SPECIFICATION FOR APPROVAL

CUSTOMER　　　:

PRODUCT NAME:　　Dual- voltage Output Ultra-thin PoE module

PRODUCT MODEL :　　　　　　　　TSD-V158B

BRAND　　　　:　　　　　　　TST（OEM/ODM）

DATE　　　　　:　　　　　　　2024 / 06 / 26

| DRAWING			CUSTOMER APPROVE
DESIGNED	CHECKED	APPROVED	
VANNE	YOUTRONG	Mark	
DATE	2024 / 06 / 26		Please return the visa after confirmation, thank you!

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PRODUCT: Dual-voltage output ultra-thin PoE module

MODEL: TSD-V158B
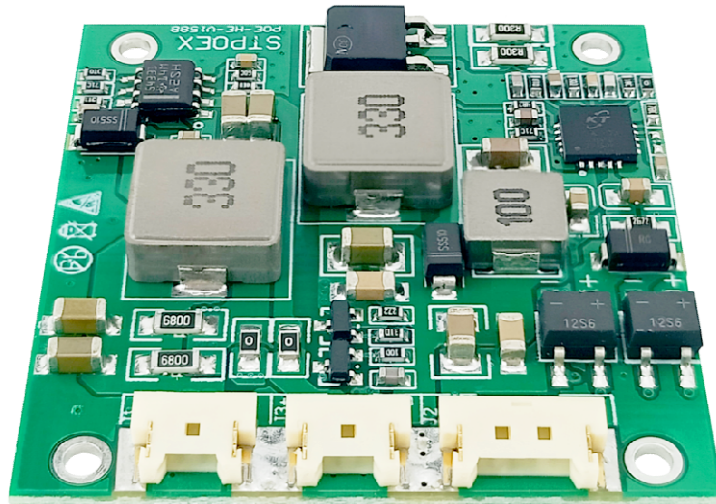
What Is PoE

PoE (Power over Ethernet) refers to the technology that can transmit data signals for some IP-based terminals (such as IP phones, wireless LAN access point APs, IP cameras, etc.) without any changes to the existing Ethernet Cat.5 cabling infrastructure, and can also provide DC power supply for such devices.

A complete PoE system consists of two parts: Power Sourcing Equipment (PSE) and Powered Device (PD). The PSE device is the device that powers the Ethernet client device and is also the manager of the entire PoE (Power-over-Ethernet) process. The PD device is the PSE load that receives the power supply, that is, the client device of the PoE system. Based on the IEEE 802.3af/at standard, the two establish information about the connection status, device type, power consumption level and other aspects of the PD of the power receiving device, and use this as the basis for PSE to supply power to the PD through Ethernet.

The Principle of PoE

The standard Category 5 cable has four twisted pairs, but only two pairs are used in l0M BASE-T and 100M BASE-T. IEEE80 2.3af/at allows two uses: (1) When the idle pin is used for power supply, pins 4

and 5 are connected as the positive pole, and pins 7 and 8 are connected as the negative pole. (2) Pin 1 and pin 2 are connected as the positive pole, and pin 3 and 6 are connected as the negative pole.

The Advantages of PoE

1. Save labor and material costs. Compared with the traditional wiring method of weak current engineering, PoE only needs to install a network cable to make the IP equipment work normally. In many cases, PoE is more advantageous in the places where it is difficult to deploy AC power. As the number of network devices in the system increases, the use of PoE eliminates the need for local power supply for the equipment, which will greatly reduce deployment costs and simplify their manageability.

2. Easy to install and manage. Customers can autonomously and securely mix PoE devices and legacy devices within the system, and can coexist with existing Ethernet cables. PoE devices are compatible with the management system of existing network devices and can share the management platform with existing network devices.

3. Good security. The Power Sourcing Equipment（PSE） in a PoE system will only supply power to the Powered Device （PD） that needs to be powered. Only when the Device that needs to be powered is connected and the protocol is successfully identified, the power supply equipment will have a voltage output and supply power to the powered device, thus eliminating the risk of leakage and short circuit on the line.

Product Introduction

The TSD-V158B is a PoE module that supports dual-channel independent dynamic power distribution. It receives a 38-56V DC signal from the input PoE and outputs dual-channel 5V/12V DC signals, with a maximum current of 2A per channel, intelligently matching the power requirements of connected devices.

With a maximum output power of 30W, the TSD-V158B complies with the IEEE 802.3af/at international PoE standards, enabling it to safely receive DC power from the PoE and provide DC power supply for devices such as advertising screens, electronic class signs, and all-in-one machines.

Product Description

Interface Configuration of the TSD-V158B Module:

Input Interface: 4-pin PH1.25mm socket for DC 38-56V input signal.

Output Interface 1: 2-pin PH1.25mm socket for DC 12V / 2A output signal.

Output Interface 2: 2-pin PH1.25mm socket for DC 5V / 2A output signal.

Dimensions &structure: overall size: 44 × 42 × 4.9mm (L × W × H),PCB thickness: 0.96mm, Module maximum height: 4.9mm, PCB design: Square structure, double-layer single-sided design, with glossy green solder mask, Screw hole diameter: Φ = 2.2mm × 4, hole center distance: L = 38mm, W = 34mm, Module design: Ultra-thin, horizontal interface layout, Net weight: 12g.

The TSD-V158B delivers a maximum output power of 30W and features comprehensive protection, including overheat, overvoltage, overcurrent, and short-circuit protection, with surge immunity up to 4KV to ensure the safety of connected devices and the entire power system. It supports wide-range DC 38-56V input and enables dynamic power distribution for 5V/2A and 12V/2A DC outputs.Compliance: Follows IEEE 802.3af/at PoE international standards.

The TSD-V158B complies with the IEEE 802.3af/at PoE international standards and meets the EMC requirements specified in IEC 61000-4-2/3/4/5/6. It has obtained authoritative certifications including CE, FCC, and RoHS. Featuring a compact and ultra-slim design, the TSD-V158B enables rapid deployment across diverse applications. Its flexible installation options, exceptional reliability, and broad compatibility have earned widespread acclaim and strong market recognition.

Product Features

- Input: Wide-range PoE DC 38-56V
- Output:DC 5V MAX 2A + DC 12V MAX 2A Dynamic Allocation
- Compliance: IEEE 802.3af/at PoE International Standard
- Certifications: CE, FCC, RoHS
- EMC Standards: Meets IEC 61000-4-2/3/4/5/6 Requirements
- Port Compatibility: RJ12+ RJ36- / RJ45+ RJ78- Fully Compatible

- Surge Protection: 4KV lightning surge resistance

- Design Features:

  High-temperature-resistant, flame-retardant horizontal connectors, ultra-slim compact design

  Double-layer PCB with single-sided layout

- Protection mechanisms:

  Short-circuit protection, overload protection, overheat protection, overvoltage protection

- Premium Components:

  High-precision branded electronic components

  High-power, low-impedance transistors for superior conductivity

  Pure copper pin connectors (excellent electrical & thermal conductivity)

- Efficiency & Durability:

  Conversion efficiency≧90%

  High-temperature-resistant, eco-friendly PCB material

Specifications

Product parameter table	
Product Name	Dual-voltage output ultra-thin PoE module
Product Model	TSD-V158B
PoE Standard	IEEE802.3af/at
Input Voltage	PoE: DC38-56V
Output	DC 5V MAX 2A + DC 12V MAX 2A Dynamic Allocation
Conversion Efficiency	≧90%
PoE Pin	RJ12+ RJ36- / RJ45+ RJ78- Fully compatible
Conversion Mode	Non-isolated type
Data Rate	N/A
Transmission Distance	100 meters(Category 5e Cable (Cat5e))
Surge Protection	4KV
Circuit Protection	Short-circuit Protection Overcurrent Protection Overvoltage Protection Overheating Protection

LED Indicator	/
Interface	Input Port (4-Pin PH1.25mm Socket): DC 38-56V IN Output Port (2-Pin PH1.25mm Socket): DC 5V OUT Output Port (2-Pin PH1.25mm Socket): DC 12V OUT
Function	/
Material	FR-4
Color	bright green oil
Accessories	/
EMC	IEC 61000-4-2/3/4/5/6
Temperature	-30～65℃ For Operating -40～85℃ For Storage
Humidity	RH95% MAX (Non-condensation)
Weight	N.W: 12g
Dimension	44*42*4.9mm
Package	Anti-static pearl cotton

Product Applications

The TSD-V158B module features standardized interface design and low-power circuit architecture, significantly reducing installation complexity and deployment costs. Its multi-directional mounting compatibility allows flexible adaptation to various spatial layouts.

Equipped with comprehensive protection mechanisms—including overcurrent, overvoltage, and EMI shielding—the module effectively mitigates safety risks in complex power systems, ensuring stable device power supply.
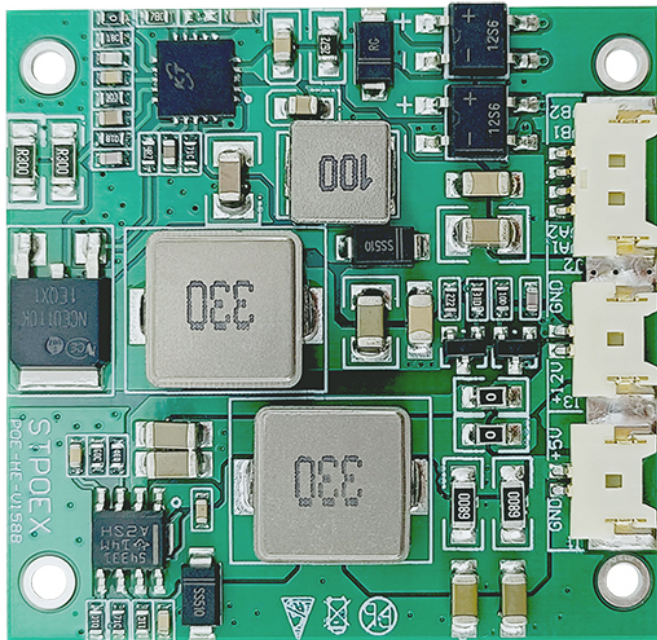
With its compact, lightweight design, the TSD-V158B has been widely adopted in commercial displays, smart education, financial terminals, and industrial automation, delivering reliable and flexible power solutions for diverse applications.

Dimensions
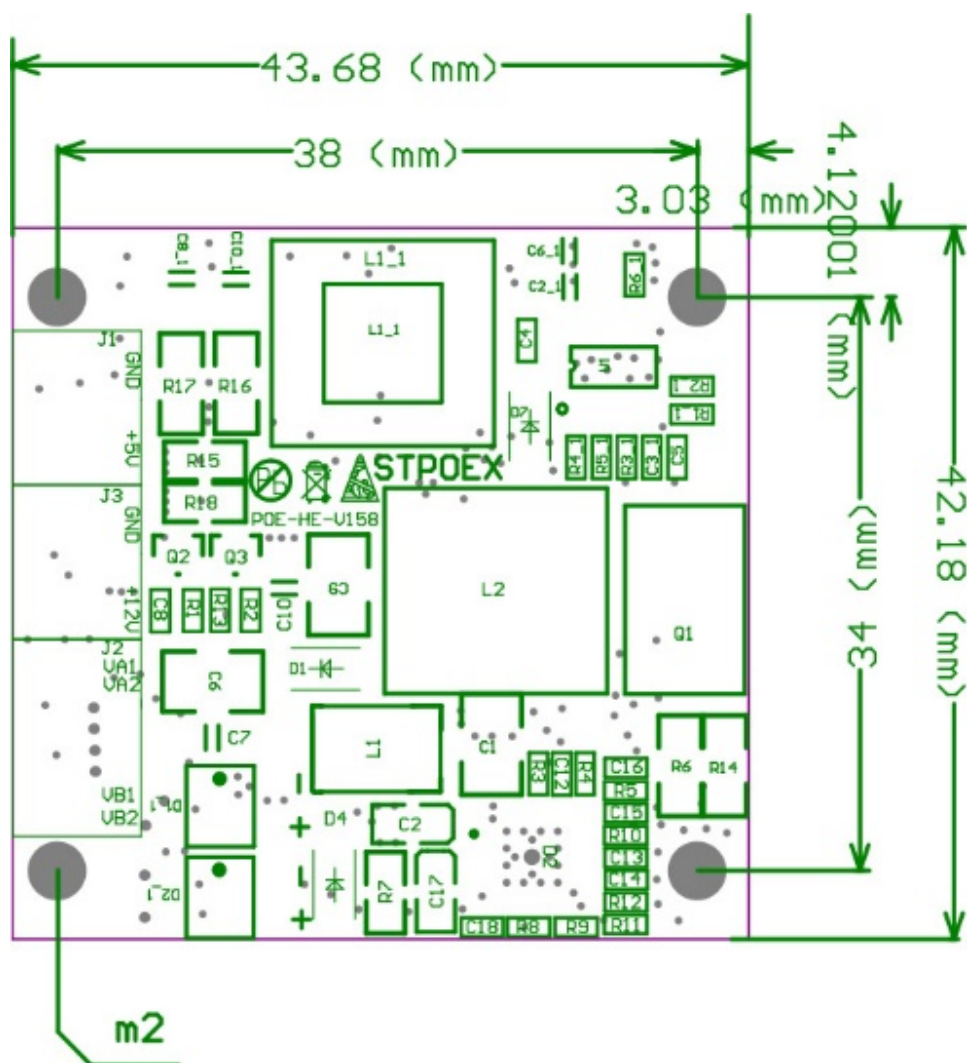
Interface Definition

DC 48V IN

4P PH1.25mm

Horizontal
ultra-thin socket

VB2	48V-
VB1	48V+
VA2	48V-
VA1	48V+

2P PH1.25mm
Horizontal
ultra-thin socket

DC 12V OUT

OUT1	GND
OUT2	+12V

DC 5V OUT

2P PH1.25mm

Horizontal
ultra-thin socket

OUT1	+5V
OUT2	GND

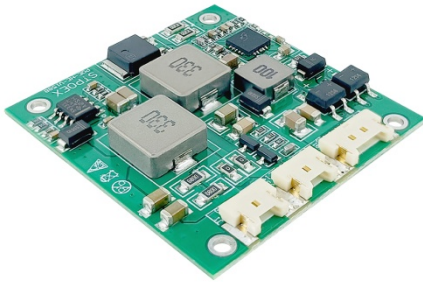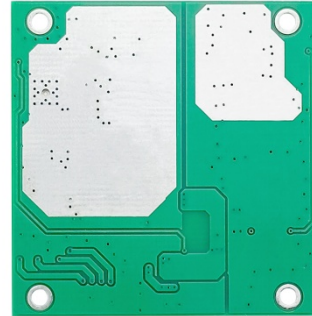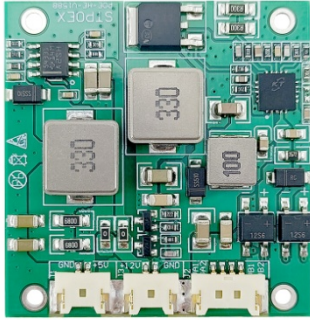# Application Scenarios
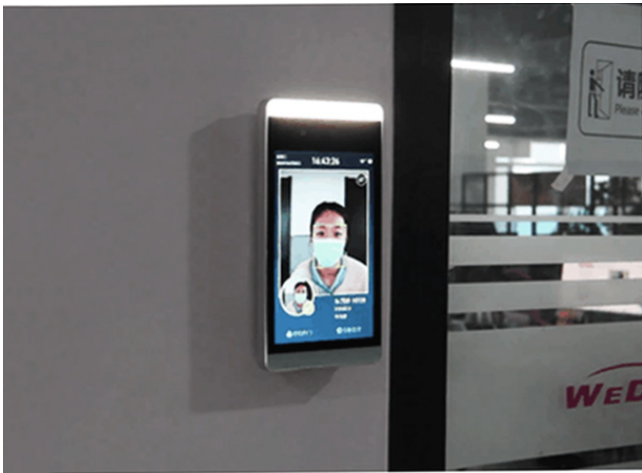
Wall-mounted Access Control Display

Face Recognition Paper Dispenser

Touchscreen All-in-One Terminal

Product Detail
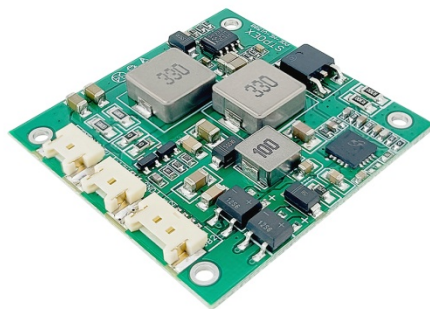
Product Package

Package Size: 41*29*32 cm (L*W*H)

MPQ: 1120 PCS

N.W: 12.9 kg

G.W: 13.8 kg