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# ZEBRA<sup>®</sup> ZT420<sup>™</sup> SERIES PRINTER SPECIFICATIONS



Specifications are provided for reference and are based on printer tests using Genuine Zebra<sup>™</sup> supplies and accessories. Results may vary in actual application settings or when using other-than-recommended Zebra supplies. Zebra recommends qualifying any application with thorough testing.

## Standard Features

### Printing

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- Thermal transfer and direct thermal printing
- Thin-film printhead with E<sup>3</sup><sup>®</sup> Element Energy Equalizer<sup>™</sup>
- 203 dpi print resolution (8 dots/mm)
- Print speeds per second up to 12" (305 mm/second)

### Communication

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- USB 2.0, high speed
- RS-232 Serial (RS-232C with DB9F connector; Configurable baud rate (2400 – 115,200kb), parity, and data bits. Stop bits at 1 or 2; Software (XON/XOFF), hardware (DTR/DSR or RTS/CTS) communication handshake protocols)
- 10/100 Ethernet: ZebraNet<sup>®</sup> Print Server – supports networks internally integrated option that enables the use of Webview and Alert features
- Bluetooth<sup>®</sup> 2.1 (including Apple<sup>®</sup>)
- USB Host

### Media Support

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- Dual media sensors – transmissive and reflective
- 3" media supply hanger
- Auto calibration – printer calibrates when printer is turned on or when printhead is closed

### Design

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- Easy, side-loading metal print mechanism
- Door and print mechanism activated lights to light supplies path
- Tool-less printhead and platen replacement
- Metal media cover with enlarged clear viewing window
- Robust-gold user touch points indicating key adjustments
- Bi-fold media door decreasing overall operating space by 35%

### Operation

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- Back-lit, multiline graphic LCD display with intuitive menu and easy-to-use keypad for quick operation
- Bi-colored status LEDs for quick printer status
- 32 bit, 400 MHz processor
- 256 MB RAM memory (4 MB User Available)
- 512 MB Flash memory (64 MB User Available)
- Real-time Clock (RTC) – date/time for standalone applications
- Print Touch<sup>™</sup> application
- Link-OS<sup>®</sup>-enabled
- Auto-switching 100-240V power supply
- ENERGY STAR<sup>®</sup> qualified

### Firmware

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- Resident ZPL<sup>®</sup>, ZPL II<sup>®</sup> and EPL<sup>™</sup> programming languages, selectable through software or front panel.
- XML-enabled Printing – allows XML communications for barcode label printing, eliminating license fees and printer server hardware and lowering customization and programming costs

## Optional Features

### Printheads/ Resolution

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- Printhead 203 dpi (8 dots/mm)
- Printhead 300 dpi (12 dots/mm)

### Communication

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- Parallel (Bi-directional interface)

Wireless: ZebraNet Printer Server – supports 802.11 a/b/g/n networks via an internally integrated option.



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### Media Handling

- **Rewind:** internally rewinds a full roll of printed labels on 3" core, or peels and rewinds liner (*factory installed only*)
- **Peel:** Front-mount, passive-peel option
- **Cutter:** Front-mount guillotine cutter and catch tray, operates under software control cutting labels individually, or in strips (not compatible with rewind and peel options)
- 1" I.D. Core media supply hanger

### Fonts

- Asian and other international scalable and smooth bitmapped fonts

### Power Cords

- US, Europe/UK, Israel, China, Japan, Australia, Argentina, Brazil and Taiwan

### RFID

- Supports tags compatible with UHF EPC Gen 2 V1.2/ISO 18000-6C
- Prints and encodes tags with a minimum pitch of 0.6" /16 mm
- Adaptive Encoding Technology simplifies RFID setup and eliminates complex RFID placement guidelines

### Keyboard Display Unit (KDU Plus™ and ZKDU)

- Enter variable data and retrieve stored forms for standalone applications (requires null modem adapter with DB9 serial cable)

### ZBI 2.0™

- Field installed via activation key

### Programming Language

- **ZPL II:** Universal language for Zebra printers. Simplifies label formatting and enables format compatibility with existing systems that run Zebra printers.
  - Fonts: 16 resident expandable ZPL II® bitmap and two resident scalable ZPL fonts
  - Unicode: For multi-language printing
  - Web View: Connect and control Zebra barcode printers via the printer's Web interface using a common Web browser
  - Alert: Printers equipped with ZebraNet print servers provide alerts via any email-enabled, wired, or wireless device to minimize downtime

### Link-OS Software Tools

- **Document Design:** Quickly design a customized print solution using your business data and Zebra's intuitive, plug-and-print design tools
- **Printer Integration:** Zebra offers apps and products designed to help you integrate Zebra devices into your existing systems
- **Printer Management:** Manage your print operations locally and globally with Zebra's suite of device management tools
- **Developer Tools:** Provides you with the tools you need to create your own apps, including documentation, source code, programming languages, templates and more
- **Zebra Setup Utility:** Single-printer configuration utility
- **Zebra Printer Drivers:** Windows XP, Windows Vista®, Windows 2003, Windows 2008, Windows 7, Windows 8
- **ZebraDesigner™ Driver:** Zebra driver compliant with Windows 95/98/2000/2003/ME/NT/XP/Vista™ (downloadable from [www.Zebra.com](http://www.Zebra.com))

### Printing Specifications

| Parameter                         | 203 dpi<br>(8 dots/mm)  | 300 dpi<br>(12 dots/mm)                                       |
|-----------------------------------|---|---|
| Dot size (W x L):                 | 0.0049" x 0.0049"<br>(0.125 mm x 0.125 mm)                    | 0.0033" x 0.0039"<br>(0.084 mm x 0.099 mm)                    |
| Max continuous media print length | 102"<br>(2590 mm)   | 45"<br>(1143 mm)  |
| Max print width                   | 6.6" (168 mm)   | 6.6" (168 mm)   |
| Programmable print speeds         | 2.4" (61 mm) through 14" (356 mm) per second in 1" increments | 2.4" (61 mm) through 10" (254 mm) per second in 1" increments |

- **First Dot Location:** Measured from inside media backing edge: 0.10" ± .04" (2.5 mm, not to exceed -.5 mm +1.0 mm)
- **Media Registration Tolerance:**
  - Vertical = < ±0.039" (±1.0 mm) on non-continuous media
  - Horizontal = < ±0.039" (±1.0 mm) within a roll of media



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## Media Specifications

- **Media Types:** Continuous, die-cut, notch, black-mark
- **Maximum Non-continuous Label Length:** 39" (991 mm)
- **Media Web Width (Label and Liner):**
  - 2.00" (51 mm) to 7.0" (178 mm) Tear/Cutter
  - 2.00" (51 mm) to 6.75" (171 mm) Peel/Rewind
- **Minimum Label Length:**
  - Tear-off mode: 0.5" (12.7 mm)
  - Peel mode: 0.5" (12.7 mm)
  - Rewind mode: 0.5" (12.7 mm)
  - Cutter: 1.00" (25.4 mm)
- **Media Thickness (Label and Liner):**
  - 0.0023" (0.058 mm) to 0.010" (0.25 mm)
- **Maximum Media Roll Dimensions:**
  - 8.0" (203 mm) O.D. on a 3" (76 mm) I.D. core

## Gap/Notch Sensing Standards

| Parameter       | Dimensions   |
|-----------------|--|
| Inter-label gap | 0.079" - 0.157" (2 - 4 mm), preferably 0.118" (3 mm) |
| Sensing notch*  | Width x Length: 0.25" x 0.12" (6 mm x 3 mm)          |
| Sensing hole*   | 0.125" (3 mm) diameter                               |

\* **Note:** Notch and hole position centered from 0.15" to 2.25" from media inner edge

- **Fixed Reflective Sensor Location:** 7/16" from media inner edge

## Black Mark Sensing Standards

| Parameter  | Dimensions                         |
|--|------------------------------------|
| Black mark length<br> | 0.098" - 0.453" (2.5 mm - 11.5 mm) |
| Black mark width   | ≥ 0.37" (9.5 mm)                   |
| Black mark location (within inside media edge)   | 0.40" (1 mm)                       |

- **Black Mark Density:** > 1.0 Optical Density Units (ODU)
- **Maximum Media Density:** 0.5 ODU

## Ribbon Specifications (Thermal Transfer Option Only)

- **Ribbon Width:** 2.00" (51 mm) to 4.33" (110 mm)
- **Maximum Ribbon Length:** 1476' (450 m)
- **Maximum Ribbon Roll Size:** 450m: 3.2" (81.3 mm) O.D. on a 1.0" (25.4 mm) I.D. core
- **Ribbon Wound Ink-side Out**

## ZPL Printer Fonts

- Fonts A, B, C, D, E, F, G, H and GS are expandable up to 10 times, height and width independently. However, fonts E and H (OCR-A and OCR-B) are not considered "in-spec" when expanded.
- The scalable smooth font 0 (CG Triumvirate™ Bold Condensed\*) is expandable on a dot-by-dot basis, height and width independent, while maintaining smooth edges. Maximum character size depends on available memory.
- IBM Code Page 850 international character sets are available in the fonts A, B, C, D, E, F, G and 0 through software control
- Code Page 1250, 1252, 1253, 1254, 1255 Support with font 0

\*Contains UFST® from Agfa Monotype Corporation

## Font Matrices: 8 dot/mm (203 dpi) Printheads

| Font | Matrix           |       |                | Type* | Character Size |       |            |             |       |            |
|------|------------------|-------|----------------|-------|----------------|-------|------------|-------------|-------|------------|
|      | Height           | Width | Inter-Char Gap |       | Inches         |       |            | Millimeters |       |            |
|      |                  |       |                |       | Height         | Width | Char/ inch | Height      | Width | Char/ inch |
| A    | 9                | 5     | 1              | U-L-D | .044           | .029  | 33.90      | 1.1         | 0.75  | 1.33       |
| B    | 11               | 7     | 2              | U     | .054           | .044  | 22.60      | 1.3         | 1.13  | 0.89       |
| C,D  | 18               | 10    | 2              | U-L-D | .088           | .059  | 16.95      | 2.2         | 1.50  | 0.67       |
| F    | 28               | 15    | 5              | OCR-B | .138           | .098  | 10.17      | 3.5         | 2.50  | 0.40       |
| F    | 26               | 13    | 3              | U-L-D | .128           | .079  | 12.71      | 3.2         | 2.00  | 0.50       |
| G    | 60               | 40    | 8              | U-L-D | .295           | .236  | 4.24       | 7.5         | 6.00  | 0.17       |
| H    | 21               | 13    | 6              | OCR-A | .103           | .093  | 10.71      | 2.6         | 2.38  | 0.42       |
| GS   | 24               | 24    | 0              | SYMB  | .118           | .118  | 8.48       | 3.0         | 3.00  | 0.33       |
| P    | 20               | 18    | N/A            | U-L-D | .098           | .089  | N/A        | 2.4         | 2.26  | N/A        |
| Q    | 28               | 24    | N/A            | U-L-D | .138           | .118  | N/A        | 3.5         | 2.99  | N/A        |
| R    | 35               | 31    | N/A            | U-L-D | .172           | .153  | N/A        | 4.3         | 3.89  | N/A        |
| S    | 40               | 35    | N/A            | U-L-D | .197           | .172  | N/A        | 5.0         | 4.37  | N/A        |
| T    | 48               | 42    | N/A            | U-L-D | .236           | .207  | N/A        | 5.9         | 5.26  | N/A        |
| U    | 59               | 53    | N/A            | U-L-D | .290           | .261  | N/A        | 7.3         | 6.63  | N/A        |
| V    | 80               | 71    | N/A            | U-L-D | .394           | .349  | N/A        | 10.         | 8.86  | N/A        |
| 0    | Default: 15 x 12 |       |                | U-L-D | Scalable       |       |            |             |       |            |

\*U = Uppercase, L = Lowercase, D = Descenders



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## Font Matrices: 12 dot/mm (300 dpi) Printheads

| Font | Matrix           |       |                |          | Type*  | Character Size |       |           |             |       |           |
|------|------------------|-------|----------------|----------|--------|----------------|-------|-----------|-------------|-------|-----------|
|      | Height           | Width | Inter-Char Gap | Char Gap |        | Inches         |       |           | Millimeters |       |           |
|      |                  |       |                |          |        | Height         | Width | Char/Inch | Height      | Width | Char/Inch |
| A    | 9                | 5     | 1              |          | U-L-D  | .030           | .020  | 50.00     | 0.7         | 0.5   | 1.9       |
| B    | 11               | 7     | 2              |          | U      | .037           | .030  | 33.33     | 0.9         | 0.7   | 1.3       |
| C,D  | 18               | 10    | 2              |          | U-L-D  | .060           | .040  | 25.00     | 1.5         | 1.0   | 0.9       |
| E    | 41               | 20    | 6              |          | OCR-B  | .137           | .087  | 11.54     | 3.4         | 2.2   | 0.4       |
| F    | 26               | 13    | 3              |          | U-L-D  | .087           | .053  | 18.75     | 2.2         | 1.3   | 0.7       |
| G    | 60               | 40    | 8              |          | U-L-D  | .200           | .160  | 6.25      | 5.0         | 4.0   | 0.2       |
| H    | 30               | 19    | 9              |          | OCR-A  | .100           | .093  | 10.71     | 2.5         | 2.3   | 0.4       |
| GS   | 24               | 24    | 0              |          | SYMBOL | .080           | .080  | 12.50     | 2.0         | 2.0   | 0.4       |
| P    | 20               | 18    | N/A            |          | U-L-D  | .098           | .089  | N/A       | 2.4         | 2.2   | N/A       |
| Q    | 28               | 24    | N/A            |          | U-L-D  | .138           | .118  | N/A       | 3.5         | 2.9   | N/A       |
| R    | 35               | 31    | N/A            |          | U-L-D  | .172           | .153  | N/A       | 4.3         | 3.8   | N/A       |
| S    | 40               | 35    | N/A            |          | U-L-D  | .197           | .172  | N/A       | 5.0         | 4.3   | N/A       |
| T    | 48               | 42    | N/A            |          | U-L-D  | .236           | .207  | N/A       | 5.9         | 5.2   | N/A       |
| U    | 59               | 53    | N/A            |          | U-L-D  | .290           | .261  | N/A       | 7.3         | 6.6   | N/A       |
| V    | 80               | 71    | N/A            |          | U-L-D  | .394           | .349  | N/A       | 10.         | 8.8   | N/A       |
| 0    | Default: 15 x 12 |       |                |          | U-L-D  | Scalable       |       |           |             |       |           |

\*U = Uppercase, L = Lowercase, D = Descenders

## ZPL Barcode Symbolologies & Specifications

- Barcode modulus "X" dimension:
  - Picket fence (non-rotated) orientation:
    - 203 dpi = 4.9 mil to 49 mil
    - 300 dpi = 3.3 mil to 33 mil
  - Ladder (rotated) orientation:
    - 203 dpi = 4.9 mil to 49 mil
    - 300 dpi = 3.9 mil to 39 mil
- Barcode Ratios – 2:1, 7:3, 5:2 and 3:1
- Linear Barcodes: Code 11, Code 39, Code 93, Code 128 with subsets A/B/C and UCC Case Codes, ISBT-128, UPC-A, UPC-E, EAN-8, EAN-13, UPC and EAN 2- or 5-digit extensions, Plessey, Postnet, Standard 2-of-5, Industrial 2-of-5, Interleaved 2-of-5, Logmars, MSI, Codabar and Planet Code
- 2-Dimensional Barcodes: Codablock, PDF417, Code 49, Data Matrix, MaxiCode, QR Code, TLC 39, MicroPDF, RSS-14 (and composite), Aztec

## Zebra Programming Language (ZPL/ZPL II®)

- Communicates in printable ASCII characters
- Unicode™-compliant
- Compatible with mainframe, mini and PC hosts
- Downloadable objects include graphics, scalable and bitmap fonts, label templates and formats

- Adjustable print cache
- Data compression
- 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, cut control
- Status messages to host upon request

## Eltron Programming Language (EPL2™) (Available on 203 dpi only)

- Compatible with mainframe, mini, and PC hosts
- Four-position field rotation (0°, 90°, 180°, 270°)
- Variable field support (00 to 99)
- Counter support (up to 10)
- Variable field addition and subtraction
- Status reporting
- Form storage
- Metered print odometer

## Electrical Specifications

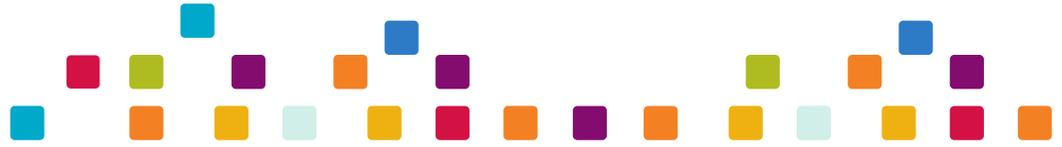
- Power Supply:** Auto-detectable (PFC Compliant) 100-240VAC, 50-60Hz, rated at 100 Watts
- ENERGY STAR** qualified
- Agency Approvals:** IEC 60950, EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3
- Product Markings:** cTUVus, CE Marking, FCC-B, ICES-003, VCCI, C-Tick, NOM, S-Mark (Arg), CCC, CU, BSMI, KCC, SABS, IN-Metro

## Physical Specifications

| Parameter       | ZT420              |
|-----------------|--------------------|
| Height          | 12.75" (324 mm)    |
| Width           | 13.25" (336.55 mm) |
| Depth           | 19.50" (495 mm)    |
| Weight          | 40 lb (18.14 kg)   |
| Shipping Weight | 45 lb (20.41 kg)   |



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## Environmental Specifications

- **Operating Environment:**
  - Thermal transfer = 40° to 104°F (5° to 40°C)
  - Thermal direct = 32° to 104°F (0° to 40°C)
  - 20% to 85% non-condensing R.H.
- **Storage/Transportation Environment:**
  - -40° to 140°F (-40° to 60°C)
  - 5% to 85% non-condensing R.H.

## Preventative Maintenance

Zebra recommends cleaning the printer on a regular basis using standard Zebra printer parts and cleaning supplies. Consult your “User’s Guide” for further details.

### Cleaning

The exterior is cleaned with a lint-free cloth, and if necessary, a mild detergent solution or desktop cleaner. Interior components (printhead, platen roller, media sensor, peel bar, ribbon and media paths) are cleaned with alcohol or blown air to remove any particles.

### Lubrication

All mechanical parts are self-lubricating and do not require additional lubrication.

### Print Registration

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

### Printhead Replacement

For optimal printing quality and proper printer performance across our product line, Zebra strongly recommends the use of Genuine Zebra supplies as part of the total solution. Printers are designed to work only with Genuine Zebra printheads, thus maximizing safety and print quality.



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