Airgain ®)))

AIRGAINCONNECT® ETHERNET SWITCH

User Guide

Airgain, Inc provides this documentation in support of its products for the internal use of its current and prospective customers. The publication of this document does not create any other right or license in any party to use and content in or referred to in this document and any modification or redistribution of this document is not permitted.

While efforts are made to ensure accuracy, typographical and other errors may exist in this document. Airgain, Inc reserves the right to modify or discontinue its products and to modify this and any other product documentation at any time.

All Airgain, Inc products are sold subject to its published Terms and Conditions, subject to any separate terms agreed with its customers. No warranty of any type is extended by publication of this documentation, including, but not limited to, implied warranties or merchantability, fitness for a particular purpose and non-infringement.

Copyright© 2025 All Rights Reserved. Registered Trademarks ™ Airgain, Inc. Airgain, AirgainConnect, NimbeLink, and their associated logos are trademarks or registered trademarks of Airgain, Inc.

Table of Contents

1   Preface

1.1   Copyright

This publication, including all photographs, illustrations and software, is protected under international copyright laws, with all rights reserved. No part of this manual may be reproduced, copied, translated or transmitted in any form or by any means without the prior written consent from Airgain.

1.2   Disclaimer

The information in this document is subject to change without prior notice and does not represent commitment from Airgain. However, users may update their knowledge of any product in use by constantly checking its manual posted on our website: airgain.com. Airgain shall not be liable for direct, indirect, special, incidental, or consequential damages arising out of the use of any product, nor for any infringements upon the rights of third parties, which may result from such use. Any implied warranties of merchantability or fitness for any particular purpose is also disclaimed.

1.3   Acknowledgements

CY-AFES-E6P4 are the trademarks of Airgain. All other product names mentioned herein are registered trademarks of their respective owners.

Airgain RoHS Environmental Policy and Status Update

1.4   Safety Information

Before installing and using the device, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a heating device.
- The load of the system unit does not solely rely for support from the rackmounts located on the sides. Firm support from the bottom is highly necessary in order to provide balance stability.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

1.5　Installation Recommendations

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- A Philips screwdriver
- A flat-tipped screwdriver
- A grounding strap
- An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nose pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

1.6　Safety Precautions

1. Read these safety instructions carefully.
2. Keep this User Manual for later reference.
3. Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
4. Put this equipment on a stable surface during installation. Dropping it or letting it fall may cause damage.
5. The openings on the enclosure are for air convection to protect the equipment from overheating. DO NOT COVER THE OPENINGS.
6. Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
7. All cautions and warnings on the equipment should be noted.
8. If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.
9. Never pour any liquid into an opening. This may cause fire or electrical shock.
10. Never open the equipment. For safety reasons, the equipment should be opened only by qualified service personnel.
11. If one of the following situations arises, get the equipment checked by service personnel:
    a.　The power cord or plug is damaged.
    b.　Liquid has penetrated into the equipment.
    c.　The equipment has been exposed to moisture.

> d. The equipment does not work well, or you cannot get it to work according to the user's manual.
> e. The equipment has been dropped and damaged.
> f. The equipment has obvious signs of breakage.

12. Do not place heavy objects on the equipment.

Warning!

1. Handling the unit: carry the unit with both hands and handle it with care.
2. Maintenance: to keep the unit clean, use only approved cleaning products or clean with a dry cloth.

1.7 Package Contents

Before continuing, verify that the CY-AFES-E6P4 that you received is complete. Your package should have all the items listed in the following table.

CY-AFES-E6P4

Item	Name	Description	Qty
1	(T)TERMINAL BLOCKS 3P PHOENIX CONTACT	5.08mm MALE DIP GREEN	1
2	(H)FLAT HEAD SCREW LONG	F3x5 NI NYLOK	4
3	MOUNTING BRACKET	140x31x10mm SPCC NI PLATING T=1.2mm	2

1.8 Ordering Information

The following provides ordering information:

CY-AFES-E6P4
4 x RJ45 10/100/1000 PoE port (802.3af/at), 2 x RJ45 10/100/1000
Ethernet port, 9~36VDC input, ignition detection, low voltage protection, delay timer

2 Product Information

2.1 CY-AFES-E6P4 Overview

The CY-AFES-E6P4 unmanaged mobile PoE switch is designed for applications in harsh environments with a fanless enclosure. It provides 6/10 Gigabit Fast Ethernet ports including 4/4 IEEE 802.3af/at compliant PoE+ ports to transfer large amounts of video streaming, voice and critical data across an Ethernet network to/from AC Fleet smoothly and quickly.

As the power source from a vehicle is unstable by nature, the Ethernet switch supports a wide voltage input range from 9VDC to 36VDC and provides smart power management with low-battery voltage protection, power-off delay timer, and auto ignition power on/off functions. These features provide reliable operation.

The CY-AFES-E6P4 is encased in a fanless dustproof enclosure and can operate under shock, vibration, and temperature extremes from -40 to 70°C. The Ethernet switch is small for ease of installation.

2.1.1 Key Features

- 4/4 x IEEE 802.3af/at-compliant Gigabit Ethernet ports, 120W total
- 4/4 PoE+ standard + 2 x Gigabit Ethernet ports
- Low battery voltage protection
- Jumbo frame support (up to 9216 Bytes)
- CE/FCC/UKCA/E13 mark certification
- Wide power input range 9~36VDC
- -40~70°C operating temperature
- Ignition power on/off support
- Power off delay time setting
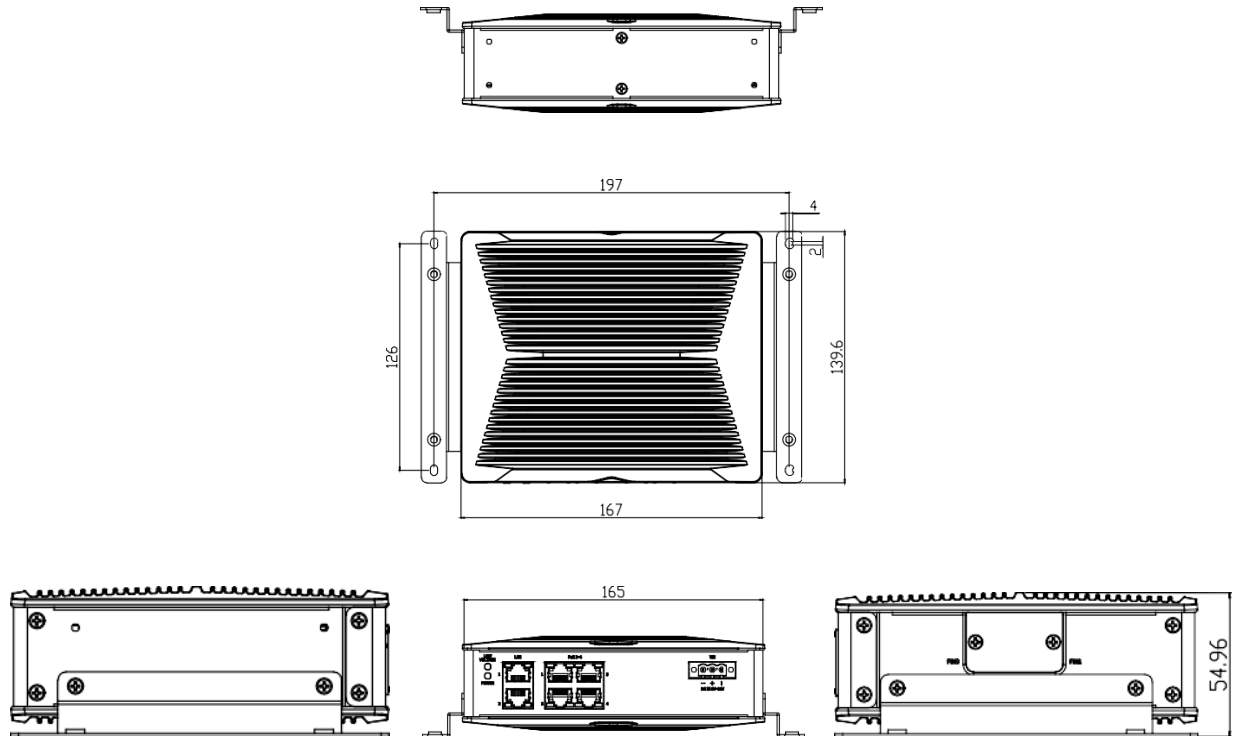
2.2 Physical Features

CY-AFES-E6P4 Front View

Low Voltage LED

Power LED   LAN 1/2 Ports   PoE 1 to 4 Ports   DC IN 9V-36V
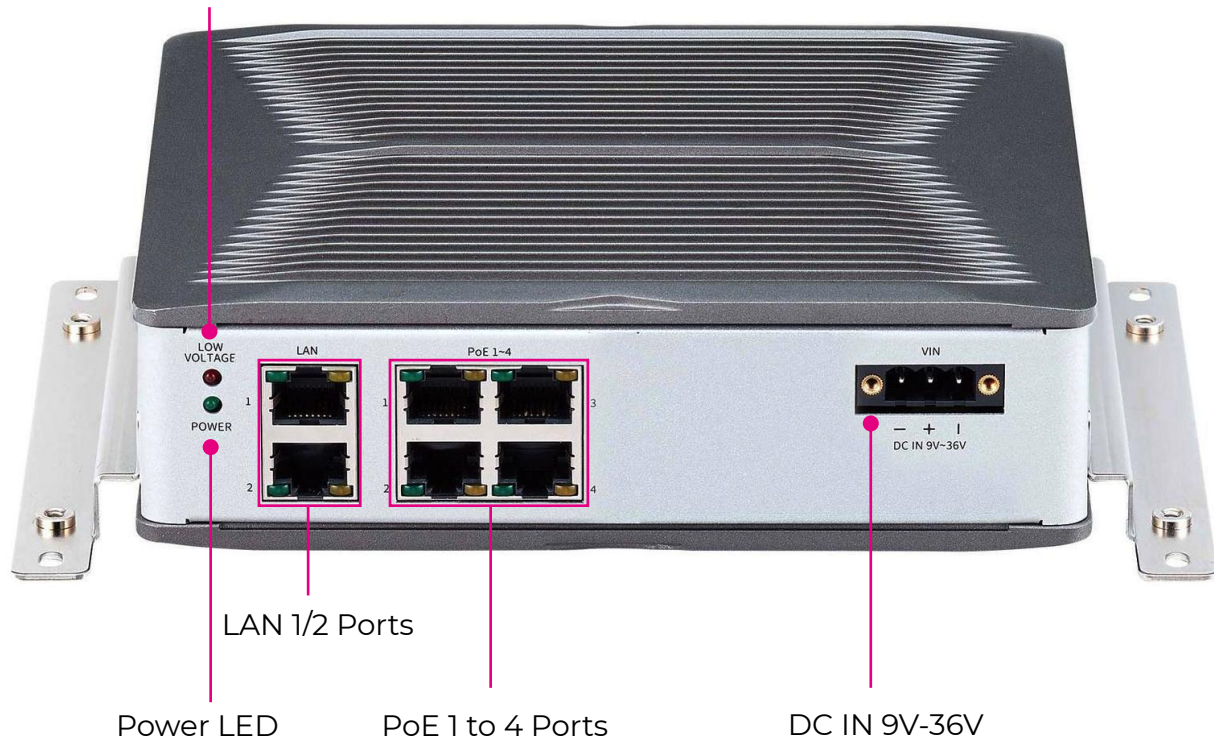
2.3   Mechanical Dimensions

2.4   Hardware Specs

Architecture

- Highly integrated, unmanaged smart gigabit, store-and-forward Ethernet switch
- 2K entry MAC address table with 4-way hash algorithm

Power over Ethernet

- PoE standard IEEE 802.3af/at power over Ethernet/Ethernet
- PoE power supply type end-span
- PoE power output per port 54V DC, 550mA. max. 30 watts

Power Management

- Selectable boot-up & shut-down voltage for low power protection by DIP switch
- Power off delay time setting by DIP switch

Dimensions

- 211 x 55 x 140 mm (83" x 21.65" x 55.1") with wall mounting bracket
- Weight: 1kg
- Supports horizontal mounting

Network Connector

- 4/4-port RJ45 for 10/100/1000 base-T. PoE IEEE 802.3af/at compliance, total 120W
- 2-port RJ45 for 10/100/1000 base-T

Standards Compliance

- IEEE 802.3 for 10BaseT Ethernet
- IEEE 802.3u for 100BaseT(X) Fast Ethernet
- IEEE 802.3ab for 1000BaseT(X) Gigabit Ethernet
- IEEE 802.3x for flow control
- IEEE 802.3af/at Power Over Ethernet

I/O Interface

- Power: 9~36VDC input with ignition
- Ethernet
  - 4/4 x RJ45 10/100/1000 Mbps PoE port, 802.3af/at compliance
  - 2 x RJ45 10/100/1000 Mbps
- LED
  - 1 x power indicator
  - (RJ45 for PoE) 4/4 x PoE indicator + 4/8 x Link/Active indicator
  - (RJ45 for LAN) 2 x Link indicator+2 x Active indicator
  - 1 x low voltage protection indicator

Environment

- Operating temperatures: -40°C to 70°C with air flow
- Storage temperatures: -40°C to 85°C
- Relative humidity: 10% to 90% (non-condensing)
- Vibration (random): 2g@5~500 Hz
- Vibration:
  - Operating: MIL-STD-810H, Method 514.8C Procedure 1, Category 4, common carrier US highway truck vibration exposure
  - Storage: MIL-STD-810H, Method 514.8E Procedure 1, Category 24
- Shock:
  - Operating: MIL-STD-810H, Method 516.8 Procedure I, trucks and semitrailers=40g
  - Non-Operating: MIL-STD-810H, Method 516.8 Procedure V, crash hazard shock test=75g

Standards/Certifications

- CE
- FCC Class A
- IC/ISED (Canada)

3   Description of the LED Indicators

3.1   LED Definitions
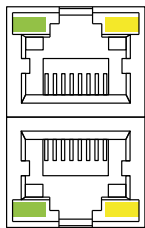
3.1.1   Power and Low Voltage Protection LEDs

LOW VOLTAGE
🔴

🟢
POWER

LED	Status	Description
Low Voltage	Light off	Battery voltage is normal
	Light on (red)	The status of low voltage occurs
Power	Light off	Power off
	Light on (green)	Power on

3.1.2   RJ45 for LAN Ports LEDs

| LED	Status	Description
LINK (Left)	Light off	No link
	Light on (green)	100Mbps or 1Gbps network link
ACT (Right)	Light blinking (yellow)	Data is being transmitted or received.
	Light off	No data is being transmitted or received

3.1.3 RJ45 for PoE Ports LEDs
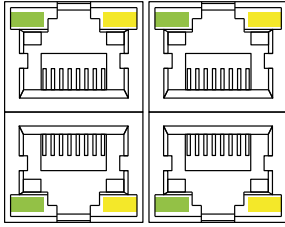
LED	Status	Description
Left	Light off	No link
	Light on (green)	PoE is activated
Right	Light blinking (yellow)	The network is connected, and data is being transmitted or received
	Light off	No data is being transmitted or received

4 Description of the External Connector Points

4.1 LAN 1 AND LAN 2 Ports

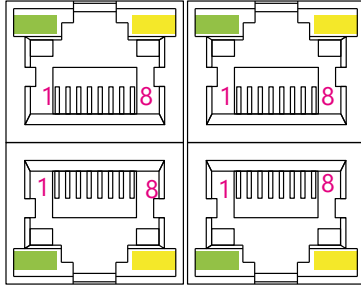### 4.1.1 Connector type: RJ45 port with LEDs

LINK   ACT
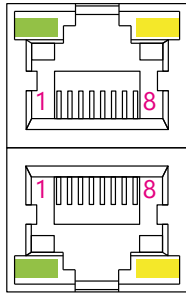
LINK   ACT

Pin	Definition	Pin	Definition
1	LAN_MDI_0P	2	LAN_MDI_0N
3	LAN_MDI_1P	4	LAN_MDI_2P
5	LAN_MDI_2N	6	LAN_MDI_1N
7	LAN_MDI_3P	8	LAN_MDI_3N

4.1.2 PoE Port 1~4

Pin	Definition	Pin	Definition
1	LAN_MDI_0P	2	LAN_MDI_0N
3	LAN_MDI_1P	4	LAN_MDI_2P
5	LAN_MDI_2N	6	LAN_MDI_1N
7	LAN_MDI_3P	8	LAN_MDI_3N

4.2   DC Input 9V-36V
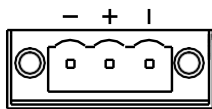
Pin	Definition
1(-)	GND_IN
2(+)	V_IN
3(I)	IGNITION

4.3   Power Off Delay Settings

OFF (Default)

Pin 8
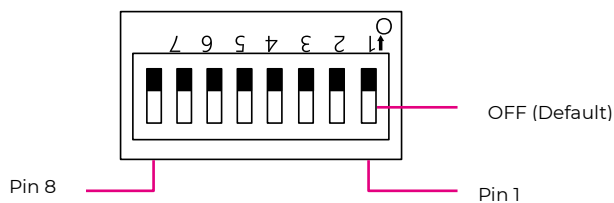
Pin 1

Power OFF Delay Time	Pin 4	Pin 3	Pin 2	Pin 1
Disabled(*)	O	O	O	O
30 seconds	O	O	O	1
2 minutes	O	O	1	O
5 minutes	O	O	1	1
15 minutes	O	1	O	O
30 minutes	O	1	O	1
60 minutes	O	1	1	O
120 minutes	O	1	1	1
240 minutes	1	O	O	O

(*) Default setting

4.4   Input Voltage Settings

Pin 8

Pin 1

OFF (Default)
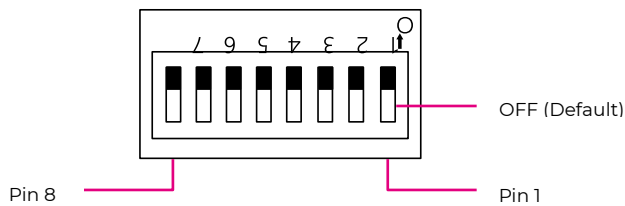
Voltage Range	Pin 8	Pin 7
9~36VDC(*)	O	O
12VDC	O	1
24VDC	1	O

(*) Default setting

4.5 Low Voltage Protection Settings

Pin 8 — | — Pin 1 | OFF (Default)
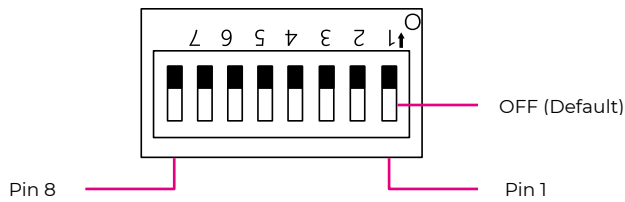
Low Voltage Protection						
12V System			**24V System**			
Minimum power on voltage	**Minimum operation voltage**	**Minimum power on voltage**	**Minimum operation voltage**	**Pin 6**	**Pin 5**	
Disabled (9~36V)(*)	Disabled (9~36V)(*)	Disabled (9~36V)(*)	Disabled (9~36V)(*)	0	0	
11.5V	10.5V	23V	21V	0	1	
12V	11V	24V	22V	1	0	
12.5V	11V	25V	22V	1	1	

* If the vehicle battery voltage drops lower than the above minimum power on and minimum operation voltages for 6 minutes, the CY-AFES-E6P4 will be shut down.
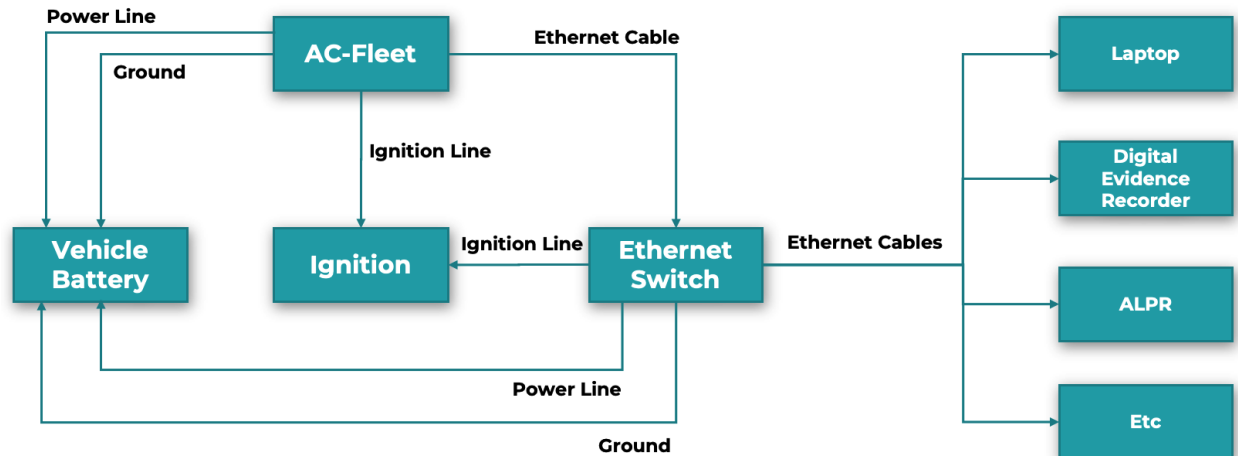
** If the vehicle battery voltage ranges between 6V~9V for 30 seconds, the CY-AFES-E6P4 will be shut down.

(*) Default setting

5   Ethernet Switch Connection with AC-fleet

The following diagram shows the connections between the Ethernet switch and AC-Fleet:

6 Support / Questions:

For the most updated information of Airgain products, visit Airgain's website at https://www.airgain.com/.

For any questions, please contact Airgain support: connectivity.support@airgain.com.

For technical issues that require contacting our technical support team or sales representative, please have the following information ready before calling:

- Product name and serial number
- Detailed information of the peripheral devices
- Detailed information of the installed software (operating system, version, application software, etc.)
- A complete description of the problem
- The exact wordings of the error messages

For information about product warranty, see https://www.airgain.com/support/.