G53-AI · AI SCAN MODULE · 1280 × 800 GLOBAL SHUTTER · 12-PIN FPC

G53-AI

AI-Powered 1D / 2D Scan Module

1280 × 800 CMOS (global) | Resolution ≥ 3.3 mil (1D) / ≥ 5 mil (2D) | FOV 48° × 28° | 3.3 V · < 180 mA | 30 × 15.5 × 13 mm · 6.2 g



PRODUCT FEATURES

- **Deeply customised AI chip** — on-module AI inference with a self-developed deep-learning decoding algorithm for complex DPM codes.
- **Large-pixel optics** — dedicated ultra-wide depth-of-field lens; up to 5 codes read in a single image.
- **Standard 12-PIN FPC interface** — with aiming system and plug-in replacement mounting.
- **Dual-light auto switching** — warm white and warm red illumination, two external light-source control channels with laser aimer.
- **Difficult-code capability** — low-contrast, dot-matrix, occluded and tilted DPM codes, plus very small codes.
- **Configuration tools** — Image tools and ScanKit for setup, tuning and evaluation.

SCANNING PERFORMANCE

OPTICAL & READING

Image Sensor	1280 × 800 CMOS Global shutter
Illumination	Warm white + warm red LED
Aimer	Laser cross-hair
Resolution	1D ≥ 3.3 mil / 2D ≥ 5 mil
Print Contrast Signal (PCS)	≥ 15%
Pitch / Skew / Tilt	±60° / ±60° / 360°
Field of View (FOV)	48° (H) × 28° (V)
Depth of Field (DOF)	Code 39 5 mil: 75–250 mm QR Code 10 mil: 75–230 mm
Ambient Light Immunity	0–100,000 lux
Simultaneous Reading	Up to 5 codes per image
Configuration	Image tools / ScanKit

SUPPORTED SYMBOLOGIES

2D	PDF417, Data Matrix, QR Code, HanXin, Aztec, MaxiCode
1D	EAN-13, EAN-8, UPC-A, UPC-E, Code 39, Code 128, ISBN, Code 93, Code 11, UCC/EAN-128, GS1 DataBar, Interleaved 2 of 5, Matrix 2 of 5, Industrial 2 of 5, Codabar, Standard 2 of 5, MSI-Plessey, GS1 composite code, and others

ELECTRICAL & MECHANICAL

Host System Interfaces	USB (virtual COM port, HID-KBW, HID-POS) TTL-232 UART on PIN4 / PIN5
Input Voltage	3.3 V
Operating Current	< 180 mA Typical, 3.3 V input
Dimensions	30 (D) × 15.5 (W) × 13 (H) mm (max.)
Weight	6.2 g
Mounting	Ø3.3 mm hole Per outline drawing

TYPICAL APPLICATIONS

The G53-AI is embedded as a device component in **production-line workstation code reading, outdoor self-service check-in, parcel lockers, ticket machines, display kiosks and other self-service cabinet equipment**.

Shenzhen Xinlong IoT Technology Co., Ltd. XINLONG IOT

ADDRESS Room 207, Building A, No. 168 Cenxia Road, Fenghuang Community, Fuyong Street, Bao'an District, Shenzhen 518103, China

EMAIL lixuan@xinlongiot.com **WEB** www.xinlongiot.com

Specifications subject to change without notice.

ENVIRONMENT & RELIABILITY

ENVIRONMENTAL	
Operating Temperature	−20 °C to +50 °C
Storage Temperature	−40 °C to +60 °C
Humidity	5–95% RH, non-condensing
Ambient Light Immunity	0–100,000 lux
Warranty	2 years

THERMAL SHOCK RESISTANCE	
High Temperature	60 °C (140 °F)
Low Temperature	−20 °C (−4 °F)
Cycle Dwell	30 min high / 30 min low
Cycles	24 Unit not stated in source

HOST INTERFACE · 12-PIN FPC PIN ASSIGNMENT

SIGNAL DEFINITION			
PIN1 · TEST1	Internal test pin, keep floating	PIN7 · USB D+	USB DP signal
PIN2 · VCC	+3.3 V input	PIN8 · GND	Ground
PIN3 · GND	Ground	PIN9 · BEEP	Passive buzzer control, low when idle
PIN4 · UART RXD	TTL-232 serial receive	PIN10 · DLED	Indicator LED control, low when idle
PIN5 · UART TXD	TTL-232 serial transmit	PIN11 · TEST2	Internal test pin, keep floating
PIN6 · USB D−	USB DN signal	PIN12 · TRIG	Trigger input, active low / falling edge

TEST CONDITIONS

REFERENCED IN THE VALUES ABOVE

1. Depth-of-field test conditions: ambient temperature 23 °C; ambient illuminance from an incandescent light source; test symbol supplied by the manufacturer.
2. Barcode sensitivity test conditions: test distance = (minimum DOF + maximum DOF) / 2; test code QR Code; PCS = 1; test symbol supplied by the manufacturer.
3. Operating-current test conditions: typical reading preference mode; test distance = (minimum DOF + maximum DOF) / 2.

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