DIGITUS®

8-Port Gigabit + 4G Combo Industrial Fast Ring Managed Switch

Quick Installation Guide
DN-651139 & DN-651145

Table of Contents

1 Introduction

The DN-651139, DN-651145 Industrial network switch provide 8 x 10/ 100/ 1000Mbps RJ45 ports and 4 Gigabit Combo ports. The RJ45 ports from 1-8 support PoE power supply with a maximum of 30W for each port. DN-651139, DN-651145 offers excellent security policy, QoS policy, and rich VLAN function. Additionally, it has a ring network function that allows you to set up a ring network. With this feature, the switches form a ring network topology manually. The ring network is redundant, highly reliable, and won't affect data forwarding in case a link is broken. The device is designed with a no-fan, low power consumption design, making it easy to use, compact, and beautiful. It is also simple to install. The product meets Ethernet standards, has lightning protection, static protection mechanisms, and operates in a temperature range of -40°C to 75°C. This guarantees stable performance, safety, and reliability. V1 can be widely used in various broadband data transmission fields such as intelligent transportation, telecommunications, security, financial securities, and customs, among others.

2 Features
2.1 Product Overview

8-Port Gigabit + 4G Combo Is a ring-network industrial-grade Managed PoE Switch independently developed by our company, providing 8*10/100/1000Mbps adaptive RJ45 ports and 4*1000Mbps Combo ports. Each RJ45 port supports MDI/MDIX automatic rollover and wire-speed forwarding. Ports 1-8 support PoE power supply. PoE ports automatically detect PD devices and supply power to PD devices that comply with IEEE 802.3af/at standards. Each port can provide up to 30W power.

The device offers perfect security policies, QoS policies and extensive VLAN functions as well as a ring network function. A ring network can be set up, the switches form a ring network topology by hand. Its redundancy, high reliability and other functions can be set in the ring network. When a connection is broken, data forwarding in the network is not affected.

2.2 Product Features

- Operating temperature: -40°C ~ 75 °C
- Low power consumption fanless, high energy aluminum alloy roof heat conduction, groove shell design
- DIN-Rail type installation
- Industrial grade components
- Support IEEE 802.3af/at standards (DN-651139 only)
- Single port output power up to 30W (DN-651139 only)
- IEEE 802.3x full-duplex flow control and Backpressure half-duplex flow control
- Support one-key ring network, one-key storm suppression function, with redundancy design, high reliability
- Highly reliable design, supporting traditional STP/MSTP/RSTP Layer 2 link protection technology.
- Support static convergence and dynamic convergence (LACP) 2 convergence modes, effectively increase the link bandwidth, improve the reliability of the link, and at the same time can achieve load balancing, link backup.
- Flexible and convenient management and maintenance Supports various management modes, such as Console, Telnet, and SSH.
- Support WEB management, simple and efficient, convenient for installation and debugging of engineering and maintenance personnel
- Supports file upload and download management through TFTP.
- 2 power inputs, redundant backup, greatly improve product power supply reliability.

2.3 Product Advantage

1. **-40°C ~ 75 °C operating temperature design**

   -40℃~75℃ operating temperature design, which ensures the use of natural heat dissipation to ensure that the switch can achieve long-term stable operation within the temperature range to meet all types of operating environment.

2. **High energy aluminum alloy roof heat conduction groove shell design**
   Housing size 145*109*62mm, compact and lightweight, full aluminium alloy high energy roof heat conduction groove shell design, better effect of heat dissipation.

3. **DIN-Rail installation, simple and flexible**
   DIN rail installation design, easy and quick installation, allowing users to reduce unnecessary installation time to save time.

4. **Select industrial grade components**
   Chemical nickel-gold circuit board, with high corrosion resistance, oxidation resistance. Select high specification capacitor to improve product life.

5. **Supports one-click ring network and one-click storm suppression**
   Supports one-click loop networks, prevents broadcast storms, improves network reliability and strengthens data protection. Thanks to its high adaptability to environmental conditions and fast topology self-healing, it can be used in many security, surveillance and other scenarios.

6. **Supports WEB management, which is simple and efficient**
   Provides WEB management functions and supports basic network functions such as 802.1Q VLAN, port monitoring and port aggregation. You can manage and maintain the network via the WEB UI.

7. **Supports relay alarm function**
   Support system startup abnormal and power alarm function. If the system startup or input power abnormal, can be timely output alarm signal.

3 Package Contents

- Network Switch *1
- User Guide *1
- Terminal Block *1

Note: Precision devices are built in the device, please handle them carefully to avoid violent vibration, which may affect the performance of the device. If you find that the equipment is damaged or any parts are lost in the process of transportation, please inform us, we will give you a proper solution as soon as possible.

Statement
Product specifications and information mentioned in this manual are for reference only and are subject to change without prior notice. Unless otherwise agreed, this manual is for use only and does not constitute any form of warranty.

Convention
The product pictures in this document are for illustration only. The number and positions of ports depend on actual models. This document helps you correctly use the Switch. It describes the performance characteristics of the Switch and describes how to install the Switch. Read this manual carefully before operating the Switch.

4 Specifications

4.1 Technical Specifications

Model	DN-651139 PoE Switch DN-651145 non-PoE Switch
Standard	IEEE 802.3,IEEE 802.3u,IEEE 802.3ab,IEEE 802.3z, IEEE 802.3x,IEEE 802.1X, IEEE 802.1q,IEEE 802.1p, IEEE 802.1d, IEEE 802.1w,IEEE 802.3ad, (DN-651139 support IEEE802.3af,IEEE802.3at)

Network Media (Cable)	10BASE-T: UTP category 3,4,5 cable （≤100m） 100BASE-TX: UTP category 5, 5e cable （≤100m） 1000BASE-T: UTP category 5e, 5 cable （≤100m） 1000BASE-X: MMF, SMF
MAC Address Table	8K, Auto-learning, Auto-update
Transfer Mode	Store-and-Forward
Jumbo Frame	9216Byte
Packet Buffer	4.1M bit
Packet Forward Speed	17.86Mpps
Input Power Supply	DC:48-57V DN-651139 (PoE version) DC:12-55V DN-651145
Switching Capacity	24Gbps
Dimensions (L*W*H)	145*109*62mm
Fan	Fanless
PoE Power Budget	185W (DN-651139 only)
PoE Port	Port1~8 (DN-651139 only)
PoE Power On RJ45	Mode A 1/2（-），3/6（+） (DN-651139 only)
PoE Output	30W(Max) (DN-651139 only)
Temperature	Operating Temperature: -40°C ~ 75 °C (-40 °F ~167°F) Storage Temperature: -40 °C ~ 80°C (-40 °F ~176°F)
Humidity	Operating Humidity: 5% ~ 95% non-condensing

	Storage Humidity: 0% ~ 95% non-condensing
Surge Protection	Differential mode ±2KV, Common mode ±6KV
MTBE	>100000hours

4.2 Software Specification

spanning Tree	IEEE 802.1D -Spanning Tree
	IEEE 802.1w -Rapid Spanning Tree
	IEEE 802.1s -Multiple Spanning Tree
	BPDU Guard
	STP Root Guard
	Loop Detection
VLAN	Management VLAN
	Private VLAN
	Voice VLAN
	Surveillance-VLAN
	Q-in-Q (Double Tag)
	802.1v Protocol VLAN
	MAC-Based VLAN
Port	IEEE 802.3ad witch LACP(Dynamic)
	Static Trunk
	EEE
	Jumbo Frame
	Error-Disable
IGMP Snooping	IGMP Snooping v1/v2/v3
	MLD Snooping v1/v2
	MVR
QoS Features	Hardware Queues

		Port Based
	Class Of Service	802.1p
		CoS
		DSCP
		IP Precedence
		TCP/UDP (IPv4/IPv6)
	Rate Limiting	Ingress
		Egress
	Priority Queue Scheduling	WRR
		Strict Priority
		DSCP & CS
	IPv4 QoS (QCEs)	
	IPv6 QoS (QCEs)	
Security	Port Security	
	Port Isolation	
	IEEE802.1x AAA	
	ACLs	L2+/L3/L4
		IPv6 Support
		Management Access List
	Management ACL/Management ACE	
	IP Source Guard (IP-MAC-Port-VALN Binding)	
	IP Source Guard (IP-MAC-Port Binding)	
	Dynamic ARP Inspection	
	Storm Control	
	RADIUS/TACACS+	
	RADIUS Authentication (RFC2138)	
	DDoS Prevention	
	HTTPs and SSL (Secured Web)	

	SSH v1.5/v2.0 (Secured Telnet Session)	
	DHCP Snooping	
	DHCP Relay	
Management	SNMP (v1, v2c, v3)	
	RMON (1,2,3 & 9 groups)	
	Software Upgrade	
	Configuration Export/Import	
	DHCP	Client
		Option 82
		Option 66
		Option 67
	Event/Error Log	Syslog
	Management Access Filtering	Console
		SNMP
		HTTP/HTTPS
		Telnet
	Port Mirroring	
	LLDP (IEEE802.1AB)	
	LLDP-MED	
	UDLD	
	DNS Client	
	Traceroute	
	Ping	
	Cable Test	
	DDMI	
	NTP/ SNTP (RFC2030)	
IPv6 Support	Dual IPv6/IPv4 stack	
	IPv6 Web/SSL	
	IPv6 SNTP	

	(Simple Network Time Protocol)
	IPv6 Telnet / SSH
	IPv6 Ping/Trace route
	IPv6 TFTP
	IPv6 RADIUS/TACACS+
	IPv6 SNMP
PoE Management	Port Config
	Alive Checking for PD
	PoE Delay
	PoE Schedule
ONVIF	ONVIF Detection
	ONVIF Server(NLM)

5 Product Appearance Description

5.1 Front Panel

The front panel consists of 8*10/100/1000Mbps adaptive RJ45 ports, 4*1000Mbps Combo ports and related indicators, as shown below:
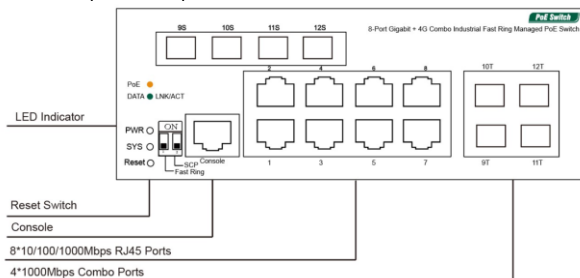
Front panel of the 8-Port Gigabit + 4G Combo Switch

8-Port Gigabit + 4G Combo Port description:

- 10/100/1000Mbps RJ45 Ports

Supports 10Mbps, 100Mbps, or 1000Mbps rate adaptation, auto-MDI /MDIX, and each port has a corresponding indicator, that is, port indicators 1-8 as shown on the panel in the figure above.

- 1000Mbps Combo Ports

  The Combo ports is located at the right and upper part of the panel. It is an optical multiplexing port. Each port has a corresponding indicator, that is, the port indicator 9-12 shown on the panel in the figure above.

- Console Port

  The Console port is used to connect to the serial port of a computer or other terminal device and manage or configure Switches.

- SCP

  One-touch broadcast storm suppression: limits broadcast packets, unicast packets, and multicast packets to a certain rate.

- Fast Ring

  To enable the ERPS function, set the last 2 SFP slots as the sub-network ports of the ring network.

5.2 LED Indicator

The LED indicators of the Switch are shown in the following table. Users can monitor the work and running status of the Switch conveniently and quickly through the following indicators:

LED	Color	Function
PWR	Green	Off: No Power supply. Light: Indicates the Switch has power.
DATA	Green	• Off: No device is connected to the corresponding port. • Light: Indicates the link through that port is successfully established at 10/100/1000Mbps. • Blink: Indicates that the Switch is actively sending or receiving data over that port.
PoE	Orange	**DN-651139 only** • Off: No PoE powered device (PD) connected. • Light: There is a PoE PD connected to be port, which supply power successfully. • Blink: Indicates port abnormal PoE supply.
SYS	Green	• Blinking: The system is working properly • Off: The system is being started or is abnormal

5.3 Side Plate
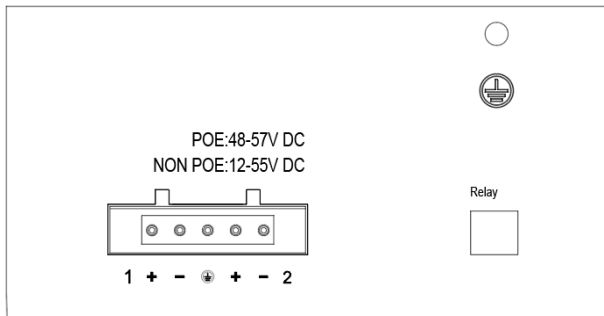
Side panel of 8-Port Gigabit + 4G Combo Switch

The side panel of the Switch provides 5-position industrial wiring terminals and power input DC: The DC power input of the Switch is redundant. The PWR1 and PWR2 power supplies can be used individually or connected to 2 independent DC power supply systems. When any power supply system fails, the device can run normally without interruption, which improves the reliability of network operation.

Relay port： Alarm port, support machine abnormal alarm function. This interface needs to be connected to an external alarm device. When the machine starts abnormally or when the power is on, the internal relay will close and output the alarm signal in time, which has the function of automatic alarm, safety protection and isolation conversion in the circuit.

6 Installation Guide

This chapter helps users correctly install and safely use Switches.

6.1 Installation Precautions

Precautions: To avoid equipment damage and personal injury, observe the following precautions:

- The Switch room should be dry and ventilated, free from corrosive gases and strong electromagnetic interference.
- The humidity of the Switch equipment room should be 5% to 95%. Install proper equipment if possible.
- The grounding of the Switch shall comply with the grounding requirements described in this manual, and shall be separately and well grounded.
- Keep a proper distance between the Switch and other devices. Do not stack other devices with the Switch.
- The connection cable between the Switch and the distribution frame should be standardized and reasonable, and the distribution frame (box) jumper wire should be concise and clear to prevent the phenomenon of parallel lines and wires.
- To avoid the danger of electric shock, do not open the chassis without authorization; If any fault occurs, contact professional maintenance personnel.

Safety Tips:

- Ensure that the PGND cable of the power socket is properly grounded;
- Ensure sufficient space for heat dissipation and ventilation of the Switch. Do not place heavy objects on the Switch.

6.2 Installation Environment

Before installation, make sure that the proper working environment is available, including power requirements, adequate space, proximity to other equipment to be connected, and other equipment in place. Please confirm the following installation requirements:

- Ensure the stability of the workbench and good grounding
- Check whether cables and connectors required for installation are in place (less than 100m)
- The product does not provide installation components. Prepare components of the selected installation type, such as screws, nuts, and tools, to ensure reliable installation
- Power supply: 48V to 57V DC (DN-651139)
                12V to 55V DC (DN-651145)
- Environment: operating temperature: -40°C to 75 °C relative humidity: 5% to 95%.

6.3 Installation

DIN-Rail Installation

The 45mm standard DIN-Rail installation is very convenient for most industrial applications. The installation steps are as follows:

- Check whether the installation accessories of DIN-Rail guide tools are available (installation accessories are provided for this product).
- Check whether DIN-Rail is firmly fixed, whether there is a suitable place to install the product.
- Clamp the lower part of the DIN-Rail connecting seat of the product accessories into the DIN-Rail (lower part with spring support), and then clamp the upper part of the connecting seat into the DIN-Rail (lower part clamp a little, slightly force to keep the balance of the equipment stuck into the upper part).
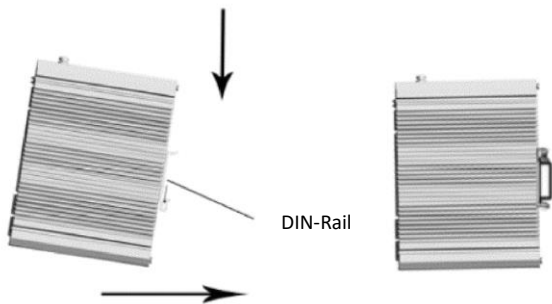
DIN-Rail

Figure 4-1 Schematic diagram of industrial machine guide rail installation
Note: Aluminum alloy DIN-Rail hooks have been fixed to the rear panel of the Switch.
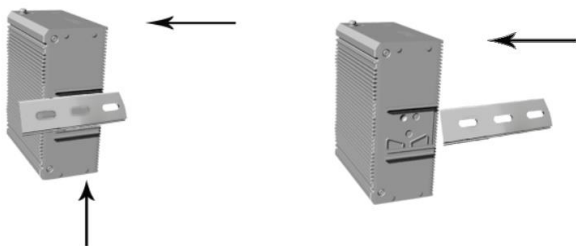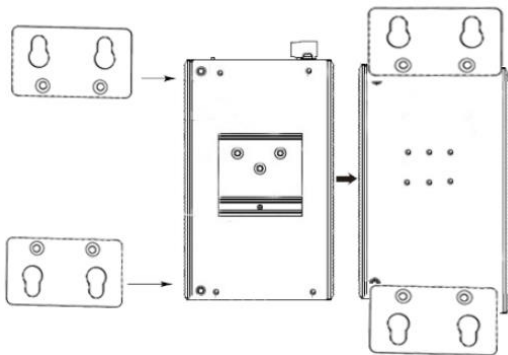

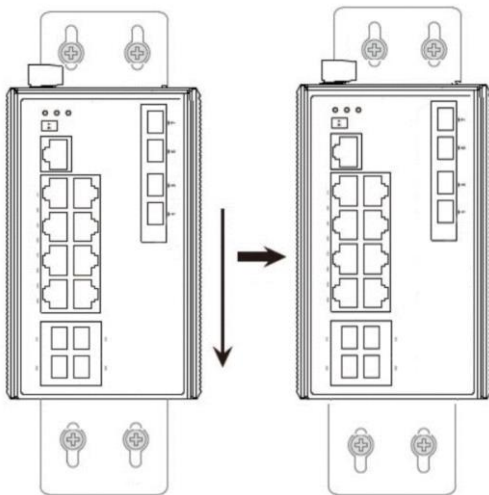Figure 4-2 Schematic diagram of industrial machine guide rail disassembly

Power on
- Power on: First insert the power terminal of the power cable into the power port of the device, then plug in the power plug and power on. After the Switch is started, the Switch automatically initializes. If all port indicators are on and then off, the system is successfully reset, and the power LED indicator is always on.
- Power off operation: Unplug the power plug first, and then remove the wiring part of the terminal. Please pay attention to the above operation sequence.

Wall Mount Installation
The following describes how to install a Switch on the wall.

Schematic diagram of wall mounted installation of industrial machine

- Remove the DIN-Rail mounting plate on the rear board of the Switch;
- Install the wall mounting board on the Switch as shown below.
- Four wall screws are required to mount the Switch on the wall, as shown in the figure above.
- When fixing the screws to the wall, do not screw the screws into the wall completely. Leave a space of about 2 mm for sliding the wall panel between the wall and the screws.
- After securing the screws to the wall, place the 4 screw heads through most of the keyhole, then place the Switch vertically and tighten the screws to increase stability.

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