ZEBRA
CAPTURE YOUR EDGE

ZT510 Industrial Printer

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

ZT510 Standard Features

- Customizable Back-lit multi-line graphic LCD display with intuitive menu and easy-to-use keypad for quick operation.
- User programmable password protection
- Thin film printhead – with E3® Element Energy Control Equalizer™
- 512MB SDRAM / 2GB on-board Flash memory
- Cortex A9 800MHz Processor
- Serial RS-232,Full Speed (12Mbps) USB 2.0, BTLE, static NFC tag, and Auto-switching Internal Gigabit Ethernet
- Dual media sensors – transmissive and reflective, selectable through software or front panel
- Real- time Clock (RTC)
- Energy Star Qualified

Firmware

- ZPL® or ZPL II® programming language – selectable through software or front panel
- XML-Enabled Printing – direct connect integration for barcode label printing; eliminates license fees and print server hardware and lowers customization and programming costs

Optional Features

- Modular full-width guillotine style cutter with catch tray – operates under software control cutting labels individually or in strips (not compatible with rewind and peel options)
- Media rewind spindle – rewinds finished roll internally onto 3" (76 mm) core or enables label peel and liner rewind



- Parallel port option card
- USB Host option card
- Additional fonts available

Zebranet Print Server Options

- Features provided by ZebraNet Print Servers include:
  - WebView web pages – connect and control Zebra barcode printers via the printer's web interface using common internet browsers
  - Alerts – provide alerts via any e-mail-enabled, wired, or wireless device to minimize downtime
- ZebraNet 802.11ac/BT4.0 Print Server Option card
- Internal IPv4 10/100/1000 Wired Print Server Option Card
- SEH PS105-Z Internal IPv6 Print Server (requires Parallel port option

Printer Operation

- Thermal transfer and direct thermal printing of barcodes, text and graphics
- Advanced label/media counters

- Auto calibration – printer calibrates when printer is turned on or when printhead is closed using approximately two labels
- Early Warning Systems – provides clean printhead alerts via the front panel and ZebraLink Alerts

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
- ZebraDesigner Printer Driver – for Microsoft® Windows® 7, 8, 10, Server 2008, Server 2012, Vista operating systems
- Zebra's Virtual Devices – allows integration into mixed printer environments without re-programming formats. More Information at www.zebra.com.

Electrical Specifications

- 250 watt rated Universal power supply with power-factor correction 90–265 VAC, 47–63 Hz
- Agency approvals: IEC 60950-1, EN 55022 Class B, EN 55024, EN 61000-3-2, EN 61000-3-3
- Product Markings: cTUVus, CE, FCC-B, ICES-003, VCCI, C-Tick, NOM, S-Mark(Arg), CCC, GOST-R, BSMI, KCC, STB, and UkrSEPRO
- Energy Star Rated

Environmental Specifications

- Operating environment:
  - Thermal transfer = 40°F to 104°F (5° to 40°C)
  - Direct thermal = 32°F to 104°F (0° to 40°C)
  - 20% to 85% non-condensing relative humidity
- Storage/transportation environment:
  - –22°F to 140°F (–30° to 60°C) 20% to 85% non-condensing relative humidity

Font Specifications

- 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

Communications Specifications

- USB 2.0, full-speed (12Mbps)
- 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)
- Gigabit internal Ethernet supports networks internally integrated option that enables the use of Webview and Alert features
- Bluetooth® LE - Bluetooth LE is best used for printer set-up and light data transfer events. Using Bluetooth Classic is recommended when data transfer times are the priority. For best performance when printing, use a printer with Bluetooth Classic.
- Static NFC tag
  - RS-232C with DB9F connector, optional converter for DB25F available

Zebra Programming Language (ZPL and 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
- Object copying between memory areas (RAM, Onboard Flash memory locations)
- 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
- User-programmable password
- Status messages to host on request

Barcode Symbologies and Specifications

- 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, DataMatrix, MaxiCode, QR Code, TLC 39, MicroPDF, RSS-14 (and composite), Aztec

ZT510

Printing Specifications

- Height: 15.58" (395.68 mm)
- Width: 10.56" (268.2 mm)
- Depth: 20.17" 512.33mm)
- Weight: 50 lbs. (22.7 kg)

Media Specifications

- Media type: continuous, die-cut, notch, hole, or black mark
- Media width (label and liner): 0.79" (20 mm) to 4.5" (114 mm)
- Minimum label length:
  - Rewind mode: 0.25" (6 mm)
  - Peel mode: 0.5" (13 mm)
  - Tear-off mode: 0.7" (18 mm)
  - Cutter mode: 1.5" (38 mm)
- Media thickness (label and liner): 0.003" (0.076 mm) to .009" (0.23mm) cutter, 0.012" (0.305 mm) non-cutter
- Maximum media roll size: 8.0" (203 mm) outside diameter on a 3" (76 mm) inside diameter core
- Transmissive (gap) sensing standards:
  - Interlabel gap: 2-4 mm, preferably 3 mm
  - Sensing notch: 0.25" W (6 mm) × 0.12" L (3 mm)
  - Sensing hole: 0.125" (3 mm) diameter
- Reflective (black mark) sensing standards:
  - Black mark length (parallel to inside media edge): 0.12"-0.43" (3-11 mm)
  - Black mark width (perpendicular to inside media edge): 0.43" (> 11 mm)
  - Black mark location: within 0.040" (1 mm) of inside media edge
  - Black mark density: >1.0 Optical Density Units (ODU)
  - Maximum media density: 0.5 ODU

Ribbon Specifications

- Standard lengths: 1476' (450 m)
- Provides 3:1 media roll to ribbon ratios
- Maximum ribbon roll size:
- 3.2" (81.3 mm) outside diameter on a 1.0" (25.4 mm) inside diameter core
- Ribbon wound coated-side out
- Ribbon width: 0.79" (20 mm) to 4.33" (110 mm)

Electrical Specifications

- Standard lengths: 1476' (450 m)
  Provides 3:1 media roll to ribbon ratios
- Maximum ribbon roll size: 3.2" (81.3 mm) outside diameter on a 1.0" (25.4 mm) inside diameter core
- Ribbon wound coated-side out
- Ribbon width: 0.79" (20 mm) to 4.33" (110 mm)

* 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.

ZT510 203 dpi

Printing Specifications

- 203 dpi resolution (8 dots/mm)
- Dot size (W × L): 0.0049" × 0.0049" (0.125 mm × 0.125 mm)
- First dot location measured from inside media edge: 0.14" ±0.05" (3.5 mm ±1.25 mm)
- Maximum print width: 832 dots 4.09" (104 mm)
- Maximum non-continuous media print length 39" (991 mm)
- Maximum continuous media print length 150 in.
- Media registration tolerance: *
  - Vertical:
    - o ± 0.75mm at print speeds at or below 6 ips
    - o ±1.5mm at speeds greater than 6ips
  - Horizontal: ± 0.060" (± 1.5 mm)
- Programmable print speeds (inches per second): 2.4, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12,
- Barcode modulus “X” dimension:
  - Picket fence (non-rotated) orientation: 4.9 mil to 49 mil
  - Ladder (rotated) orientation: 4.9 mil to 49 mil

Font Specifications (203 dpi) 8 dot/mm

Font	Matrix (in dots) (H × W)	Type†	Minimum Character Size (H × W) in inches (mm)	Max CPI
A	9 x 5	U-L-D	0.044 × 0.029 (1.1 × 0.74)	33.9
B	11 × 7	U	0.054 × 0.044 (1.37 × 1.1)	22.6
C, D	18 × 10	U-L-D	0.088 × 0.059 (2.2 × 1.5)	16.9
E	28 × 15	OCR-B	0.138 × 0.098 (3.5 × 2.5)	10.1
F	26 × 13	U-L-D	0.128 × 0.079 (3.3 × 2.0)	12.7
G	60 × 40	U-L-D	0.295 × 0.236 (7.5 × 6.0)	4.2
H	21 × 13	OCR-A	0.103 × 0.093 (2.6 × 2.4)	10.7
GS	24 × 24	SYMBOL	0.118 × 0.118 (3.0 × 3.0)	8.4
P	20 × 18	U-L-D	0.098 × 0.089 (2.50 × 2.25)	N / A
Q	28 × 24	U-L-D	0.138 × 0.113 (3.50 × 3.00)	N / A
R	35 × 31	U-L-D	0.172 × 0.153 (4.38 × 3.88)	N / A
S	40 × 35	U-L-D	0.197 × 0.172 (5.00 × 4.38)	N / A
T	48 × 42	U-L-D	0.236 × 0.207 (6.00 × 5.25)	N / A
U	59 × 53	U-L-D	0.290 × 0.261 (7.38 × 6.63)	N / A
V	80 × 71	U-L-D	0.394 × 0.349 (10.0 × 8.88)	N / A
Ø	variable	U-L-D	variable	N / A

†U—Uppercase L—Lowercase D—Descenders

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ZT510 300 dpi

Printing Specifications

- 300 dpi resolution (11.8 dots/ mm)
- Dot size (W × L): 0.0033" × 0.0039" (0.084 mm × 0.01 mm)
- First dot location measured from inside media edge: 0.08" ±0.05" (2.1 mm ±1.25 mm)
- Maximum print width:1248 dots 4.16 " (105.7 mm)
- Maximum non-continuous media print length 39" (991 mm)
- Maximum continuous media print length 100 in
- Media registration tolerance: *
  - Vertical:
    - o ± 0.75mm at print speeds at or below 6 ips
    - o ±1.5mm at speeds greater than 6ips
  - Horizontal: ± 0.060" (± 1.5 mm)
- Programmable print speeds (inches per second): 2.4, 3, 4, 5, 6, 7, 8, 9, 10,
- Barcode modulus “X” dimension:
  - Picket fence (non-rotated) orientation: 3.3 mil to 49 mil
  - Ladder (rotated) orientation: 3.9 mil to 39 mil

Font Specifications (300 dpi) 12 dot/mm

Font	Matrix (in dots) (H × W)	Type†	Minimum Character Size (H × W) in inches (mm)	Max CPI
A	9 × 5	U-L-D	0.030 × 0.020 (0.76 × 0.51)	50.0
B	11 × 7	U	0.037 × 0.030 (0.94 × 0.76)	33.3
C, D	18 × 10	U-L-D	0.060 × 0.040 (1.5 × 1.0)	25.0
E	28 × 15	OCR-B	0.137 × 0.087 (3.5 × 2.2)	11.5
F	26 × 13	U-L-D	0.087 × 0.053 (2.2 × 1.3)	18.8
G	60 × 40	U-L-D	0.200 × 0.160 (5.1 × 4.1)	6.3
H	21 × 13	OCR-A	0.100 × 0.093 (2.5 × 2.37)	10.7
GS	24 × 24	SYMBOL	0.080 × 0.080 (2.03 × 2.03)	12.5
P	20 × 18	U-L-D	0.067 x 0.060 (1.69 x 1.52)	N / A
Q	28 × 24	U-L-D	0.093 x 0.080 (2.37 x 2.03)	N / A
R	35 × 31	U-L-D	0.117 x 0.103 (2.96 x 2.62)	N / A
S	40 × 35	U-L-D	0.133 x 0.117 (3.39 x 2.96)	N / A
T	48 × 42	U-L-D	0.160 x 0.140 (4.06 x 3.56)	N / A
U	59 × 53	U-L-D	0.197 x 0.177 (5.00 x 4.49)	N / A
V	80 × 71	U-L-D	0.267 x 0.237 (6.77 x 6.01)	N / A
Ø	variable	U-L-D	variable	N / A

†U—Uppercase L—Lowercase D—Descenders

For more information, visit www.zebra.com/zt510

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