0.49 Inch Monochrome OLED Display Module CH049L001A-PW with IIC Interface

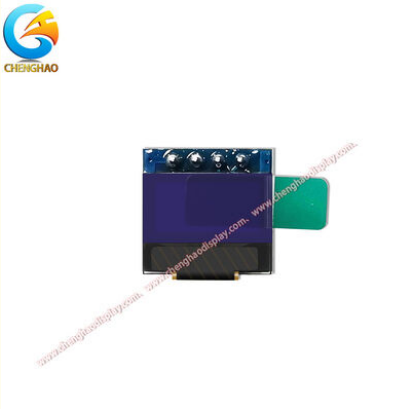
Our Product Introduction

Basic Information

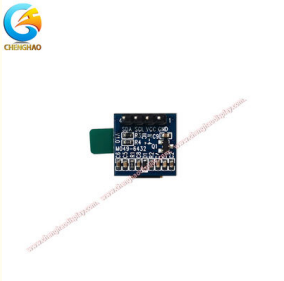
- Place of Origin: China
- Brand Name: chenghao optoelectronic
- Certification: RoHS & CE & FCC
- Model Number: CH049L001A-PW
- Minimum Order Quantity: 100 pcs
- Price: Negotiable
- Packaging Details: Standard export packaging
- Delivery Time: 7-15 work days
- Payment Terms: T/T
- Supply Ability: 300,000 pieces/month

Product Specification

- Module No: CH049L001A-PW
- Display Mode: OLED
- Screen Size: 0.49 Inch
- Resolution: 64 X 32
- Viewing Direction: All Direction
- Module Interface: IIC
- FPC Pin Numbers: 4
- Operating Temperature: -40°C ~ +85°C
- Storage Temperature: -40°C ~ +85°C
- Module Size: 15 ± 0.3 Mm
- Active Area Size: 5.58 X 3.81 Mm
- Touch Type: No Touch



More Images



Product Description

The CH049L001A-PW is a compact 0.49-inch monochrome OLED display module manufactured by Chenghao Optoelectronic. Designed with a passive matrix OLED (PMOLED) architecture, this ultra-small display delivers crisp white-on-black visuals with a resolution of 64 x 32 dots, making it an ideal choice for space-constrained embedded applications where clear status indication and text readability are essential.

Built around a robust IIC (I2C) communication interface, the CH049L001A-PW requires only four pins for full operation ?GND, VCC, SCL, and SDA. This minimalist pin configuration simplifies PCB layout and reduces wiring complexity, which is particularly valuable in compact device designs. The module features a total PCB dimension of 15 mm (0.3 mm), with an active display area measuring 5.58 x 3.81 mm, providing sufficient screen real estate for icons, simple graphics, and short alphanumeric strings.

One of the standout features of this OLED module is its exceptional operating temperature range of -40 C to +85 C. This wide temperature tolerance ensures reliable performance across demanding environments, from cold-chain logistics monitoring to industrial automation control panels installed near heat sources. The storage temperature range matches the operating range, guaranteeing long-term durability even when the device is not actively powered.

As a self-emissive OLED display, the CH049L001A-PW does not rely on a backlight, resulting in lower power consumption compared to traditional LCD alternatives. The true-black background and high contrast ratio inherent to OLED technology ensure excellent readability under varying ambient lighting conditions. Each pixel emits light independently, enabling sharp dot detail with a pixel pitch that achieves fine rendering of small text and simple graphical elements.

The CH049L001A-PW complies with ROHS environmental protection requirements, reflecting Chenghao's commitment to sustainable electronics manufacturing. Whether deployed in portable medical instruments, industrial sensor readouts, IoT node displays, or consumer electronics sub-displays, this miniature OLED module delivers dependable visual output within an exceptionally small footprint. Its straightforward IIC interface and wide temperature performance make it a go-to solution for engineers seeking a reliable micro-display component for their next embedded design project.

Product Features

Ultra-Compact 0.49-Inch Form Factor Measuring just 15 mm across the PCB, the CH049L001A-PW is engineered for applications where board space is at a premium. Its tiny footprint allows designers to integrate a visible display into handheld diagnostic tools, compact sensors, and miniature control panels without sacrificing other critical components. The 4-pin IIC interface further reduces the space needed for display wiring, freeing up valuable PCB real estate for additional circuitry.

Wide Temperature Performance (-40 C to +85 C) Unlike many consumer-grade small displays, this OLED module is rated for full operation from -40 C to +85 C. This makes it suitable for outdoor data loggers exposed to freezing winter conditions, factory floor instruments near high-temperature machinery, and automotive sub-systems that experience extreme thermal cycling. Engineers no longer need to compromise on display quality when designing for harsh environments.

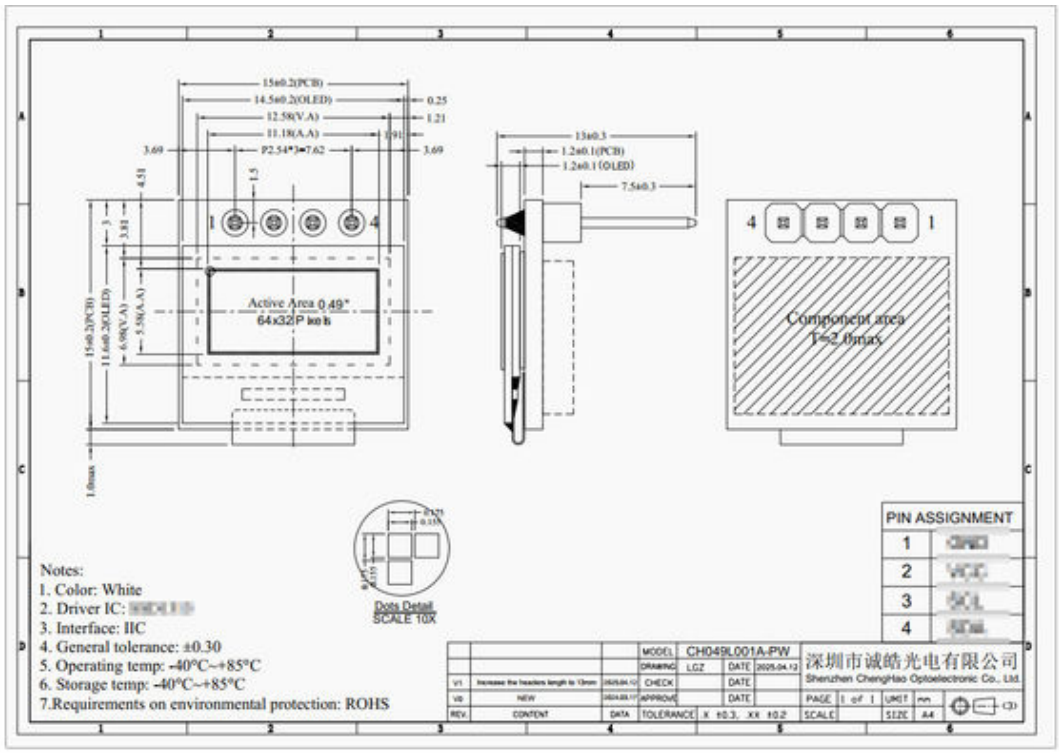
Low Power Self-Emissive OLED Technology As a passive matrix OLED, the CH049L001A-PW generates its own light without requiring a backlight. Each pixel consumes power only when illuminated, which means power draw scales naturally with content complexity. For battery-powered IoT devices and portable instruments that display static status screens most of the time, this translates to significantly extended battery life compared to backlit LCD alternatives.

Simple 4-Pin IIC Interface for Easy Integration With only four connection pins (GND, VCC, SCL, SDA), this module minimizes both hardware design effort and software driver complexity. The IIC bus allows multiple devices to share the same two communication lines, enabling multi-display configurations or easy coexistence with other IIC peripherals such as temperature sensors, EEPROMs, and ADCs on the same bus.

High Contrast Monochrome Visuals The monochrome OLED technology delivers a true-black background with bright white pixels, achieving a contrast ratio far superior to that of conventional LCD panels. This ensures clear readability even in low-light environments, making the display well-suited for medical device indicators, industrial status panels, and any application where visual clarity at a glance is critical.

ROHS-Compliant and Environmentally Responsible The CH049L001A-PW meets ROHS environmental protection standards, ensuring compliance with international regulations for hazardous substances. This certification simplifies the product approval process for medical and automotive applications that mandate strict environmental compliance for all electronic components used in their designs.

Product Drawing



Detailed Specifications

Item	Specifications
Module No.	CH049L001A-PW
Display Type	Mono OLED (PMOLED)
Display Mode	Passive Matrix
Screen Size	0.49 inch
Resolution	64 x 32 dots
Display Color	White
Viewing Direction	All Direction
Module Interface	IIC (I2C)
Driver IC	*

Item	Specifications
FPC Pin Numbers	4 (GND, VCC, SCL, SDA)
Pitch (FPC)	P2.54
Operating Temperature	-40 C ~ +85 C
Storage Temperature	-40 C ~ +85 C
Module Size (PCB)	15 0.3 mm
Active Area Size	5.58 x 3.81 mm
Overall Thickness	2.0 mm max
Touch Type	No Touch
Environmental Compliance	ROHS

Customized Introduction

Chenghao Optoelectronic offers professional display module customization services across four major product categories: TFT LCD modules, mono LCD displays, color OLED modules, and mono OLED modules. With years of expertise in the display industry, our engineering team works closely with customers to deliver tailored display solutions that precisely match their project requirements.

FPC Customization We provide custom FPC designs including flexible circuit shape, pin count, and connector specifications. Whether you need a shorter tail, a unique bend radius, or additional signal lines for integrated sensors, our FPC engineering team can accommodate a wide range of design requirements.

Interface Customization Chenghao supports interface customization across multiple communication protocols including SPI, MCU (parallel), RGB, MIPI, LVDS, EDP, and HDMI. We can adapt any display module to your preferred interface standard, ensuring seamless integration with your existing MCU or SoC platform.

Brightness Customization Depending on your application scenario, we offer brightness levels ranging from standard (200 ?00 cd/m) for indoor environments to high-brightness (500+ cd/m) configurations for outdoor or high-ambient-light applications. Each brightness specification is validated through rigorous testing to ensure consistent performance.

Touch Panel Customization Our display modules can be configured with capacitive touch, resistive touch, or delivered without touch functionality. Capacitive touch options support multi-point gestures, while resistive touch is ideal for gloved-operation or stylus-input scenarios.

Surface Treatment and Cover Glass Chenghao provides Anti-Glare (AG) surface treatment to minimize reflections in bright environments. We also design custom cover glass with tailored thickness, shape, color, and silkscreen printing to meet the specific aesthetic and functional needs of your product enclosure.

Why Choose Chenghao for Customization? With in-house engineering, rapid prototyping capabilities, and strict quality control, Chenghao delivers customized display solutions with short lead times and competitive pricing. Contact our sales team today to discuss your display customization requirements and receive a detailed quotation for your project.

Application Cases

Portable Medical Diagnostic Devices The CH049L001A-PW is well-suited for compact medical instruments such as handheld pulse oximeters, portable glucose meters, and miniature patient monitors. Its wide operating temperature range ensures accurate display performance in varying clinical and field environments, while the low power consumption extends battery life during extended use in emergency medical scenarios.

Industrial IoT Sensor Nodes In smart factory and industrial IoT deployments, this micro OLED module serves as an ideal local display for wireless sensor nodes, environmental monitors, and edge computing gateways. The 4-pin IIC interface integrates easily with common microcontroller platforms, and the self-emissive OLED technology provides clear readability on dimly lit factory floors or control cabinet interiors.

Consumer Electronics Sub-Displays Beyond industrial and medical applications, the CH049L001A-PW can be integrated into consumer electronics as a secondary status display for audio equipment, smart home controllers, battery management systems, and portable test equipment. Its true-black background and crisp white text create a modern, premium visual appearance within a remarkably small display area.

FAQ

Q1: What is the resolution of the CH049L001A-PW OLED display?A: The CH049L001A-PW features a resolution of 64 x 32 dots, providing sufficient pixel density for displaying short text strings, status icons, and simple graphics in compact embedded applications.

Q2: What communication interface does this module use? A: This OLED module communicates via the IIC (I2C) interface with just four pins: GND, VCC, SCL, and SDA. The two-wire IIC protocol simplifies both hardware connections and software driver implementation.

Q3: What is the operating temperature range? A: The CH049L001A-PW supports an operating temperature range from -40 C to +85 C, making it suitable for industrial, medical, and outdoor applications that experience extreme thermal conditions.

Q4: Does this module require a backlight? A: No. As a passive matrix OLED display, the CH049L001A-PW is self-emissive and does not require a backlight. This results in lower power consumption and a thinner overall module profile compared to backlit LCD alternatives.

Q5: Can Chenghao customize the FPC or pin configuration of this module?A: Yes. Chenghao offers comprehensive customization services including FPC shape, pin count, interface type, brightness level, and cover glass design. Contact our sales team with your specific requirements for a tailored solution.

Q6: Is the CH049L001A-PW ROHS compliant? A: Yes. The CH049L001A-PW meets ROHS environmental protection requirements, ensuring compliance with international regulations on hazardous substances in electronic components.

Q7: What are typical applications for this 0.49-inch OLED display?A: Common applications include portable medical devices, industrial IoT sensor displays, smart home controller panels, audio equipment status indicators, battery management system readouts, and other space-constrained embedded systems requiring a compact visual interface.

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