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170*PAX4*™ PRINT ENGINE 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

- Available in 203 dpi (8 dots/mm) or 300 dpi (12 dots/mm)
- Embedded ZebraLink™ WebViewand Alert features (requires an optional ZebraNet® 10/100 Print Server)
- Real-time clock
- Applicator interface—provides status and control signals for applicators
- Communications via serial RS-232/422/485 and IEEE 1284 bidirectional parallel interface with auto detect
- Full function front panel and multilingual back-lit LCD display with user programmable password protection
- Thin film printhead with E³™ Element Energy Equalizer
- Dual media sensors, transmissive and reflective, selectable through software or front panel
- ZPL® or ZPL II® programming language, selectable through software or front panel
- XML-Enabled Printing—allows XML communications from today's enterprise systems for bar code label printing
- Fast 32 bit 133 MHz RISC processor
- 10 MB RAM memory
- Flash memory including 2 MB non-volatile memory storage for downloadable objects
- Type I & II Series C & D PC Card Interface, memory only
- Zebra printer driver for Windows® 3.X and 95/98/NT 2000 operating systems

Optional Features

- ZebraNet® 10/100 Print Server (internal or external)
- ZebraNet® 10/100 External Print Server (Class B digital device, approved for residential, commercial, or light industrial environment use only. Degradation in performance could occur if used in a heavy industrial environment.)
- ZebraNet® Wireless Plus print server—Provides an internally integrated 802.11b/g wireless option and supports Motorola® (Symbol) and Cisco® radio cards.
- PCMCIA socket: Supports linear type I & II, 5 volt memory cards, up to 32 MB, ATA format up to 256 MB
- Up to 256 MB CompactFlash®
- Factory-installed 64 MB (61 MB user available) Flash memory option
- Additional fonts available
- Unicode™
- WGL4 through Swiss 721
- Firmware support for downloadable TrueType™ fonts

ZebraLink Solutions

Software

ZebraDesigner™ Pro—An intuitive, easy-to-use software program for creating complex label designs (option).
ZebraDesigner™—Offers basic features for simple label design
ZebraDesigner™ Label Design Software for use with the SAP® Business Suite family of business applications
ZebraDesigner™ for XML—Easy-to-use label design software that enables printing on XML-Enabled printers
ZebraNet™ Bridge Enterprise —Centrally manage Zebra printers from a single PC screen anywhere on your global network.
ZebraNet™ Utilities v 7.0—Provides enhanced printing, conversion, and administration capabilities; message management; and more.
Zebra Universal Driver—A printer driver compatible with Windows® 98SE/NT/2000/XP/2003.
ZebraDesigner™ Driver—A powerful printer driver compatible withWindows 98SE/NT/2000/XP/2003 and Windows Vista.
ZBI 2.0™ is an optional, powerful programming language that lets printers run stand-alone applications, connect to peripherals, & much more.
ZBI-Developer™ programming utility makes it dramatically easier for programmers to create and test complex ZBI 2.0 programs and distribute them to the printer.

Networking Options

ZebraNet Wireless Plus PrintServer (internal)
ZebraNet 10/100 PrintServer (internal or external)

Firmware

ZPL II®—Universal language for Zebra printers. Simplifies label formatting and enables format compatibility with existing systems that run Zebra printers.
XML-Enabled printing—Direct-connect integration for bar code label printing; eliminates license fees and print server hardware and lowers customization and programming costs.
Web View—Connect and control Zebra bar code 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.

Printing Specifications

- 203 dpi resolution (8 dots/mm) 12 inches per second (ips) maximum print speed
  Dot size (W x L): 0.0049" x 0.0052" (0.125mm x 0.132mm)
  Pitch: 8.0 dots/mm
- 300 dpi resolution (12 dots/mm) 8 ips maximum print speed
  Dot size (W x L): 0.0033" x 0.0043" (0.084 mm x 0.108 mm)
  Pitch: 11.8 dots/mm
- First dot location measured from inside (frame) media edge:
  Right-Hand = 0.093" ±0.035" (2.4 mm ±0.8 9mm)
  Left-Hand = 0.093" ±0.035" (2.4 mm ±0.89 mm)
- Maximum print width: 6.6" (168 mm)
- Maximum non-continuous media print length (300 dpi):
  10 MB memory = 39" (990 mm)
- Maximum continuous media print length (300 dpi):
  10 MB memory = 100" (2540mm)
- Maximum non-continuous media print length (203 dpi):
  10 MB memory = 39" (990 mm)
- Maximum continuous media print length (203 dpi):
  10 MB memory = 150" (3,810 mm)
- Media registration tolerance: *
  Vertical = < ±0.040" (±1.0 mm)
  On concurrent labels in "Applicator" mode
  Horizontal = < ±0.040" (±1.0 mm)
- Programmable print speeds:
  203dpi - 2.4" (61 mm) through 12" (305 mm) per second in 1" increments.
  300 dpi – 2.4" (61 mm) through 8" (203 mm) increments.

* 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.

Media Specifications

- Media type: continuous, die-cut, or black mark*
- Media width (label and liner):
  3.0" (76 mm) to 7.1" (180 mm)
- Minimum label length: *
  Applicator mode: 3.0" (76.2 mm); 1.0" with backfeed off
  Rewind mode: 1.0" (25.4 mm)
  Tear-off mode: 3.0" (76.2 mm); 1.0" with backfeed off
- Media thickness (label and liner):
  0.003" (0.076 mm) to 0.012" (0.305 mm)
- Media Unwind Force:
  − Applicator media supply steady state tension must be uniform and not exceed 2 lbs. Start/Stop tension transients must not exceed 4 lbs.
- Media rewind force:
  − Applicator media take-up pull tension must be uniform between 1 - 4lbs.
- Transmissive (gap) sensing standards:
  − Inter label gap: 2 – 4 mm, preferably 3 mm
  − Sensing notch: 0.25"W (6 mm) x 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

* Smaller labels may be printed subject to qualifying and characterizing the media and application with thorough testing.

Ribbon Specifications

- Ribbon width: 3.0" (76 mm) to 7.1" (180 mm)
- Maximum Length: 2,955' (900 m)
- Maximum ribbon roll size:
  4.0" (101.6 mm) O.D on a 1.0" (25.4 mm) I.D. core
- Ribbon wound coated-side out

**PAX*4 printers are not recommended for use with fanfold style media in applicator mode.

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
P	20 x 18	U-L-D	.098" x .089"	N/A
Q	28 x 24	U-L-D	.138" x .113"	N/A
R	35 x 31	U-L-D	.172" x .153"	N/A
S	40 x 35	U-L-D	.197" x .172"	N/A
T	48 x 42	U-L-D	.236" x .207"	N/A
U	59 x 53	U-L-D	.290" x .261"	N/A
V	80 x 71	U-L-D	.394" x .349"	N/A
	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
P	20 x 18	U-L-D	.067" x .060"	N/A
Q	28 x 24	U-L-D	.093" x .080"	N/A
R	35 x 31	U-L-D	.117" x .103"	N/A
S	40 x 35	U-L-D	.133" x .117"	N/A
T	48 x 42	U-L-D	.160" x .140"	N/A
U	59 x 53	U-L-D	.197" x .177"	N/A
V	80 x 71	U-L-D	.267" x .237"	N/A
	variable	U-L-D	Variable	N/A

†U—Uppercase L—Lowercase D—Descenders

- Bitmap fonts A through V 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 and Planet Code, RSS-14
- 2-dimensional bar codes: Codablock, PDF417, Code 49, Data Matrix, MaxiCode, QR Code , TLC 39, and Aztec

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

- Communicates in printable ASCII characters
- Unicode™ -compliant (Version V60.14 and higher)
- 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 and PC memory card)
- 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
- User-programmable password
- Status messages to host on request

Communications Specifications

- High-speed bi-directional parallel interface, Centronics® compatible
- High-speed serial interfaces:
  - RS-232C and RS422 with DB9F connector
  - RS-485 multi-drop capability
  - Configurable baud rate (110 - 57.6kB), parity, data bits, and stop bits
  - Software (XON/XOFF) or hardware (DTR/DSR) communication handshake protocol
- ZebraNet 10/100 Print Server
- ZebraNet Wireless Plus print server
- Applicator interface with DB15F connector
  - +5V I/O and +24V to +28V I/O versions available

Electrical Specifications

- Universal power supply with power-factor correction 90–264 VAC, 48–62 Hz
- Standards approvals—IEC 60950-1; EN55022, Class B; EN55024; EN61000-3-2, 3-3
- Product Markings—NRTL; CE; FCC-B; ICES-003; VCCI; C-Tick; CCC; NOM; Gost-R; S Mark (Argentina); MIC; BSMI; ZIK
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Physical Specifications

- Height: 11.8" (300 mm)
- Width: 9.6" (245 mm)
- Depth: 18.3" (465 mm)
- Weight: 35.5 lbs (16.1 kg)

Environmental Specifications

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

- Storage/Transportation environment:
  -40º to 160ºF (-40º to 71ºC)
  5% to 95% non-condensing R.H.