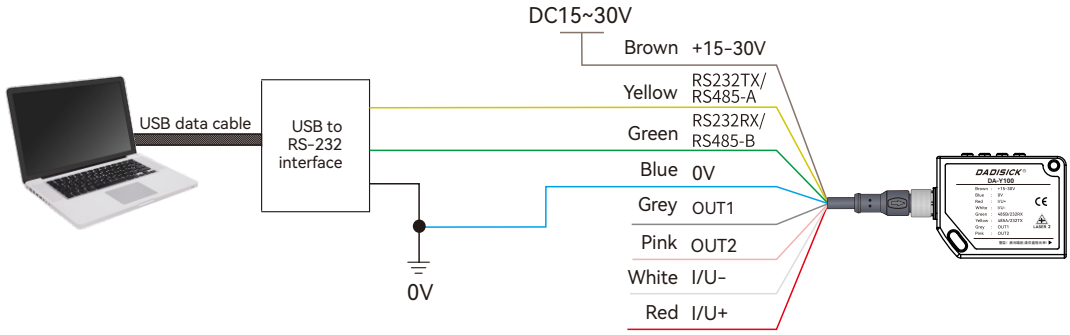

### D-Sub connector RS485 pin definition




(Note: Different manufacturers may have different specifications)

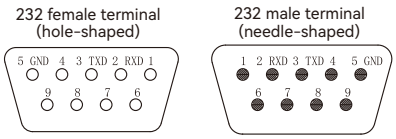
### 3.RS232 Wiring Method

This function has an open-drain (collector) output inside the instrument. It can only input DC current and cannot directly output voltage and current. Please note that the current sink cannot exceed DC36V 0.5A.




Note: RXD and TXD on the computer side and instrument side need to be cross-connected.
RS232 has three connections: RX (green) TX (yellow) GND (blue).

### D-Sub connector RS232 pin definition




### 4.RS485 networking connection method

This function has an open-drain (collector) output inside the instrument. It can only input DC current and For example, the figure below is a connection diagram for networking a computer and multiple instruments through RS485 half-duplex communication, All instruments are connected to the bus, Due to address restrictions, the maximum number is 64.

Note: In actual application, if communication is unstable, a 120Ω /8W resistor needs to be connected in parallel to the RS485 terminal.