ZEBRA Z4000™ PRINTER SPECIFICATIONS

Specifications are provided for reference and are based on printer tests using Zebra brand ribbons and labels. 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

- 203 dpi print resolution (8 dots/mm)
- Thin film print head with E^3® Element Energy Control
- Thermal transfer and direct thermal printing of bar codes, text, and graphics
- ZPL® or ZPL II® programming language, software selectable
- 32 bit RISC processor
- 1MB RAM memory
- Serial RS-232/422/485 and IEEE 1284 compliant bi-directional parallel
- Reflective media sensing technology
- Operator controls via front panel buttons and LEDs, configuration settings via DIP switches and software
- Die-cast aluminum frame: 0.20" (5mm) thick
- Clear window on media cover: easy to view supplies
- Zebra® printer driver for Windows™ 3.X and 95 operating systems

Optional Features

- Print head 300 dpi (12 dots/mm)
- Deluxe LCD front panel: Back-lit, 2 line, 16 characters w/ full menu to change set-up options
- Full-width guillotine knife cutter and catch tray, operates under software control cutting labels individually or in strips (not compatible with rewind and peel options)
- Rewind and peel combination - internally rewinds printed labels or liner
- Value peel - for print-and-apply; liner drops to the floor
- PCMCIA Connector - Flash memory cards up to 8 MB
- 1 or 2 MB Flash memory
- 2 MB DRAM memory expansion for longer labels or storage of fonts, graphics, logos, templates, and label formats
- Additional scalable and smooth bitmapped fonts available
- ZebraNet™ Micro Print Server - provides ethernet connectivity
- BAR-ONE® Windows™-based WYSIWYG on-screen label design and print application software

Printing Specifications

- 203 dpi resolution (8 dots/mm)
  - Dot size (W x L): 0.0049" x 0.0049" (0.125mm x 0.125mm)
- 300 dpi resolution (12 dots/mm)
  - Dot size (W x L): 0.0033" x 0.0039" (0.84mm x 0.99mm)
- First dot location measured from inside media backing edge: 0.10" ±.04" (2.5mm, not to exceed -.5mm +1.0mm)
- Maximum print width: 4.09" (104mm)
- Maximum non-continuous and continuous media print length:

Memory	203 dpi	300 dpi
1.0MB (*both non- continuous and continuous memory*)	37"/940mm	16"/406mm

Opt. Mem. (non-continuous)	39"/991mm	39"/991mm
Opt. Mem (continuous)	136"/3454mm	61"/1549mm

- Media registration tolerance: *
- Vertical = < ±0.039" (±1.0mm) on non-continuous media Horizontal = < ±0.039" (±1.0mm) within a roll of media
- Programmable print speeds:
  - 203 dpi models = 2.0" (51mm) through 10" (254mm) per second in 1" increments
  - 300 dpi model = 2.0" (51mm) through 6" (152mm) per second in 1" increments

Media Specifications

- Media type: continuous, die-cut, tags, black-mark
- Media width (label and liner): 1.0" (25.4mm) to 4.50" (114mm)
- Minimum label length: * Rewind mode: 0.5" (12.7mm) Peel mode: 1.0" (25.4mm) Tear-off mode: 0.5" (12.7mm) Cutter mode: 1.0" (25.4mm)
- Media thickness (label and liner): 0.0023" (0.058mm) to 0.010" (0.25mm)
- Media liner: Recommended not to exceed 3.5 mil caliper and 60 lbs. in weight. (*See " Gap and notch sensing standards" section below.*)
- Maximum full-width media thickness for cutter: 0.25mm (0.010")
- Maximum media roll size: 8.0" (203mm) O.D. on a 3" (76mm) I.D. core
- Maximum fan-fold pack size: 8.0"L (203mm) x 4.5"W (114mm) x 6.2"H (157mm)
- Gap and notch sensing standards:
  - Interlabel gap: 2 - 4mm, preferably 3mm
  - Sensing notch: 0.25"W (6mm) x 0.12"L (3mm)
  - Sensing hole: 0.125" (3mm) diameter
  -Reflecting technology used for gap (web) sensing applications requires a minimum difference in the reflectance values when measured from the label versus the gap (web). Some specialty media may not be compatible with the media sensor of Z Series printers. These media include pre-printed release liner, thick or opaque liners exceeding .0035" (.089 mm) thickness (60 lb. stock), or color on the adhesive side of the media. With these types of specialty media, adding a black mark or notch will ensure proper calibration and registrationk.
- Black mark sensing standards:
  - Black mark length (parallel to inside media edge): 0.098" - 0.453" (2.5mm - 11.5mm)
  - Black mark width (perpendicular to inside media edge): ≥ 0.37" (≥ 9.5mm)
  - Black mark location: within 0.040" (1mm) of inside media edge
  - Black mark density: > 1.0 Optical Density Units (ODU)

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- Maximum media density: 0.5 ODU

Ribbon Specifications

- Ribbon width: 0.94" (24mm) to 4.33" (110mm)
- Standard Lengths: 984' (300m) or 1476' (450m)
- Maximum ribbon roll size:
  3.2" (81.3mm) O.D. on a 1.0" (25.4mm) I.D. core
- Ribbon wound coated-side out

Font Specifications

203 dpi (8 dots/mm)

Fonts	Matrix (in dots) (H x W)	Type†	Minimum Char. Size (H x W)	Maximum C.P.I.
A	9 x 5	U-L-D	.044" x .029"	33.9
B	11 x 7	U	.054" x .044"	22.6
C,D	18 x 10	U-L-D	.088" x .059"	16.9
E	28 x 15	OCR-B	.138" x .098"	10.1
F	26 x 13	U-L-D	.128" x .079"	12.7
G	60 x 40	U-L-D	.295" x .236"	4.2
H	21 x 13	OCR-A	.103" x .093"	10.7
GS	24 x 24	SYMBOL	.118" x .118"	8.4
Ø	variable	U-L-D	variable	N/A

300 dpi (12 dots/mm)

Fonts	Matrix (in dots) (H x W)	Type†	Minimum Char. Size (H x W)	Maximum C.P.I.
A	9 x 5	U-L-D	.030" x .020"	50.0
B	11 x 7	U	.037" x .030"	33.3
C,D	18 x 10	U-L-D	.060" x .040"	25.0
E	41 x 20	OCR-B	.137" x .087"	11.5
F	26 x 13	U-L-D	.087" x .053"	18.8
G	60 x 40	U-L-D	.200" x .160"	6.3
H	30 x 19	OCR-A	.100" x .093"	10.7
GS	24 x 24	SYMBOL	.080" x .080"	12.5
Ø	variable	U-L-D	variable	N/A

† U - Uppercase   L - Lowercase   D - Descenders

- Bitmap fonts A through H and GS symbols are expandable up to 10 times, height and width independent
- Smooth scalable font Ø (CG Triumvirate™ Bold Condensed) is expandable dot-by-dot, height and width independent
- IBM® Code Page 850 International Characters

Bar Code Symbologies & Specifications

- Bar code 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
- Bar code ratios: 2:1, 7:3, 5:2, and 3:1
- Linear bar codes: 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
- 2-dimensional bar codes: Codablock, PDF-417, Code 49, DataMatrix, Maxi Code, QR Code and Micro PDF-417.

Zebra Programming Language®
(ZPL® and ZPL II®)

- Communicates in printable ASCII characters
- 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 (0º, 90º, 180º, 270º)
- Slew command
- Programmable label quantities with print, pause, cut control
- Status messages to host upon request

Communications Specifications

- IEEE 1284 compliant bi-directional parallel interface
- High-speed serial interfaces:
  - RS-232C, RS422 and RS485 with DB25F connector
  - Configurable baud rate (600 - 38.4kB), parity, and data bits. Stop bits at 1 or 2.
  - Software (XON/XOFF) or hardware (DTR/DSR) communication handshake protocols
- ZebraNet™ Micro Print Server (MPS) ethernet network print server (10BASE-T)

Electrical Specifications

- Auto-detectable 90-265VAC, 48-62 Hz, 5A fused
- Agency approvals: UL 1950, CISPR 22 (class B), EN60950, EN500824, CSA 22.2 No. 950-95, Canadian Doc. (class A), FCC (class B), CE compliance

Physical Specifications

- Height: 11.47" (291mm)
  -w/ Rewind Option Installed: 16.38" (416mm)
- Width: 10.27" (261mm)
- Depth: 18.28" (464mm)
- Weight: 24.5lbs. (11kg)

Environmental Specifications

- Operating environment:
  Thermal transfer = 40º to 105ºF (5º to 40ºC)
  Thermal direct = 32º to 104ºF (0º to 40ºC)
  20% to 85% non-condensing R.H.
- Storage/Transportation environment:
  -40º to 140ºF (-40º to 60ºC)
  5% to 85% non-condensing R.H.

*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.