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ZD421 Printer Specifications

Specifications are provided for reference and are based on printer tests using Zebra brand supplies. Results may vary in actual application settings or when using other than recommended Zebra supplies. Zebra recommends always qualifying any application with thorough testing.

Standard Features

- 6 ips maximum print speed
- ZPL II® and EPL2™ programming languages
- Connectivity: USB 2.0, USB Host
- Printer setup mobile app for Android™ & iOS via Bluetooth® Low Energy (BLE) connection
  - BLE is best used for printer setup and light data transfer events. For best performance when printing, use a printer with Bluetooth Classic.
  - For additional information see the application notes here.
- OpenACCESS™ design for easy media loading
- Real Time Clock (RTC)
- 203 dpi print resolution (8 dots/mm)
- 4.09 in. (104 mm) print width
- Direct thermal and thermal transfer (ribbon roll and ribbon cartridge) printing of barcodes, text and graphics
- 512 MB of Flash memory
- 256 MB SDRAM
- Head-up sensor
- Multi-position transmissive and full-width reflective sensor
- 5 in. outside diameter media capability
- Fan-fold media feed slot
- Link-OS® operating system
- Print Touch-enabled
- Unicode compliant for multi-language printing
- 16 resident expandable ZPL II bitmap fonts
- Two resident scalable ZPL fonts
- Multiple DOS and Windows® codepage support
- Windows drivers
- Printer utilities
- Linear & 2-D barcode symbologies
- PDF Direct



- ENERGY STAR® certified, meets Energy Efficiency Level VI
- Two-year standard warranty

Healthcare Models - Standard Features

- Healthcare-preferred white color scheme
- Healthcare-compliant power supply, IEC 60601-1 certified
- Disinfectant-ready, easy-to-clean plastics with sealed button interface
- UV-resistant housing supports UV cleaning protocols

Optional Features

- 300 dpi print resolution (12 dots per mm)
- Field-installable cutter
  - Continuous paper, linered label and tag stock (Note: Cutting through labels and liner is not supported)
  - Maximum thickness 0.0075 in. (0.1905 mm)
- Field-installable dispenser (peeler) – label peel and present with label taken sensor

Connectivity Options

- Field-installable 10/100 Ethernet
- Field-installable RS-232 auto-sensing Serial interface, DB-9
- Field-installable wireless – Wi-Fi certified 802.11ac and Bluetooth 4.1; MFi-certified (Apple)

Accessories

- ZKDU™ – Zebra keyboard display unit
- ZD-Series Battery (2750 mAh) for cordless operation
- Carrying case for printer and battery
- Mounting adapter plate
- Media core adapters to accommodate 1.5 in., 2 in. and 3 in. ID core sizes
- Attached power supply

Software

- Zebra Print DNA software –includes a full suite of applications, utilities and developer tools. For more information, visit here.
- Zebra Basic Interpreter 2.0 (ZBI) allows programs to run directly on the printer
- Set-Get-Do commands to set and get printer configuration details
- ZPL II – Universal language for Zebra printers. Simplifies label formatting and enables format compatibility with existing systems that run Zebra printers.
- EPL2 – Eltron Programming Language simplifies label formatting and enables format compatibility with legacy applications
- EPL1 – Line Mode available on direct thermal, 203 dpi model only
- Web View – Connect and control Zebra barcode printers via the printer's web interface using a common Web browser (ZPL mode)

Media Specifications

- Media Width:
  - ZD421t - 0.585 - 4.41 in. (15 - 112 mm)
  - ZD421c - 0.585 - 4.65 in. (15 - 118 mm)
  - ZD421d - 0.585 - 4.25 in. (15 - 108 mm)
- Label Length:
  - Minimum 0.25 in. (6.4 mm - tear)
  - Minimum 0.5 in. (12.7 mm - with cutter)
  - Minimum 0.5 in. (12.7 mm - with peeler)
  - Maximum 39 in. (991 mm)
  - Core inner diameter:
    - Standard - 0.5 in./12.7 mm, 1.0 in./25 mm.
    - With optional adaptor kit - 1.5 in./37.1 mm, 2.0 in./50.8 mm, 3 in./76 mm
- Max Roll Outer Diameter: 5.00 in. (127 mm)
- Media Thickness: 0.003 in. (0.08mm) min, 0.0075 in. (0.1905mm) max
- Media Sensing: gap, black line, notch
- Media Type:
  - Roll-fed or fan-fold
  - Label stock (die cut or continuous, direct thermal or thermal transfer)
  - Tag stock (die cut or continuous, direct thermal or thermal transfer)
  - Receipt paper (continuous, direct thermal)
  - Wristband stock (direct thermal or thermal transfer) (Z-Band 4000)

Printer Specifications

Resolution	203 dpi resolution (8 dots/mm)	300 dpi resolution (12 dots/mm)
Speed inch/Sec - ips (mm/sec)	Programmable 2, 3, 4, 5 or 6 max. (51, 76, 102, 127 with max. 152)	Programmable 2, 3 or 4 max. (51, 76, with max. 102)
Dot PItch	0.0049 in. (0.13 mm)	0.0033 in. (0.085 mm)
Min. Print Length	One Dot	One Dot
Max. Print Length	39.0 in. (991 mm)	39.0 in. (991 mm)
Min. Print Width	One Dot	One Dot
Max. Print Width	4.09 in. (104 mm)	4.27 in. (108 mm)

ZPL Programming Language (ZPL/ZPL II)

- Communicates in printable ASCII characters
- Compatible with mainframe, mini and PC hosts
- Downloadable objects include graphics and bitmap fonts, label templates and formats
- Automatic memory allocation for format while printing
- Automatic serialization of fields
- Format inversion (white on black)
- Mirror-image printing
- Four position field rotation (0°, 90°, 180°, 270°)
- Slew command
- Programmable label quantities with print, pause
- Status messages to host upon request

Ribbon Specifications

	ZD421 thermal transfer only
Ribbon Outside Diameter	2.6 in./66 mm (300 m) 1.34 in./34 mm (74 m)
Ribbon Standard Length	Roll: 984 ft. (300 m); 244 ft. (74 m) Cartridge: 243 ft. (74 m)
Ribbon Ratio	4:1 media to ribbon (300 m) 1:1 media to ribbon (74 m)
Ribbon Width	Roll: 1.33 in./33.8 mm - 4.3 in./109.2 mm Cartridge: 4.3 in./109.2 mm
Ribbon Core I.D.	300 m ribbon 1 in./25.4 mm 74 m ribbon 0.5 in./12.7 mm

Font Specifications: 203 DPI (8 DOT/MM)

Font	Matrix (in dots) (H × W)	Type†	Minimum Character Size (H × W) in inches	Max CPI
A	9 × 5	U-L-D	.044 in. x .030 in.	33.3
B	11 × 7	U	.054 in. × .044 in.	22.7
C, D	18 × 10	U-L-D	.088 in. × .059 in.	16.9
E	28 × 15	OCR-B	.138 in. × .098 in.	10.2
F	26 × 13	U-L-D	.128 in. × .079 in.	12.7
G	60 × 40	U-L-D	.295 in. × .236 in.	4.2
H	21 × 13	OCR-A	.103 in. × .093 in.	10.8
GS	24 × 24	SYMBOL	.118 in. × .118 in.	8.5
P-V	20 × 18	U-L-D	Backward compatible w/ S-300 Scalable (Smooth) Font	
Ø	15 × 12	U-L-D		

†U—Uppercase L—Lowercase D—Descenders

Font Specifications: 300 DPI (12 DOT/MM)

Font	Matrix (in dots) (H × W)	Type†	Minimum Character Size (H × W) in inches	Max CPI
A	9 × 5	U-L-D	.030 in. x .020 in.	50.8
B	11 × 7	U	.037 in. x .030 in.	33.8
C, D	18 × 10	U-L-D	.060 in. x .040 in.	25.4
E	41 x 20	OCR-B	.138 in. x .085 in.	11.5
F	26 × 13	U-L-D	.085 in. x .053 in.	19.06
G	60 × 40	U-L-D	.200 in. x .160 in.	6.36
H	30 x 19	OCR-A	.100 in. x .098 in.	10.02
GS	24 × 24	SYMBOL	.80 in. x .80 in.	12.7
P-V	20 × 18	U-L-D	Scalable (Smooth) Font	
Ø	15 × 12	U-L-D		

†U—Uppercase L—Lowercase D—Descenders

- Character Fonts: Standard bitmapped Zebra fonts: A, B, C, D, E (OCR-B), F, G, H, (OCR-A), GS, P, Q, R, S, T, U, V & Ø Smooth font (CG Triumvirate™ Bold Condensed*)
- Supports user-defined fonts and graphics, including custom logos
- Bitmap fonts are expandable up to 10 times, height and width independent. Fonts E and H (OCR-B and OCR-A), however, are not considered in spec when expanded
- Smooth scalable font Ø (CG Triumvirate Bold Condensed*) is expandable dot-by-dot, height and width independent, while maintaining edges to a max. 1500 x 1500 dots
- Printers sold in China include the Simplified Chinese SimSun font pre-installed
- 64 MB user available non-volatile memory storage for downloadable objects
- 8 MB user available SDRAM

* Contains UFST® from Agfa Monotype Corporation

ZPL Barcode Symbologies

- Barcode ratios: 2:1 (non-rotated) and 3:1
- Linear barcodes: Code 11, Code 39, Code 93, Code 128, UPC-A, UPC-E, EAN-8, EAN-13, EAN-14, UPC-A and UPC-E with EAN 2 or 5 digit extensions, Plessey, POSTNET, Standard 2 of 5, Industrial 2 of 5, Interleaved 2 of 5, LOGMARS, MSI, Codabar, and GS1 DataBar (formerly RSS)
- 2-dimensional barcodes: PDF417, MicroPDF-417, Code 49, Maxicode, Codablock, Data Matrix, QR code, and Aztec

EPL Programming Language (EPL2)

- ASCII EPL2 programming language (Page Mode)
- Field rotations
- Variable field support (up to 100)
- Counter support (up to 10)
- Variable field addition and subtraction
- Status reporting
- Form, fonts and graphics storage
- Simple set of formatting commands
- Support of selected barcode

Fonts Specifications

Type	Width	Height	SP	CPI	Chars
Font1	8	12	2	20.3	160
Font2	10	16	2	16.9	160
Font3	12	20	2	4.5	160
Font4	14	24	2	12.7	160
Font5	32	48	4	5.6	80

EPL Barcode Symbologies

- Linear barcodes: Code 39, Code 128A, B & C (User selectable/Auto), UCC/EAN-128, Code 93, Codabar, Interleaved 2 of 5, UPC-A, UPC-E, UPC-A with 2 and 5 add on, UPC-E with 2 and 5 add on, EAN 13, EAN 8, EAN 13 with 2 and 5 add on, EAN 8 with 2 and 5 add on, Postnet (5, 9, 11, & 13 digit) Japanese Postnet, Plessey (MSI-1), MSI-3, German Post Code, RSS-14 (limited, truncated, stacked)
- 2-dimensional barcodes: Maxicode (modes 2,3,4,6), PDF417 (MicroPDF417 and MacroPDF417), Data Matrix

Code Pages Supported

- DOS: 437, 850, 851, 852, 855, 857, 860, 861, 862, 863, 865, 866, 869, 737, Big 5, GB2312, GB18030
- Windows: 1250, 1251, 1252, 1253, 1254, 1255, 1256, 1257

Interface/Connectivity Types

- Auto-sensing Serial – RS232 field-installable option:
  - Software selectable
    - baud rate (default 9600)
    - parity (default none)
    - data length (default 8)
    - stop bit (default 1)
  - Flow control – hardware and software
  - Connector: DB-9 Type: 9 pin D Sub connector female (standard)
  - Includes +5 VDC- 160 mA power output capability
- Wireless - factory-installed or field-installable option
  - Wi-FI 802.11ac
  - Bluetooth 4.1; MFi-certified (Apple)
- USB:
  - Version 2.0 full speed, bi-directional
  - Supported in Win98 and Win98SE, Win Me and Windows 2000 platforms
  - Connector – Type B Female
- Internal 10/100 Ethernet – factory-installed or field-installable option

Electrical Specifications

- Auto-ranging external power supply with C13 type connector
- Output: 24 VDC, 2.5A
- Input: 100-240 VAC, 50-60 Hz
- ENERGY STAR certified; Energy Efficiency Level VI certified
- Healthcare models include IEC 60601-1 certified power supply

Agency Approvals

- IEC 60950-1, EN55022 Class B, EN55024, EN61000-3-2, EN61000-3-3, FCC Class B, ICES-003, FCC 15.209; 15.247(d), IC RSS 247, EN 300 328, EN 301 893, EN 62311, cTUVus
- CE Marking, VCCI, C-Tick, S-Mark, CCC, CU, BSMI, KCC, SABS, IN-Metro, BIS, NOM

Physical Specifications

ZD421	
Dimensions	**ZD421 thermal transfer model** • 10.5 in. L x 8.0 in. W x 7.44 in. H • 267 mm L x 202 mm W x 189 mm H **ZD421 direct thermal model** • 8.69 in. L x 6.98 in. W x 5.93 in. H • 220.8 mm L x 177.5 mm W x 150.7 mm H **ZD421 ribbon cartridge model** • 10.0 in. L x 8.0 in. W x 7.0 in. H • 254 mm L x 202 mm W x 177 mm H
Weight	**ZD421 thermal transfer model** • 4.52 lbs./2.05 kg **ZD421 direct thermal model** • 3.98 lbs./1.35 kg **ZD421 ribbon cartridge model** • 5.0 lbs./2.3 kg

Operating Environment

ZD421	
Operational Temperature	40° to 105°F (4.4° to 41°C)
Non-Operational Temperature	-40° to 140°F (-40° to 60°C)
Operational Humidity	10 to 90% non-condensing
Non-Operational Humidity	5 to 95% non-condensing

Preventative Maintenance

Zebra recommends cleaning the printer on a regular basis using standard Zebra cleaning supplies. Refer to the User's Guide for more details.

Cleaning

The exterior is cleaned with a lint-free cloth, and if necessary, a mild detergent solution or desktop cleaner can be used. Interior components (printhead, platen, media path, and dispenser bar) are cleaned with alcohol or blown air.

For healthcare models refer to Zebra Guide to Disinfecting and Cleaning for a full list of Zebra approved cleaning agents.

Media Registration

Media registration and minimum label length are affected by media type, width and print speed. Performance improves as these factors are optimized. Zebra recommends always qualifying any application with prior testing.

For more information, visit www.zebra.com/zd421

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