



Make Enterprise Material Management Simpler, Smarter, and More Efficient



Guangzhou Zebra Information Technology Co., Ltd.

Pick to ight System (PTL)

Version: V3.0

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System Overview

The PTL system is a paperless, visualized high-efficiency operation system. The core concept is replacing traditional paper pick lists with light indicators, completely restructuring manual work processes. It can be applied to SMT, e-commerce, pharmaceuticals, fresh produce, laboratories, spare parts, automotive parts, hardware, Chinese medicinal materials, Cainiao stations and other scenarios. It provides standard interfaces for integration with existing WMS (Warehouse Management System), ERP (Enterprise Resource Planning), and MES (Manufacturing Execution System) to directly convert order/work order instructions into visualized light signals, guiding operators to accurately complete picking, replenishment, and sorting actions. It is one of the most efficient and accurate solutions in the person-to-goods mode. Advantages include extreme accuracy, improved picking efficiency, and complete replacement of paper documents.

PTL System Composition Diagram



System Composition

The Pick-to-Light system core components include:

- (1) Location Labels: Installed on each storage location, lights up to show material position.
- (2) Aisle Lights: Entrance guide lights indicating pending pick tasks in the aisle.



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(3) Label Smart Control Gateway: 2.4G wireless communication core, coverage radius 20-50 meters.

(4) Handheld Terminal: Operator scans wave orders or material info, controls lights, confirms pick completion.

(5) Material Management Platform: Supports SaaS cloud and local deployment, providing complete warehouse management, consumables management, and asset management functions.

No.	Device Name	Model	Note
1	Smart Handheld Terminal	ZSW-D07	●
2		ZSW-D08	●
3	Portable Label Printer	ZSW-D09	○
4	Label Smart Control Gateway	ZSL-PT20	○
5		ZSL-PT30	○
6	Smart Colorful LED Aisle Light	ZSL-PT10	○
7	Smart Colorful LED Location Label	ZSL-PT01	○
8		ZSL-PT02	○
9		ZSL-PT03	○
10		ZSL-PT04	○
11		ZSL-PT05	○
12		ZSL-PT06	○
13		ZSL-PT07	○
14		ZSL-PT08	○
15	Material Management Platform	-	●

Note: ● Required ○ Optional

Key Features

(1) Hardware: 6 Smart Colorful LED Location Labels (PT01-PT06), Smart Colorful LED Aisle Light, Label Smart Control Gateway (PT20/PT30), Smart Handheld Terminal (D07/D08);

(2) Material Management Platform: Basic data, employee permissions, consumables/asset/warehouse management, multi-location, report analysis;

(3) Smart Handheld Terminal: Login, light-guided picking, inbound, outbound, return, inventory, item search, system settings;

(4) Core Light Functions: Single/Multi-color zones, digital display lock, aisle guidance, multi-order collaboration, report traceability;

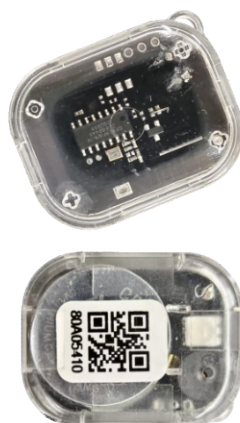
(5) System Integration: Three modes - Standard (PTL+WMS), Hardware (PTL+SDK), Interface (PTL+API);

(6) System Features: Supports SaaS/Local deployment

Device Parameters

Smart Colorful LED Location Label

(1) ZSL-PT01 - Smart Colorful LED Location Label (Mini)



Item	Specification
Product Dimensions	38(L) × 30(W) × 13mm(H)
Product Weight	20g
Battery	CR2477
Communication Protocol	AES Encrypted Private
Frequency	2.4035GHz
Transmit Power	Default 0dBm
Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	20-50m (depending on environment)
Operating Time	18 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(2) ZSL-PT02 - Smart Colorful LED Location Label (Button)



Item	Specification
Product Dimensions	80 × 32 × 18mm
Product Weight	45g
Battery	2 × CR2477
Communication Protocol	AES Encrypted Private
Transmit Power	Default 0dBm
Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	Radius 20m without obstruction (depending on environment)
Operating Time	36 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(3) ZSL-PT03 - Smart Colorful LED Location Label (Spotlight)



Item	Specification
Product Dimensions	80 × 32 × 26mm
Product Weight	42.6g
Battery	2 × CR2477
Communication Protocol	AES Encrypted Private
Transmit Power	Default 0dBm
Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	Radius 20m without obstruction (depending on environment)
Operating Time	36 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(4) ZSL-PT04 - Smart Colorful LED Location Label (Basic)



Item	Specification
Product Dimensions	53 × 35 × 14mm
Product Weight	Approximately 16.2g
Battery	CR2450
Communication Protocol	AES Encrypted Private
Transmit Power	Default -20dBm
Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	Radius 20m without obstruction (depending on environment)
Operating Time	14 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(5) ZSL-PT05 - Smart Colorful LED Location Label (Digital Display)



Item	Specification
Product Dimensions	80 × 32 × 18mm
Product Weight	Approximately 44g
Battery	CR2450
Communication Protocol	AES Encrypted Private
Transmit Power	Default -20dBm

Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	Radius 20m without obstruction (depending on environment)
Operating Time	Lighting 20 times/day, 5 seconds each red flash, approximately 32 months
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(6) ZSL-PT06 - Smart Colorful LED Location Label



Item	Specification
Product Dimensions	69 × 31 × 13mm
Product Weight	23g
Battery	CR2477
Communication Protocol	AES Encrypted Private
Frequency	2.4035GHz
Transmit Power	Default 0dBm
Mounting Method	Adhesive / Clip / Magnetic
Housing Material	PC
Communication Range	20-50m (depending on environment)
Operating Time	20 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

(7) ZSL-PT07 - Smart Colorful LED Location Label (E ink display)



Item	Specification
Product Dimensions	125 × 45 × 13mm
Product Weight	66g
Screen Size	2.9 inches
Display Color	Black, White

Refresh Rate	Approx. 3 seconds
Screen Refresh Power	8.2mA / 2.7s
Screen Refresh Count	Approx. 250,000 times
Viewing Angle	±45°
Battery	3 × CR2450
Communication Protocol	AES Encrypted Private
Transmit Power	Default 0dBm
Installation Method	Snap-fit
Housing Material	PC
Communication Range	20-30m (depending on environment)
Operating Time	24 months (actual battery life depends on screen refresh frequency)
Operating Temperature	0 ~ 40℃
Storage Temperature	0 ~ 60℃
Color	White
Installation Method	Adhesive Backing, Snap-fit (Mounting Slot)

(8) ZSL-PT08 - Smart Colorful LED Location Label (E ink display)



Item	Specification
Product Dimensions	125*45*13mm
Product Weight	Approx. 67g
Screen	4-Digit Display
Display Color	Black, White
Battery	3 × CR2450
Communication Protocol	AES Encrypted Private
Transmit Power	Default 0dBm
Installation Method	Snap-fit
Housing Material	PC
Communication Range	20-30m (depending on environment)
Operating Time	24 months (actual battery life depends on screen refresh frequency)
Operating Temperature	0 ~ 40℃
Storage Temperature	0 ~ 60℃

Color	White
Installation Method	Adhesive Backing, Snap-fit (Mounting Slot)

ZSL-PT10 - Smart Colorful LED Aisle Light



Item	Specification
Product Name	Smart Colorful LED Aisle Light
Model	ZSL-PT10
Product Dimensions	φ 70mm × 44mm(H)
Product Weight	88g
Battery	2 × AA Batteries
Communication Protocol	AES Encrypted Private
Transmit Power	Default 0dBm
Mounting Method	Lock Hole
Housing Material	PC
Communication Range	Radius 20m without obstruction (depending on environment)
Operating Time	24 months (actual battery life depends on lighting frequency)
Storage Temperature	0 ~ 65℃
Color	White Transparent (Customizable)

ZSL-PT20 - Label Smart Control Gateway



Item	Specification
Name/Model	Label Smart Control Gateway / ZSL-PT20
Dimensions	170 × 170 × 22mm
Net Weight	Approximately 238.6g
Color	White
Housing Material	ABS
Wired Interface	RJ45 Ethernet Port
Wireless Interface	WiFi
Cloud Protocol	Alibaba Cloud IoT Protocol / MQTT Protocol
2.4G Wireless Protocol	AES Encrypted Private
2.4G Communication Range	20-50m (depending on environment)
External Power	9-24V, 100mA@9V
POE Power	20mA@48V
Working Current	100mA@9V
Mounting Method	Ceiling Mount
Operating Temperature	-20℃ ~ 60℃
Storage Temperature	0℃ ~ 45℃
Operating Humidity	10% ~ 90%

ZSL-PT30 - Portable Label Smart Control Gateway



Item	Specification
Model	Portable Label Smart Control Gateway / ZSL-PT30
Dimensions	60.5 × 47 × 16mm
Net Weight	50g
Color	Black
Communication Interface	USB Port / Serial Port
Communication Range	20-50m (depending on environment)
Power Supply	OTG Power
Mounting Method	Back Clip / Adhesive
Operating Temperature	-20℃ ~ 60℃
Storage Temperature	0℃ ~ 45℃
Operating Humidity	10% ~ 90%

Smart Handheld Terminal

ZSW-D07 - Smart Handheld Terminal



(1) Basic Parameters

Category	Item	Specification
Performance	Model	ZSW-D07
Performance	Operating System	Android 11.0
Performance	Processor	Octa-core 64-bit, 2.45 GHz
Performance	Memory	RAM+ROM: 4GB+64GB
Performance	Extended Memory	Micro SD card, up to 256GB
Basic Specs	Dimensions	143.3mm × 169mm × 90.5mm
Basic Specs	Weight	678g
Basic Specs	Display	5.7-inch full-color display (720 × 1440)
Basic Specs	Touch Screen	Multi-touch, glove touch, wet operation, passive pen signature, Corning glass
Basic Specs	Main Battery	3.85V 9000mAh rechargeable lithium battery
Basic Specs	Charging Time	Less than 7 hours
Basic Specs	Audio	1.5W speaker, microphone (noise reduction), earpiece
Basic Specs	Buttons	Volume +/-, Power, Custom key × 1, Scan button × 2
Basic Specs	Camera	Front 5MP, Top 13MP with flash
Basic Specs	Sensors	Proximity, light, accelerometer, geomagnetic, gyroscope
Basic Specs	Scanner	Professional scan engine, supports 1D/2D barcodes, screen scanning
Basic Specs	Card Slots	Nano-SIM × 2, Micro SD × 1 (up to 256GB)
Data Communication	WWAN	Dual SIM, 4G/3G/2G full network
Data Communication	Bluetooth	BT5.0 + BR/EDR + BLE
Data Communication	WiFi	2.4G/5G dual band, IEEE 802.11a/b/g/n/ac/d/e/h/i/k/r/v/w, Fast roaming: 802.11r/OKC/PMKID caching
Data Communication	Positioning	GPS, A-GPS, Beidou, GLONASS, Galileo
Environment	Operating Temperature	-20 ~ +60℃
Environment	Storage Temperature	-40 ~ +70℃
Environment	Humidity	5%RH ~ 95%RH (No condensation)



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Environment	Drop Resistance	1.2m multiple drops to smooth concrete floor
Environment	Protection Rating	IP67
Environment	ESD Protection	Air discharge $\pm 15\text{KV}$, contact discharge $\pm 8\text{KV}$

(2) Data Collection Functions

Category	Item	Specification
Camera	Front	Fixed focus, 1080p video recording, 5MP
Camera	Top	Flash (700mA, flashlight), auto-focus, 1080p video recording, 13MP
Scan Engine	Rotation Angle	360°
Scan Engine	Tilt Angle	$\pm 60^\circ$
Scan Engine	Offset Angle	$\pm 60^\circ$
Scan Engine	Supported Codes	1D: Codabar, Code 11, Code 128, Code 2 of 5, Code 39, Code 93, EAN/JAN-13, EAN/JAN 8, IATA, Interleaved 2 of 5, Matrix 2 of 5, MSI, GS1 Databar, UPC-A, UPC-E 2D: Aztec, Data Matrix, MaxiCode, QR Code, Han Xin, Grid Matrix, Dot Code Postal: Australian, British, Canadian, China, Japanese, Korea, Netherlands, Planet, Postnet
RFID (UHF)	RFID Chip	Impinj E710
RFID (UHF)	Frequency	902 ~ 928MHz or 865~868MHz (adjustable by region)
RFID (UHF)	Protocol	ISO18000-6C (EPC C1G2)
RFID (UHF)	Read Distance	20m (depends on tag)
RFID (UHF)	Antenna Gain	5dBi

(3) Data Communication

Category	Item	Specification
GPS Positioning	Supported Modes	GPS, A-GPS, Beidou, GLONASS, Galileo
GPS Positioning	Frequency	GPS (L1 1.575GHz C/A code), Beidou (B1 1.561GHz), GLONASS (L1 1.602GHz), Galileo (E1 1.589GHz / E2 1.561GHz)
GPS Positioning	Cold Start Time	Less than 40s
GPS Positioning	Max Channels	31 channels
GPS Positioning	Sensitivity	-130dB (SNR 40dBHz)
GPS Positioning	Accuracy	5-10 meters (open space)
Wireless Communication	WiFi	WLAN, IEEE 802.11a/b/g/n/ac/d/e/h/i/k/r/v/w (2.4G/5G dual band), IEEE 802.11ax ready
Wireless Communication	Frequency Range	2.4G, 5G
Wireless Communication	Working Channels	CH1~CH13, CH34-CH140, CH149~CH165 (depending on country/region)
Wireless Communication	Security	WEP (40 or 104 bit); WPA/WPA2 Personal (TKIP, AES); WPA3 Personal (SAE); WPA/WPA2 Enterprise (TKIP, AES); WPA3 Enterprise 192-bit mode (GCMP-256) - EAP-TLS; Enhanced Open (OWE)
Wireless Communication	Roaming	PMKID caching; Cisco CCKM; 802.11r (Over-the-Air); OKC, configurable WiFi roaming threshold
WWAN	Communication Mode	Dual SIM dual standby
WWAN	Global Bands	4G(TD-LTE): B34/B38/B39/B40/B41 4G(FDD-LTE): B1/B2/B3/B4/B5/B7/B8/B12/B13/B17/B20/B28A/B28B 3G(WCDMA): B1/B2/B4/B5/B8 3G(TD-SCDMA): B34/B39 3G(CDMA2000): BC0 (800MHz) 2G(GSM): 850/900/1800/1900
Bluetooth	Supported Mode	BT5.0 + BR/EDR + BLE
Bluetooth	Connection Distance	Greater than 10 meters



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ZSW-D08 - Smart Handheld Terminal



(1) Basic Parameters

Category	Item	Specification
Performance	Model	ZSW-D08
Performance	Operating System	Android 12.0
Performance	Processor	Octa-core 64-bit, 2.45 GHz
Performance	Memory	RAM+ROM: 4GB+64GB
Performance	Extended Memory	Micro SD card, up to 256GB
Basic Specs	Dimensions	156.9mm × 72.3mm × 16.9mm
Basic Specs	Weight	Main unit (with battery) not exceeding 266g
Basic Specs	Display	5.5-inch full-color display (720 × 1440)
Basic Specs	Touch Screen	Multi-touch, glove touch, wet operation, passive pen signature
Basic Specs	Main Battery	5000mAh, removable
Basic Specs	Charging Time	5V2A, less than 4 hours
Basic Specs	Audio	1.5W speaker, microphone (noise reduction), earpiece (echo cancellation)
Basic Specs	Interface	USB Type-C: supports OTG, headphone signal; Bottom pogo pin × 4: supports charging/data transfer
Basic Specs	Buttons	Volume +/-, Power, Scan button × 2
Basic Specs	Camera	Front 5MP, Rear 13MP, PDAF, with flash
Basic Specs	Sensors	Proximity, light, accelerometer, geomagnetic, gyroscope
Basic Specs	Scanner	Professional scan engine, supports 1D/2D barcodes, screen scanning
Data Communication	WWAN	4G/3G/2G full network
Data Communication	Bluetooth	BT5.0 + BR/EDR + BLE
Data Communication	WiFi	2.4G/5G dual band, IEEE 802.11a/b/g/n/ac/d/h/i/k/r/v/w, Fast roaming: PMKID caching; 802.11r (Over-the-Air); OKC

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Data Communication	Positioning	GPS, A-GPS, Beidou, GLONASS, Galileo
Data Communication	NFC	RFID 13.56MHz, supports ISO15693, ISO14443A/B, Mifare, Felica
Environment	Operating Temperature	-20 ~ +60℃
Environment	Storage Temperature	-40 ~ +70℃
Environment	Humidity	5%RH ~ 95%RH (No condensation)
Environment	Drop Resistance	1.2m multiple drops to smooth concrete floor
Environment	Protection Rating	IP67
Environment	ESD Protection	Air discharge ±15KV, contact discharge ±8KV

(2) Data Collection Functions

Category	Item	Specification
Camera	Front	Fixed focus, 1080p video recording, 5MP
Camera	Rear	Flash, auto-focus, 1080p video recording, 13MP, PDAF
Scan Engine	Rotation Angle	360°
Scan Engine	Tilt Angle	±60°
Scan Engine	Offset Angle	±60°
Scan Engine	Supported Codes	1D: Codabar, Code 11, Code 128, Code 2 of 5, Code 39, Code 93, EAN/JAN-13, EAN/JAN 8, IATA, Interleaved 2 of 5, Matrix 2 of 5, MSI, GS1 Databar, UPC-A, UPC-E 2D: Aztec, Data Matrix, MaxiCode, QR Code, Han Xin, Grid Matrix, Dot Code Postal: Australian, British, Canadian, China, Japanese, Korea, Netherlands, Planet, Postnet

(3) Data Communication

Item	Specification
GPS Positioning	Supported Modes: GPS, A-GPS, Beidou, GLONASS, Galileo
Frequency	GPS (L1 1.575GHz C/A code), Beidou (B1 1.561GHz), GLONASS (L1 1.602GHz), Galileo (E1 1.589GHz / E2 1.561GHz)
Cold Start Time	Less than 40s
Max Channels	31 channels
Sensitivity	-130dB (SNR 40dBHz)
Accuracy	5-10 meters (open space)
WiFi	Wireless LAN, IEEE 802.11a/b/g/n/ac/d/e/h/i/k/r/v/w (2.4G/5G dual band), IEEE 802.11ax ready
Frequency Range	2.4G, 5G
Working Channels	CH1~CH13, CH34-CH140, CH149~CH165 (depending on country/region)
Security	WEP (40 or 104 bit); WPA/WPA2 Personal (TKIP, AES); WPA3 Personal (SAE); WPA/WPA2 Enterprise (TKIP, AES); WPA3 Enterprise 192-bit mode (GCMP-256) - EAP-TLS; Enhanced Open (OWE)
Roaming	PMKID caching; Cisco CCKM; 802.11r (Over-the-Air); OKC, configurable WiFi roaming threshold
WWAN Bands	TD-LTE(B34/B38/B39/B40/B41), FDD-LTE(B1/B2/B3/B4/B5/B7/B8/B20/B28A/B28B), WCDMA(B1/B2/B4/B5/B8), TD-SCDMA(B34/B39), CDMA&EVDO:BC0, GSM/EDGE/GPRS(850/900/1800/1900)
Bluetooth	BT5.0 + BR/EDR + BLE, connection distance greater than 10 meters



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ZSW-D09 - Portable Label Printer



Item	Specification
Series	ZSW-D09
Type	Portable Label Printer
Model	ZSW-D09
Resolution / DPI	203
Command Mode	ESC/POS, CPCL, TSPL, ZPL
Paper Type	Continuous, Gap, Black Mark
1D Barcode	Code39, Code128, ITF, EAN-8, EAN-13, etc.
2D Barcode	QRCode, PDF417, DataMatrix, etc.
Font Set	ASCII (8×16, 12×24, 9×17), GB18030 (16×16, 24×24), BIG5 (24×24), Vector Fonts Supported
RAM (Memory)	8M
Flash (Font Library)	16M
Print Speed	120mm/s
Effective Print Width	72mm
Min Paper Width	42mm
Max Paper Width	80mm
Paper Outer Diameter	50mm
Min Paper Height	10mm
Supported Paper Thickness	0.06 - 0.16mm
Paper Roll Core Diameter	None
Paper Loading Direction	Left-aligned
Ribbon Specification	None
Ribbon Outer Diameter	None
Ribbon Length	None
Ribbon Core Diameter	None
Cover Open Sensor	Yes
Ribbon Sensor	/
Gap Sensor	Yes
Black Mark Sensor	Yes
Paper Taken Sensor	/
Power Input	DC 5V, 2A, 10W
Operating Environment	0℃ ~ 50℃, 20% ~ 85% (No Condensation)
Storage Environment	-20℃ ~ 70℃, 5% ~ 95% (No Condensation)

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Printer Dimensions	118 × 105 × 62mm
PID	009B
VID	1FC9
Standard Interface	USB + Bluetooth
Optional Interface	WiFi
Cutter Support	No
Peeler Support	No
Display Screen	Yes
RFID Support	No
CPU	Cortex-M7
Buzzer	Yes
Other Features	Detachable 7.4V 2500mAh Polymer Lithium Battery; Full charge prints 1200-1300 sheets (20cm/pcs)

Contact Information

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