

# **IES-ST005G-003**

## **Industrial Grade Gigabit 5 Electrical Switch**

### **User Manual**

V1.00

**IES-ST005G-003 Industrial grade Gigabit 5 electrical switch**



Odot Automation System Co., Ltd.

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**Version Information**

| Data       | Version | Modification    | Author |
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**Disclaimer of Warranties****Product Usage**

| <b>NOTICE</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• WHEN INSTALLING, OPERATING AND MAINTAINING EQUIPMENT, DO NOT EXCEED ANY RATING SPECIFIED IN THE ELECTRICAL CHARACTERISTICS;</li><li>• WHEN INSTALLING, OPERATING, AND MAINTAINING EQUIPMENT, DO NOT EXCEED ANY OF THE RATINGS SPECIFIED IN THE ENVIRONMENTAL CHARACTERISTICS. DO NOT USE THE PRODUCT IN THE FOLLOWING PLACES: DUST, OIL FUMES, CONDUCTIVE DUST, CORROSIVE GASES, AND FLAMMABLE GASES; DO NOT EXPOSE TO HIGH TEMPERATURES, CONDENSATION, WIND AND RAIN; VIBRATION AND SHOCK WILL ALSO CAUSE PRODUCT DAMAGE;</li></ul> <p>IF NOT DONE AS DIRECTED, THE PROTECTION PROVIDED BY THE DEVICE MAY BE LOST, WHICH MAY RESULT IN MINOR BODILY INJURY OR DAMAGE TO THE DEVICE.</p> |

**Disclaimer of Warranties**

The Company shall not be liable for any damage or malfunction of the equipment caused by:

1. Transportation damage: equipment damage caused by improper transportation or packaging;
2. Natural factors: damage caused by lightning strikes, voltage fluctuations, water ingress or natural disasters (such as fires, floods, etc.);
3. Improper use: damage caused by overload, non-standard operation, unauthorized modification or use of unqualified accessories;
4. Unauthorized maintenance: equipment failure caused by unauthorized maintenance or alteration;
5. Other non-product reasons: damage caused by other reasons that have nothing to do with the equipment itself.

#### **Repair services**

1. For the damage caused by the above reasons, the company will charge the repair fee according to the actual situation.
2. Outside the warranty period, the company provides paid maintenance services, and the cost is charged according to the maintenance situation.

#### **Assumption of Risk**

The company shall not be liable for casualties, property damage or other related losses caused by the use of the equipment. All risks are borne by the user.

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# **1 Product Overview**

## **1.1 Product Description**

IES-ST005G-003 is a 5-electric full gigabit industrial Ethernet switch, the industrial Ethernet switch meets the requirements of industrial design, adopts mature technology and open network standards, adapts to low temperature and high temperature, strong anti-electromagnetic interference, anti-salt spray, anti-vibration and anti-shake, and is equipped with redundant dual DC power supply (9 V ~56V) to meet the requirements of the strict working environment of the industrial site, provide efficient, reliable, and fast solutions for the industrial IoT. The industrial transceiver is located at the network aggregation layer and is equipped with 5 gigabit electrical ports. It can be used in various field environments, can be flexibly networked, and can be widely used in industrial control automation, road traffic control automation, building automatic control system, mine automatic control system, oilfield control automation, hydropower station control automation, power system control automation, computer room monitoring system and other industrial application scenarios.

## 1.2 Product characteristics

- ◆ Supports up to 5 x 10/100/1000 Mbps ports;
- ◆ The cache reaches 1 Mbit, which can meet the smooth transmission of 4K video;
- ◆ Support IEEE 802.3/802.3u/802.3ab/802.3z/802.3x storage forwarding modes;
- ◆ Supports large backplane bandwidth, large swap cache, and ensures all port line speed forwarding;
- ◆ Redundant dual DC power supply (9 V ~56 V) with anti-reverse connection protection function;
- ◆ -40 °C ~70 °C wide temperature design to ensure that the equipment can adapt to various harsh field environments;
- ◆ IP40 level protection, high-strength metal housing, fanless, low-power design;
- ◆ Adopt shock-resistant rail/wall mounting, plug and play, can be installed in a compact equipment box;

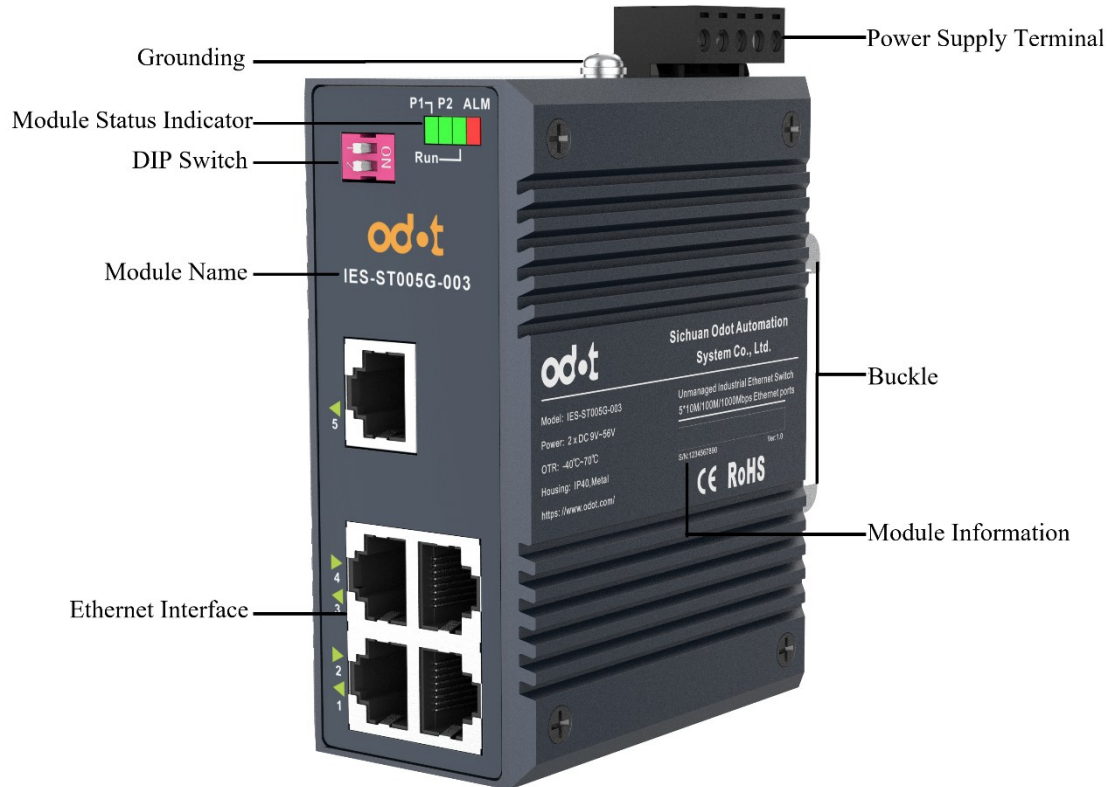
## 1.3 Technical Parameter

| Interface Parameter                    |                                                                                                                                                                                                                            |
|----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gigabit Electrical Port                | 5 RJ45 ports, 10/100/1000 Mbps adaptive                                                                                                                                                                                    |
| Power Interface                        | 5-pin 5.08 mm pitch terminal block                                                                                                                                                                                         |
| Switch Properties                      |                                                                                                                                                                                                                            |
| Protocol Standard                      | IEEE 802.3 IEEE 802.3u IEEE 802.3x IEEE 802.3az<br>IEEE 802.3ah                                                                                                                                                            |
| Cache Size                             | 1 M                                                                                                                                                                                                                        |
| Forward Frame Length                   | 9K Bytes                                                                                                                                                                                                                   |
| MAC Address Table                      | 2K                                                                                                                                                                                                                         |
| Forwarding Method                      | Store-and-forward (full-duplex/half-duplex)                                                                                                                                                                                |
| Delay                                  | < 7 $\mu$ s                                                                                                                                                                                                                |
| Backplane Bandwidth                    | 10 Gbps                                                                                                                                                                                                                    |
| Package Forwarding Rate                | 7.44 Mpps                                                                                                                                                                                                                  |
| Indicator                              |                                                                                                                                                                                                                            |
| Power Indicator                        | PWR                                                                                                                                                                                                                        |
| Port State Indicator                   | Electric port LNK&ACT (1~5)                                                                                                                                                                                                |
| Power Specifications                   |                                                                                                                                                                                                                            |
| Operating Voltage                      | 9 V ~56V DC                                                                                                                                                                                                                |
| Power Consumption                      | < 3 W                                                                                                                                                                                                                      |
| Mechanical Structure                   |                                                                                                                                                                                                                            |
| Protection Level                       | IP40                                                                                                                                                                                                                       |
| Installation                           | DIN rail/wall mounted                                                                                                                                                                                                      |
| Size                                   | 120 mm×90 mm×35 mm (L×W×H)                                                                                                                                                                                                 |
| Weight                                 | Approx. 385 g                                                                                                                                                                                                              |
| Environmental Parameter                |                                                                                                                                                                                                                            |
| Operating Temperature                  | -40 °C~70 °C                                                                                                                                                                                                               |
| Storage Temperature                    | -40 °C~85 °C                                                                                                                                                                                                               |
| Relative Humidity                      | 5%RH~95%RH (No condensation)                                                                                                                                                                                               |
| MTBF                                   | 300,000 hours                                                                                                                                                                                                              |
| EMC Performance                        |                                                                                                                                                                                                                            |
| Anti-Static Discharge (ESD)            | Contact discharge: $\pm 6$ kV, performance class B;<br>Air discharge: $\pm 15$ kV, performance class A;<br>Executive standard: IEC 61000-4-2                                                                               |
| Anti-Radio Frequency Interference (RS) | Executive standard: IEC 61000-4-3                                                                                                                                                                                          |
| Anti-Fast Transient Pulse Swarm (EFT)  | Power port 2.5 kV, performance B;<br>Signal port 2.5 kV, performance A;<br>Executive standard: IEC 61000-4-4                                                                                                               |
| Surge                                  | Common mode: 0.5 kV, performance class A; 1 kV, performance class A;<br>2 kV, performance class A;<br>Differential mode: 0.5 kV, performance class A; 1 kV, performance class A;<br>Implementation standard: IEC 61000-4-5 |
| Conducted Interference Resistance (CS) | Executive standard: IEC 61000-4-6                                                                                                                                                                                          |



## 2 Hardware Description

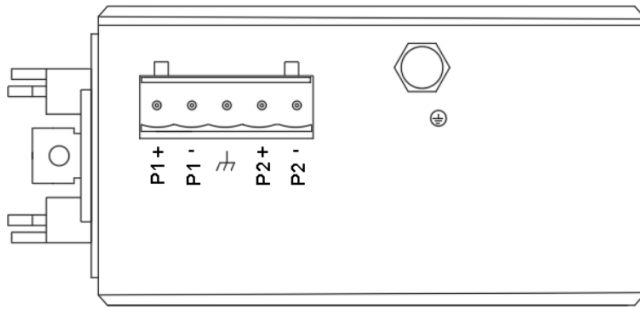
### 2.1 Product Appearance



#### Notes:

1. DIP switch 1: storm suppression DIP switch, DIP to ON to turn on the function; DIP switch 2: No function.
2. The Ethernet interface includes a network port indicator light, and the indicator light number is indicated by a triangle arrow.

## 2.2 Wiring Instructions



| No. | Mark | Description                                  |
|-----|------|----------------------------------------------|
| 1   | P1+  | DC power supply positive electrode           |
| 2   | P1-  | DC power supply negative electrode           |
| 3   | PE   | Grounding                                    |
| 4   | P2+  | Redundant DC power supply positive electrode |
| 5   | P2-  | Redundant DC power supply negative electrode |

Note: Connect one end of the protective grounding cable to the grounding screw on the top panel of the device, and the other end is well grounded nearby.

## 2.3 Indicator Description



| P1 Power supply 1 indicator (Green)                     | Description                                  |
|---------------------------------------------------------|----------------------------------------------|
| ON                                                      | Power supply 1 is normal                     |
| OFF/Flash                                               | Power supply 1 is abnormal                   |
| P2 Power supply 2 indicator (Green)                     | Description                                  |
| ON                                                      | Power supply 2 is normal                     |
| OFF/Flash                                               | Power supply 2 is abnormal                   |
| RUN System function operation indicator (Green/Yellow). | Description                                  |
| Flash (Green)                                           | The Fast ethernet system is working normally |
| ALM Power alarm indicator (Red).                        | Description                                  |
| ON                                                      | Only 1 power supply is connected             |
| OFF                                                     | Dual power access                            |

## 2.4 Mounting Dimension



## 2.5 Product Installation

Spring rail installation steps:

1. Align the back panel of the equipment with the guide rail strip to ensure that the guide rail can be aligned with the upper and lower hooks of the spring lock and ensure that the equipment has enough operating space for installation;
2. Fix the upper part of the back of the equipment on the upper edge of the guide rail, and pull the spring part of the installation guide rail of the equipment slightly down from top to bottom, push it to the guide rail side, and finally fix the lower part of the installation hook on the lower edge of the guide rail.
3. After the first installation and fixation, please try to move the switch from the bottom, down, left, and right directions to determine the degree of fastening.



## 2.6 Product Selection

| Module         | Description                                                                                                                         |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------|
| IES-ST005F-003 | Industrial-grade unmanaged Fast ethernet switch, 5 electrical ports, with network storm suppression, dual DC 9 V ~56 V power supply |
| IES-ST008F-003 | Industrial-grade unmanaged Fast ethernet switch, 8 electrical ports, with network storm suppression, dual DC 9 V ~56 V power supply |
| IES-ST005G-003 | Industrial-grade unmanaged Gigabit switch, 5 electrical ports, with network storm suppression, dual DC 9 V ~56 V power supply       |
| IES-ST008G-003 | Industrial-grade unmanaged Gigabit switch, 8 electrical ports, with network storm suppression, dual DC 9 V ~56 V power supply       |

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