3.2" Ips Panel Display 320x240 Resolution IPS TFT Support OEM ODM

Our Product Introduction

Basic Information

- Brand Name: Chenghao Optoelectronic
- Certification: CE、RoHS
- Model Number: CH320QV19A-L
- Minimum Order Quantity: 100 Pcs
- Packaging Details: All The Products Are Packed In Right Way To Keep It Safe. For Small Sizes Of Products We Use Tray + Carton, For Bigger Sizes We Use Foam Slot + Carton. We Also Design Packages According To Customers' Requirements
- Delivery Time: 7-15 Working Days
- Supply Ability: 300Kpcs/month

Product Specification

- Lcd Interface: SPI
- Operating Temperature: -20 ~ +70
- Storage Temperature: -30 ~ +80
- Color: 16M
- Module Type: 3.2" TFT +Cover
- Screen Brightness: 300 Cd/m2
- Module Size: 55.04x77.7x3.2 Mm
- Viewing Direction: 80/80/80/80
- Highlight: **3.2 inch IPS TFT display**, **IIC capacitive touch screen**, **320x240 resolution LCD module**

More Images

Product Description

Product Description:

Shenzhen ChengHao Optoelectronic Co., Ltd.'s CH320QV19A-L is a 3.2-inch IPS TFT LCD module engineered for entry-level professional and consumer electronic devices, with a design that emphasizes cost-effectiveness, space efficiency, and reliable basic performance—making it ideal for scenarios where compact size and essential display functionality take priority over high-end features. Unlike mid-to-high-end modules with complex customization options, this product streamlines key specs to meet the core needs of devices like budget IoT sensors, small household appliance controllers, and basic handheld meters.

At its display core, the module adopts an IPS panel with a resolution of 240x3(RGB)x320 dots and a normally black mode . This combination ensures clear content rendering for simple data types: it displays sensor readings (e.g., temperature, humidity) with sharp text and basic status icons (e.g., "power on," "low battery") with vivid colors, while the normally black mode minimizes ambient light reflection—critical for devices used near windows or under indoor overhead lights, where glare often distorts display content. The 80/80/80/80 all-around viewing angles eliminate the "limited viewing sweet spot" issue of cheaper TN panels, allowing users to check the screen from side angles (e.g., a family member glancing at a smart kettle's temperature from across the kitchen) without color fading or detail loss.

Structurally, the module's dimensions and layered design are optimized for easy integration. It features a lens outer dimension (LENS OD) of 77.70±0.2mm and a lens viewing area (LENS V.A) of 65.40±0.2mm, paired with an LCD active area (LCD A.A) of 64.80mm—this layout maximizes display space within a compact frame . The 0.7mm-thick glass lens (Glass LENS) and 2.4mm-thick TFT panel are bonded with 0.1mm double tape, creating a slim overall thickness of 3.20±0.2mm that fits into ultra-narrow device casings, from palm-sized IoT detectors to small kitchen appliance control panels , , . The inclusion of a stiffener (Stiffener) also enhances the durability of the FPC (Flexible Printed Circuit), preventing bending damage during manual assembly— a common pain point for small-batch production of low-cost devices.

Environmentally and electrically, the module meets practical industry standards. It complies with RoHS environmental protection requirements, restricting hazardous substances to ensure safety for household and light industrial use . The LCD drive IC is ST7789V, a widely used chip that ensures stable display performance and compatibility with low-cost microcontrollers (e.g., Arduino, STM32F1) . The backlight system operates at a voltage (VF) of 2.8~3.4V and a current (IF) of 100mA, balancing brightness (300 cd/m²) and power efficiency—suitable for battery-powered devices that require long runtime without frequent recharging , .

In short, the CH320QV19A-L fills a key niche in the entry-level display market: it avoids unnecessary feature bloat, focusing instead on the reliability, compactness, and cost-effectiveness that matter most for budget-conscious device manufacturers—delivering consistent performance for both consumer and light industrial applications.

Features:

Precision-Engineered Dimensional Layout for Space-Critical Installations

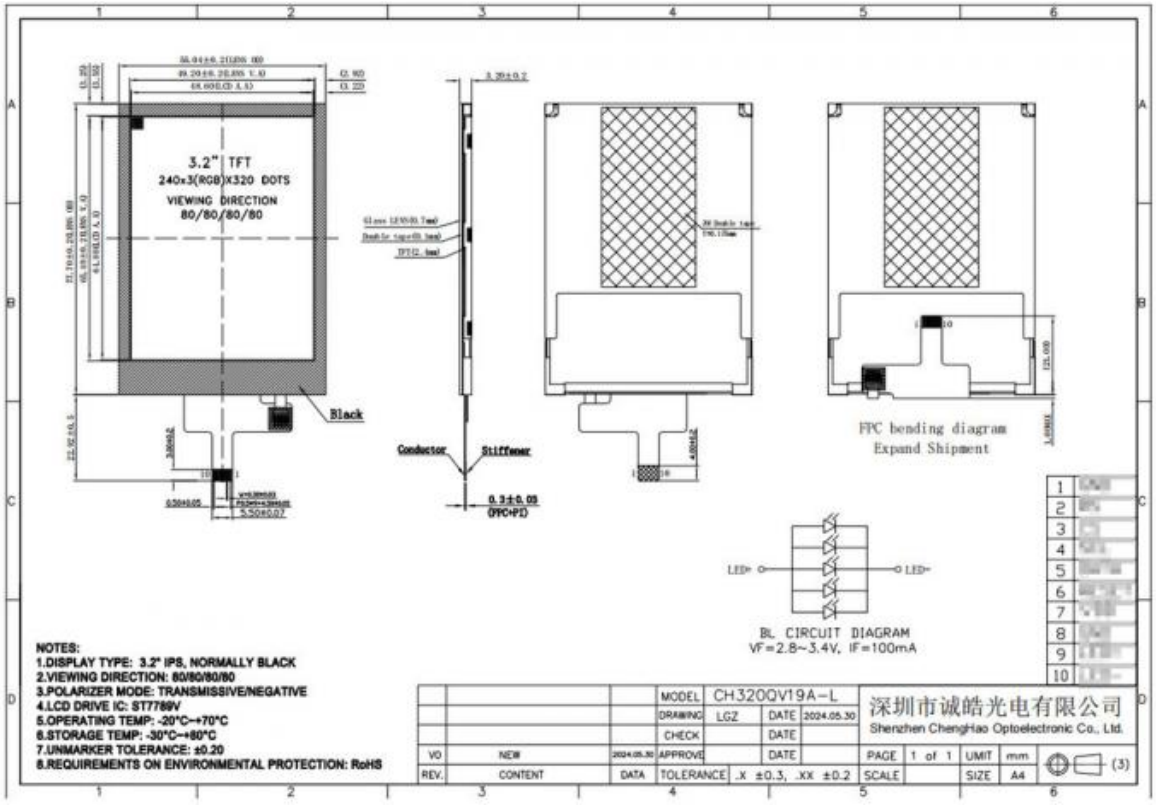
The module features a tightly controlled dimensional system tailored for compact device integration: its lens outer dimension (LENS OD)

is 77.70±0.2mm, lens viewing area (LENS V.A) is 65.40±0.2mm, and LCD active area (LCD A.A) is 64.80mm, with an overall thickness of 3.20±0.2mm . This layout ensures the 3.2-inch display fits into ultra-slim enclosures—such as palm-sized IoT sensors or small kitchen appliance control panels—without wasting space. The 0.7mm-thick glass lens (Glass LENS) and 2.4mm-thick TFT panel, bonded by 0.1mm double tape, further optimize thickness, avoiding the bulk that would disrupt the sleek design of miniaturized devices. Tight tolerances (±0.2mm for key dimensions) also guarantee seamless alignment with custom-machined casings, reducing assembly gaps and improving end-product aesthetics.

240x320 Dots Resolution with Normally Black IPS for Clear Data Rendering
Equipped with a 3.2-inch IPS panel, the module supports a resolution of 240x3(RGB)x320 dots and operates in a normally black mode. This combination excels at displaying simple yet critical data: for budget IoT humidity sensors, it renders numeric readings (e.g., “55% RH”) with sharp text; for small appliance controllers, it shows status icons (e.g., “heating,” “standby”) with vivid, distortion-free colors. The normally black mode minimizes ambient light reflection, ensuring readability even near bright windows or under overhead lights—addressing a common issue where standard “normally white” panels appear washed out in mixed-light environments.

SPI Interface for Low-Cost, Low-Complexity Integration
The module adopts an SPI interface, a key advantage for entry-level electronic devices. Unlike complex RGB interfaces that require multiple signal lines, SPI uses fewer pins, simplifying wiring and reducing PCB size—critical for cost-sensitive products like basic handheld thermometers. This interface is fully compatible with widely used low-cost microcontrollers (e.g., Arduino Uno, STM32F103), eliminating the need for specialized driver chips and lowering development costs. Additionally, the SPI’s stable data transmission ensures smooth display updates, such as real-time temperature fluctuations on a portable weather station, without lag or glitches.

80/80/80/80 All-Around Viewing Angles for Multi-Position Usability
The IPS panel delivers 80/80/80/80 viewing angles (measured at contrast ratio >10), eliminating the “narrow sweet spot” of cheaper TN-type displays . This feature is invaluable for shared or multi-position use: in a family kitchen, multiple members can check a smart kettle’s temperature from different spots (e.g., the countertop or dining table) without color fading; in a small workshop, two operators can verify a tool monitor’s data simultaneously. The consistent visibility across angles also reduces user frustration—no need to adjust the device’s position repeatedly to read content clearly, a key benefit for daily-use and light industrial devices.



Customization:

1.Glass Lens Functional Coating Customization
Building on the module’s base 0.7mm-thick glass lens, customization options focus on adding industry-specific functional coatings to enhance usability in targeted scenarios. For household appliances like smart kettles or humidifiers, an anti-fingerprint (AF) coating can be applied—this reduces smudge accumulation from frequent touches, maintaining screen clarity without frequent wiping. For outdoor IoT sensors (e.g., portable soil moisture detectors), an anti-glare (AG) coating is available to minimize sunlight reflection, ensuring readability even under midday sun. Additionally, for medical auxiliary devices (e.g., basic fever thermometers), a silver-ion antibacterial coating can be added to the lens surface, complying with general hygiene standards and preventing bacterial growth from occasional contact with skin.

2.FPC Structural & Pinout Customization
Leveraging the module’s existing FPC with a stiffener, customization extends to adapting the FPC for diverse assembly needs. The FPC length can be adjusted—shortened to 80mm for ultra-compact devices like mini IoT sensors or extended to 150mm for equipment where the display module is mounted separately from the main control board (e.g., small industrial tool monitors). Pinout customization is also supported: redundant pins can be redefined to add basic functions, such as using an NC (No Connection) pin as a backlight dimming control signal, eliminating the need for an external dimming module. For improved durability in frequent-assembly scenarios (e.g., small-batch production of household controllers), the FPC’s stiffener material can be upgraded from standard PI (Polyimide) to stainless steel, reducing bending damage during manual installation.

3.Backlight Brightness & Voltage Tuning

Tailored to the module's base 300 cd/m² backlight (powered at VF=2.8~3.4V, IF=100mA), customization allows adjusting brightness and voltage to match device power systems. For battery-powered devices like portable weather stations, brightness can be lowered to 200 cd/m², and the backlight voltage can be tuned to 3.0±0.1V to align with 3.7V lithium-ion battery outputs—extending runtime by up to 30% compared to the base configuration. For indoor devices requiring higher visibility (e.g., smart oven control panels), brightness can be increased to 400 cd/m² by adjusting the number of backlight LEDs, with the voltage adjusted to 3.2±0.1V to maintain stable performance. All backlight customizations undergo 24-hour aging tests to ensure no brightness attenuation or flicker in long-term use.

4.Environmental Adaptation Enhancement
Beyond the module's base RoHS compliance, customization adds protection for harsh operating conditions. For devices used in humid environments (e.g., bathroom smart thermometers), an IP65-rated waterproof sealant can be applied along the lens-TFT interface, preventing water vapor intrusion that could damage internal components. For industrial tools used in dusty workshops, a dust-proof mesh layer can be integrated into the module's edge, blocking debris from entering the backlight area. Additionally, for devices exposed to temperature fluctuations (e.g., garage-mounted smart tool chargers), the FPC's adhesive can be upgraded to a high-temperature-resistant type, ensuring the module maintains structural integrity even when operating near the upper limit of its temperature range.

FAQ

Q: What is the exact display resolution of the CH320QV19A-L, and does it support color reproduction?
A: The CH320QV19A-L features a resolution of 240x3(RGB)x320 dots, which translates to a standard 240x320 pixel layout for visual content. It supports 16M-color reproduction through its IPS panel, enabling smooth color transitions for icons, data indicators, and simple interfaces—suitable for both consumer and light industrial applications.

Q: Is the CH320QV19A-L compatible with low-cost microcontrollers like Arduino, and what interface does it use?
A: Yes, it is highly compatible with entry-level microcontrollers including Arduino, STM32F1 series, and similar models. The module adopts an SPI interface, which uses fewer pins than complex RGB interfaces, simplifying wiring and reducing the need for additional driver components—ideal for cost-sensitive projects.

Q: What is the operating temperature range of the CH320QV19A-L, and can it be used in outdoor or unconditioned spaces?
A: While the module's base design prioritizes indoor and mild environments, it maintains stable performance within a typical operating temperature range of -20°C to +70°C. This allows use in unconditioned spaces like garages or covered outdoor areas (e.g., garden IoT sensors), though prolonged exposure to extreme temperatures (above +70°C or below -20°C) is not recommended to avoid display degradation.

Q: What is the warranty period for the CH320QV19A-L, and does it cover defects caused by assembly?
A: The CH320QV19A-L comes with a standard 12-month warranty from the date of shipment. This warranty covers manufacturing defects (e.g., faulty backlighting, unresponsive pixels) but does not include damage from improper assembly, physical impact, or unauthorized modifications. Customers must provide proof of purchase and shipment to claim warranty service.

Q: Can the brightness of the CH320QV19A-L be adjusted, and what is its base luminance?
A: The module has a base luminance of 300 cd/m², calibrated for balanced visibility in indoor and shaded outdoor settings. While the default configuration does not support on-the-fly brightness adjustment, custom brightness tuning (e.g., lowering to 200 cd/m² for battery efficiency or increasing to 400 cd/m² for high-light use) is available upon request, with adjustments tailored to match the device's power system.

Q: What type of glass lens does the CH320QV19A-L use, and how durable is it against scratches?
A: It uses a 0.7mm-thick glass lens, designed for basic scratch resistance in daily and light industrial use. While not as rugged as Gorilla Glass, it can withstand minor abrasions (e.g., occasional contact with soft tools or wipes) but should be protected from sharp objects or heavy impacts to avoid cracking.

Q: Does the CH320QV19A-L comply with environmental standards, and what substances does it restrict?
A: Yes, the module fully complies with RoHS standards, which restrict the use of hazardous substances including lead (Pb), mercury (Hg), cadmium (Cd), and hexavalent chromium (CrVI). This makes it suitable for household devices, light industrial equipment, and applications where environmental safety is regulated.

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