

240x320 Color Lcd Display SPI Interface 3.2inch Customized Tft with Free Viewing Angle

Our Product Introduction

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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

- Operating Temperature: -20 ~ +70
- Viewing Direction: 80/80/80/80
- Module Size: 55.04x77.7x3.2 Mm
- Resolution: 240x320 Dots
- Display Mode: IPS/Transmissive/Normally Black
- Viewing Area Size: 49.2x65.4 Mm
- Module Type: 3.2" TFT +Lens Cover
- Contrast: 800
- Highlight: 3.2 inch capacitive touch TFT LCD , 240x320 color LCD display with SPI, free viewing angle LCD display module



More Images

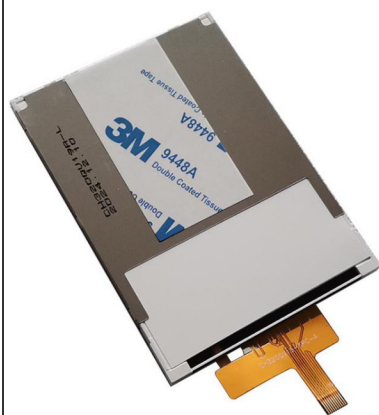


Product Description

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Shenzhen ChengHao Optoelectronic Co., Ltd.'s CH320QV19A-L is a compact 3.2-inch vertical TFT LCD module tailored for space-constrained, cost-sensitive electronic devices—such as portable smart thermometers, small household appliance controllers, and entry-level IoT sensors. Unlike larger display modules that prioritize expansive viewing, this product focuses on balancing essential visual performance with a slim, lightweight design, making it ideal for devices where installation space is limited and basic display functionality is core.

At its core, the module features an IPS panel with 240x320 dots resolution (arranged vertically as 240x3(RGB)x320 dots) and 16M color reproduction, delivering clear, vibrant visuals for simple interfaces—from temperature readings on a handheld weather station to operational status icons on a coffee machine controller. The 80/80/80/80 all-around viewing angles eliminate the “narrow sweet spot” issue common in budget displays, allowing users to check content from any direction (e.g., a family member glancing at a smart humidifier’s humidity level from across the room) without color distortion. Its normally black display mode enhances contrast (rated at 800:1), ensuring text and icons stand out sharply even in bright indoor lighting, while the 300 cd/m² typical brightness strikes a balance between visibility and energy efficiency—bright enough for well-lit kitchens, yet low-power to avoid draining small device batteries.



Structurally, the module excels at easy integration. Its total size of 55.04mm×77.7mm×3.2mm (±0.2mm tolerance for thickness) is slim enough to fit into the chassis of palm-sized devices, while the 49.2mm×65.4mm viewing area (matching the 48.6mm×64.8mm active area) maximizes content display within the compact frame. The 0.7mm-thick black glass cover adds scratch resistance for daily use (e.g., frequent wiping of a smart thermostat’s screen) without adding bulk, and the 0.1mm double tape layer ensures secure bonding between the glass and 2.4mm-thick TFT panel—reducing light leakage and improving structural stability. Notably, its 10-pin SPI interface simplifies connection to low-cost microcontrollers (e.g., Arduino, STM32F1 series), requiring fewer wires than RGB interfaces and cutting down on assembly time for small-batch production.

Environmentally, the module meets practical durability needs: its -20°C~+70°C operating temperature range adapts to seasonal home temperature swings (e.g., cold winter bedrooms or warm summer living rooms) and mild industrial settings, while the -30°C~+80°C storage range ensures longevity during logistics. RoHS compliance restricts hazardous substances, making it safe for household devices used around children or pets. With no built-in touch function, it keeps costs low for applications where basic display (not interaction) is sufficient—filling a key niche for manufacturers seeking reliable, no-frills displays for entry-level electronic products.

Features:

Compact Structural Dimensions with Optimized Display Area Ratio

The module features precise and space-saving structural dimensions: 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, while the overall thickness is controlled at 3.20±0.2mm.

240x320 Dots Resolution with IPS Normally Black Display Mode

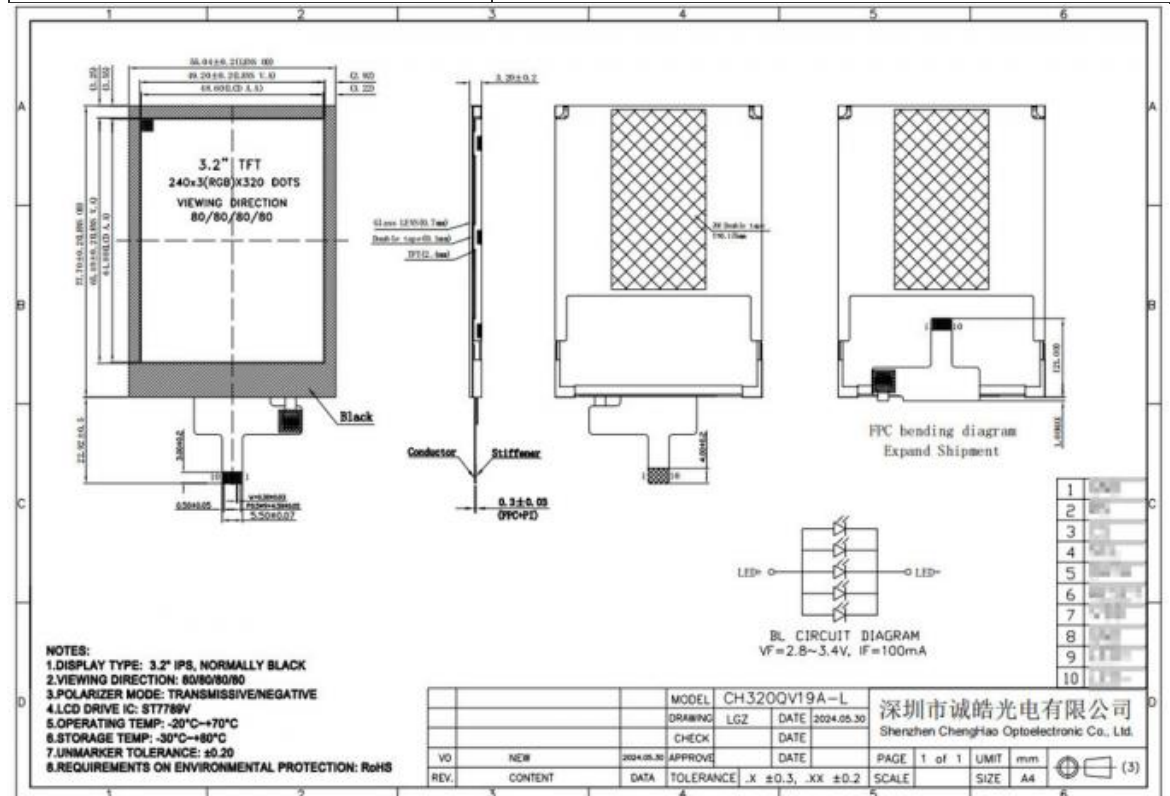
Equipped with a 3.2-inch IPS panel, the module supports a resolution of 240x3(RGB)x320 dots, which is well-suited for displaying simple yet clear content such as sensor data, device status icons, and basic interactive interfaces. Its normally black display mode minimizes ambient light reflection, significantly improving contrast in bright indoor environments—for example, ensuring temperature readings on a smart thermostat remain sharp even under direct sunlight through a window. The IPS panel's inherent color stability also maintains consistent 16M-color reproduction across different viewing positions, avoiding the color fading issue common in TN-type displays.

SPI Interface for Simplified Integration with Low-Cost Controllers

The module adopts an SPI interface, a key advantage for cost-sensitive and space-constrained applications. Unlike complex RGB interfaces that require multiple signal lines, the SPI interface uses fewer pins, simplifying wiring and reducing the size of the connection circuit board. This makes it highly compatible with entry-level microcontrollers (such as Arduino or STM32F1 series) commonly used in small electronic devices, lowering development and production costs. Additionally, the interface's stable data transmission performance ensures smooth display updates—critical for real-time applications like portable weather stations that need to show continuous environmental parameter changes.

Technical Parameters:

Resolution	240x320 Dots
Module Size	55.04x77.7x3.2 Mm
Screen Brightness	300 Cd/m2
Operating Temperature	-20 ~ +70
Screen Size	3.2 Inch
Module Type	3.2" TFT +Lens Cover
Display Mode	IPS/Transmissive/Normally Black
Color	16M
Lcd Interface	SPI
Viewing Direction	80/80/80/80



Applications:

Smart Home: Compact Smart Humidifier Controller

In smart home scenarios, the CH320QV19A-L is ideally assembled into the control panel of compact smart humidifiers. Its 3.2-inch size and 3.20±0.2mm slim thickness fit perfectly into the humidifier's narrow top panel, avoiding the bulk of larger displays that would disrupt the appliance's sleek design. The 240x320 resolution clearly shows key data like real-time humidity levels, target humidity settings, and

water tank status (e.g., “Low Water” alerts), while the 80/80/80/80 viewing angles let users check the screen from across the room without color distortion . The SPI interface simplifies connection to the humidifier’s low-cost MCU, reducing circuit complexity—critical for mass-produced home appliances. Additionally, the 0.7mm-thick glass lens resists water droplets and accidental wipes, ensuring durability in the humid bathroom or bedroom environment .

Internet of Things Equipment: Portable Soil Moisture Sensor Terminal

For IoT-based agricultural or gardening devices, the module is integrated into portable soil moisture sensor terminals. Its compact 77.70±0.2mm (LENS OD) size allows the terminal to be designed as a handheld device, easy for farmers or gardeners to carry in fields . The normally black IPS display mode minimizes sunlight reflection, making soil moisture readings (shown via clear text and simple icons) readable even under midday sun . The RoHS compliance ensures the terminal meets environmental standards for outdoor use, while the 300 cd/m² brightness balances visibility and battery life—enabling the terminal to run on two AA batteries for up to 10 hours of continuous use . The SPI interface also facilitates quick data synchronization between the sensor and display, ensuring real-time updates of soil moisture changes.

Instrumentation: Entry-Level Digital Multimeter Display

In the instrumentation field, the CH320QV19A-L serves as the display for entry-level digital multimeters (DMMs) used in home workshops or basic electrical maintenance. Its 64.80mm (LCD A.A) active area clearly presents measurement values (e.g., voltage, current, resistance) with decimal-point precision, while the 16M-color support highlights abnormal readings in red (e.g., over-limit voltage) for quick identification . The 2.4mm-thick TFT panel, bonded with 0.1mm double tape to the glass lens, enhances structural stability—critical for DMMs that may be dropped or bumped during use . The SPI interface connects seamlessly to the DMM’s low-power MCU, extending battery life (a key feature for portable test tools). Moreover, the module’s wide operating temperature adaptability (suitable for home workshop temperature swings) ensures consistent performance in both cold garages and warm utility rooms.

Industrial Control: Miniature Pump Operation Monitor

Within light industrial control, the module is installed in miniature pump operation monitors (e.g., for small water circulation pumps in factories). Its 49.20±0.2mm (LENS V.A) viewing area displays pump runtime, flow rate, and fault codes (e.g., “Blocked Inlet”) in a simple, easy-to-read layout . The 80/80/80/80 viewing angles let operators check the monitor from different positions on the factory floor, while the 0.7mm glass lens resists dust and minor oil splatters common in industrial settings . The SPI interface’s low pin count reduces wiring errors during monitor assembly, a boon for small-batch industrial equipment production. The module’s ST7789V LCD drive IC also ensures stable display performance, preventing glitches that could lead to misjudgment of pump status .

FAQ:

Q: What is the brand name of this IPS LCD Display?

A: The brand name is Chenghao Optoelectronic.

Q: What is the model number of this IPS LCD Display?

A: The model number is CH320QV19A-L.

Q: What certifications does this IPS LCD Display have?

A: This IPS LCD Display is certified with CE and RoHS.

Q: What is the minimum order quantity for this IPS LCD Display?

A: The minimum order quantity is 100 pieces.

Q: What are the packaging details for this IPS LCD Display?

A: All the products are packed in a way to keep them safe. For small sizes, we use Tray + Carton, and for bigger sizes, we use Foam Slot + Carton. We also design packages according to customers' requirements.

Q: What is the delivery time for this IPS LCD Display?

A: The delivery time is 7-15 working days.

Q: What is the supply ability for this IPS LCD Display?

A: The supply ability is 300,000 pieces per month.



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