

TOPINCN XKC-Y25-NPN

TOPINCN XKC-Y25-NPN Non-Contact Liquid Level Sensor User Manual

1. INTRODUCTION

This manual provides comprehensive instructions for the installation, operation, and maintenance of the TOPINCN XKC-Y25-NPN Non-Contact Liquid Level Sensor. This intelligent sensor is designed for detecting liquid levels in airtight, non-metallic containers without direct contact with the liquid. It utilizes advanced processing technology and a high-speed processing chip, making it suitable for various applications where direct contact is undesirable or impractical.



Figure 1: TOPINGN XKC-Y25-NPN Non-Contact Liquid Level Sensor

2. PRODUCT OVERVIEW AND FEATURES

The XKC-Y25-NPN sensor offers reliable liquid level detection through non-metallic container walls. Its key features include:

- **Non-Contact Detection:** Operates without direct contact with the liquid, making it suitable for corrosive, high-pressure, or sterile environments.
- **High Compatibility:** Effective with various non-metallic container materials such as plastic, glass, and ceramics.
- **Intelligent Functionality:** Features intelligent liquid level benchmark adjustment and level memory function.
- **High Sensitivity and Stability:** Designed for strong anti-interference capabilities, including resistance to power frequency and common mode interference.
- **Durability:** Electronic circuit structure ensures a long service life without mechanical wear.
- **Easy Installation:** No need to bore holes in the container.

3. SPECIFICATIONS

Refer to the table below for detailed technical specifications of the XKC-Y25-NPN sensor:

Specification	Value
Model	XKC-Y25-NPN
Output Type	NPN
Input Voltage (InVCC)	DC 5~24V
Current	5mA
Output Voltage (High Level)	InVCC
Output Voltage (Low Level)	0V
Output Current	1~100mA
Response Time	500mS
Operating Temperature	0~105°C
Induction Thickness (Sensitivity)	0~13 mm
Communication	RS485 (Note: This specification is listed in the product description, but the provided images and common usage for this model typically refer to the NPN output for level detection. RS485 might be for a different variant or advanced features not detailed here.)
Humidity	5% ~ 100%
Material	ABS
Ingress Protection	IP67
Dimensions (Approx.)	28mm Diameter, 16.9mm Height



Figure 2: Sensor dimensions (approximate)

4. SAFETY INFORMATION

Please read and understand the following safety precautions before installing or operating the sensor:

- Ensure the power supply voltage matches the sensor's input voltage (DC 5~24V). Incorrect voltage can damage the device.
- Disconnect power before performing any wiring or installation procedures.
- Avoid exposing the sensor to extreme physical shock or excessive force.
- Do not attempt to disassemble or modify the sensor, as this may void the warranty and cause malfunction.
- Install the sensor in a location where it is protected from direct sunlight and excessive heat, unless specifically designed for such conditions.

5. SETUP AND INSTALLATION

The XKC-Y25-NPN sensor is designed for non-invasive installation on the exterior of non-metallic containers.

5.1. Wiring Diagram

The sensor features a 4-pin connector. Proper wiring is critical for correct operation. Refer to the diagram and pin assignments below:



Figure 3: Sensor wiring labels



Figure 4: Sensor 4-pin connector

- **Brown Wire ():** Connect to DC 5V-24V (VCC - Positive Power Supply).
- **Yellow Wire ():** Connect to Signal Output (OUT). This is the NPN output. When liquid is detected, the output will be low (0V); when no liquid is detected, the output will be high (VCC).
- **Blue Wire ():** Connect to Ground (GND - Negative Power Supply).
- **Black Wire ():** Connect to Mode/Calibration (M). This wire is used for sensitivity adjustment or mode selection. Refer to the operating instructions for details.

5.2. Mounting the Sensor

1. Identify the desired detection point on the non-metallic container. The sensor should be placed on the exterior surface.
2. Ensure the surface is clean, dry, and free from any obstructions or debris that could interfere with detection.
3. Attach the sensor firmly to the container wall using appropriate adhesive, clips, or a mounting bracket (not included). The sensor's flat detection surface should be in direct contact with the container wall.
4. The induction thickness (container wall thickness) should be within 0-13 mm for optimal performance.

6. OPERATING INSTRUCTIONS

Once installed and wired correctly, the sensor operates automatically to detect liquid levels.



Figure 5: Sensor with indicator light

- **Power On:** Apply DC 5-24V power to the Brown (VCC) and Blue (GND) wires. The sensor will power on.
- **Detection:** The sensor continuously monitors the liquid level. When liquid is present at the detection point, the NPN output (Yellow wire) will switch to a low state (0V). When the liquid level drops below the detection point, the output will switch to a high state (VCC).
- **Indicator Light:** A built-in LED indicator (often red) on the sensor may illuminate or change state to indicate detection status.
- **Sensitivity Adjustment (Black 'M' Wire):** The Black 'M' wire is typically used for sensitivity adjustment or mode selection. For initial setup, it is often left disconnected or connected to VCC/GND as per specific application requirements. If fine-tuning is needed, consult advanced documentation or experiment with connecting 'M' to VCC or GND, or using a resistor, to adjust sensitivity. Some models may have an internal calibration screw accessible by carefully cutting tabs on the back, as noted in user feedback. Exercise caution if attempting this.

7. MAINTENANCE

The XKC-Y25-NPN sensor requires minimal maintenance due to its non-contact design and durable construction.

- **Cleaning:** Periodically inspect the sensor's exterior surface and the container wall at the detection point. Clean any dust, dirt, or residue with a soft, dry cloth. Do not use abrasive cleaners or solvents.
- **Inspection:** Check wiring connections for any signs of damage or corrosion. Ensure the sensor remains firmly attached to the container.
- **Environmental Conditions:** Ensure the operating environment remains within the specified temperature and humidity ranges.

8. TROUBLESHOOTING

If you encounter issues with your XKC-Y25-NPN sensor, refer to the following troubleshooting guide:

Problem	Possible Cause	Solution
Sensor not detecting liquid	Incorrect wiring Insufficient power supply Container wall too thick Sensor not properly attached Sensor malfunction	Verify all wiring connections (VCC, GND, OUT) are correct as per Section 5.1. Ensure power supply is within DC 5-24V and provides sufficient current. Check if container wall thickness is within 0-13 mm. Re-attach sensor firmly to the container surface. If all else fails, the sensor may be faulty.
Inconsistent or erratic readings	Electrical interference Vibrations Incorrect sensitivity setting Air bubbles or foam in liquid	Ensure sensor wiring is shielded and separated from high-current lines. Mount sensor securely to minimize vibrations. Adjust sensitivity using the 'M' wire or internal adjustment if available (refer to advanced documentation). Consider repositioning the sensor to avoid areas with excessive foam or bubbles.
Sensor always shows liquid detected (output always low)	Sensor too sensitive Permanent liquid residue on container wall Sensor malfunction	Adjust sensitivity (reduce it). Clean the container wall thoroughly at the detection point. Test sensor on a different container or surface.
Sensor never shows liquid detected (output always high)	Sensor not sensitive enough Sensor malfunction	Adjust sensitivity (increase it). Test sensor on a different container or surface.

9. WARRANTY AND SUPPORT

For warranty information, technical support, or service inquiries, please contact your retailer or the manufacturer, TOPINCN, directly. Keep your purchase receipt as proof of purchase. Please note that unauthorized disassembly or modification of the product may void the warranty.

ASK A QUESTION ABOUT THIS MANUAL

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Example: How do I reset this device or fix this error?

Details

Model number, symptoms, what you tried, or the section of the manual you are using.

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