ZM600 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, selectable through software or front panel
- 32 bit high speed processor
- On board Real Time Clock (RTC)
- 16MB DRAM memory
- 8MB Flash memory (2 MB User available)
- Serial RS-232, and bi-directional parallel ports
- A fixed position reflective sensor and a movable Transmissive sensor to support gap, notch and black mark media
- Sleek personality / rugged metal design
  -Die-cast aluminum frame: 0.20" (5mm) thick - ensures parallelism of spindles for consistent print quality
  -Die-cast Metal base withstands harsh industrial conditions
  -Metal media cover with enlarged clear window: easy to view supplies

-Die-cast print mechanism with head open lock withstands general wear & tear and facilitates media loading.

- Standard LCD control panel: Back-lit, 240 x 128 pixel graphic display w/ full menus to change set-up options in multiple languages (16 languages including Japanese, Chinese & Korean)
- Charcoal gray form design for improved smudge resistance
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Optional Features

- Print head: 300 dpi(12 dots/mm)
- 64 MB Factory-Installed, On-Board Flash Memory (58 MB user available)
- 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)
- Choice of 2 peel options
  - A front mount, passive peel option, w/ no take-up spindle
  - Liner-Take-Up option - full roll liner take-up spindle accommodates standard printer base - works with peel option
- RFID Field Upgrade Kit
- Rewind - internally rewinds full roll of printed labels on 3" core, or peels & rewinds liner
- Factory installed 64MB (58MB user available) Flash Memory Option
- Additional scalable and smooth bitmapped fonts available
- Internal or external ZebraNet 10/100 Print Server option: supports 10Base-T, 100Base-TX, and fast Ethernet 10/100 auto-switching networks, plus complete use of ZebraLink WebView and Alert features.
- APL-I
- APL-D
- ZebraNet; Wireless Plus Print Server: provides internally integrated wireless option with support for Symbol and Cisco radio cards.
- 48766-001 ZBI 2.0 Enablement Kit for 1
- 48767-001 ZBI 2.0 Enablement Kit for 5
- 48768-001 ZBI 2.0 Enablement Kit for 25
- 13831-001 ZebraDesigner Pro
- 13832-001 ZebraDesigner for mySAP Business Suite
- 13833-001 ZebraDesigner for XML
- 48733-120 ZebraNet Bridge Enterprise for 1-50 Printers
- 48734-120 ZebraNet Bridge Enterprise for 1-100 Printers
- 48735-120 ZebraNet Bridge Enterprise for 100+ Printers

Field installable options	ZM600

External ZebraNet Print Server II, (Ethernet) - disables parallel port	G46692
Internal ZebraNet 10/100 Print Server, (Ethernet)	79823
External ZebraNet 10/100 Print Server, (Ethernet) - disables parallel port	G47490
Internal Wireless B/G Print Server	P1032271
Serial Port Converter: RS232 to RS485/422	33130
Serial Port Converter: DB9 to DB25	33138
Cutter / Catch Tray	79842
Peel- front mount, passive peel option, **NO take-up spindle**	79832M
Rewind - internally rewinds full roll on 3" core (includes peel option and deep base - not compatible with cutter option)	79836
300 dpi print head	79804M
203 dpi print head	79803M
300dpi to 203 dpi convert kit	79809
203dpi to 300 dpi convert kit	79808

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
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: The most powerful driver available from Zebra

Firmware:

ZPL II: Universal language for Zebra printers. Simplifies label formatting and enables format compatibility with existing systems that run Zebra printers.

- **Web View:** Connect and control Zebra bar code printers via the printer's Web interface using a common Web browser.
- **Alerts:** Printers equipped with ZebraNet print servers provide alerts via any email-enabled, wired, or wireless device to minimize downtime.

XML-Enabled ZPL: allows XML communications from today's enterprise systems
EPL II: Eltron Programming Language is an optional firmware version for 203 dpi printers that provide backwards compatibility with many desktop printers as well as the Zebra 2746e Thermal Transfer Printer.
APL: Zebra's Alternative Programming Language allows integration into mixed printer environments without re-programming formats.

- -APL-I firmware: allows a 203 dpi (8 dots /mm) Zebra printer to parse and print IPL code intended for an Intermec 3400D. (With APL-I firmware installed, ZPL programming language is not recognized, and ZPL specific features are not available.)
- -APL-D firmware: allows a 203 dpi (8 dots / mm) Zebra Printer to parse and print DPL code intended for a Prodigy Plus. (With APL-D firmware installed, ZPL programming language is not recognized, and ZPL specific features are not available.)

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*Part number is listed for replacement of original print head if necessary.

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" (0.084mm x 0.099mm)
- First dot location measured from inside media backing edge:
  0.10" +/- .04" (2.5mm +/- 1 mm)
- Maximum print width: 6.6" (168mm)
- Maximum continuous media print length:

203 dpi	300 dpi
102" 2591mm	45" 1143mm

- 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 = 2.4" (61mm), 3"(76mm) through 10" (254mm) per second in 1" increments
  - 300 dpi = 2.4" (61mm), 3"(76mm) through 8" (203mm) per second in 1" increments

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Media Specifications

- Maximum non-continuous label length: 39" (991mm)

- Media type: continuous, die-cut, tags, black-mark

- Media web width (label and liner):

  2.0" (51mm) to 7.0" (178mm) Tear / Cutter
  2.0"(51mm) to 6.75"(171mm) Peel / Rewind

- Minimum label length:

  - 0.5" (12.7mm)in Tear, Peel and Rewind Mode
  - 1.0" (25.4mm) in Cutter Mode

- Media thickness (label and liner):
  0.0023" (0.058mm) to 0.010" (0.25mm)

- 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
  * Note: Notch & Hole Position centered from 0.15" to
  2.25" from media inner edge

- 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)
  - Maximum media density: 0.5 ODU

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Ribbon Specifications

- Ribbon width: 2.00" (51mm) to 6.85" (174mm)
- 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 ink-side out.

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Standard 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.

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Font Matrices for 8dot/mm (203 dpi) print heads

Font	Matrix				Character Size					
					Inches			Millimeters		
	Height	Width	Inter Char gap	Type*	Height	Width	Char/Inch	Height	Width	Char/mm
A	9	5	1	U-L-D	0.044	0.029	33.90	1.13	0.75	1.33
B	11	7	2	U	0.054	0.044	22.60	1.38	1.13	0.89
C,D	18	10	2	U-L-D	0.088	0.059	16.95	2.25	1.50	0.67
E	28	15	5	OCR-B	0.138	0.098	10.17	3.50	2.50	0.40
F	26	13	3	U-L-D	0.128	0.079	12.71	3.25	2.00	0.50
G	69	40	8	U-L-D	0.295	0.236	4.24	7.50	6.00	0.17
H	21	13	6	OCR-A	0.103	0.093	10.71	2.63	2.38	0.42
GS	24	24	0	Symbol	0.118	0.118	8.48	3.00	3.00	0.33
P	20	18	n/a	U-L-D	.098	.089	N/A	2.49	2.26	N/A
Q	28	24	n/a	U-L-D	.138	.118	N/A	3.51	2.99	N/A
R	35	31	n/a	U-L-D	.172	.153	N/A	4.37	3.89	N/A
S	40	35	n/a	U-L-D	.197	.172	N/A	5.00	4.37	N/A
T	48	42	n/a	U-L-D	.236	.207	N/A	5.99	5.26	N/A
U	59	53	n/a	U-L-D	.290	.261	N/A	7.37	6.63	N/A
V	80	71	n/a	U-L-D	.394	.349	N/A	10.0	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 for 12dot/mm (300 dpi) print heads

Font	Matrix				Character Size					
					Inches			Millimeters		
	Height	Width	Inter Char gap	Type*	Height	Width	Char/Inch	Height	Width	Char/mm
A	9	5	1	U-L-D	.030	0.020	50.00	0.76	0.51	1.97
B	11	7	2	U	.037	0.030	33.33	0.93	0.76	1.31
C,D	18	10	2	U-L-D	.060	0.040	25.00	1.53	1.02	0.98
E	28	15	6	OCR-B	.137	0.087	11.54	3.47	2.20	0.45
F	26	13	3	U-L-D	.087	0.053	18.75	2.20	1.36	0.74
G	69	40	8	U-L-D	.200	0.160	6.25	5.08	4.07	0.25
H	21	13	9	OCR-A	.100	0.093	10.71	2.54	2.37	0.42
GS	24	24	0	Symbol	.080	0.080	12.50	2.03	2.03	0.49
P	20	18	n/a	U-L-D	.098	.089	N/A	2.49	2.26	N/A
Q	28	24	n/a	U-L-D	.138	.118	N/A	3.51	2.99	N/A
R	35	31	n/a	U-L-D	.172	.153	N/A	4.37	3.89	N/A
S	40	35	n/a	U-L-D	.197	.172	N/A	5.00	4.37	N/A
T	48	42	n/a	U-L-D	.236	.207	N/A	5.99	5.26	N/A
U	59	53	n/a	U-L-D	.290	.261	N/A	7.37	6.63	N/A
V	80	71	n/a	U-L-D	.394	.349	N/A	10.0	8.86	N/A
0	Default: 15 x 12			U-L-D	Scalable					
*U = Uppercase, L = Lowercase, D = Descenders										

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Barcode Symbologies and 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
  600 dpi = 1.6 mil to 16 mil
  - Ladder (rotated) orientation:
  203 dpi = 4.9 mil to 49 mil
  300 dpi = 3.9 mil to 39 mil
  600 dpi = 1.6 mil to 16 mil
- Bar code ratios - 2:1, 7:3, 5:2, & 3:1
- Aztec
- Data Matrix
- EAN-8, EAN-13, EAN extensions
- Interleaved 2 of 5 (supports ratios 2:1 to 3:1, modulous10 check digit)
- Planet Code
- Logmars
- MaxiCode (2-D)
- PDF417 (2-D)

- Codabar (supports ratios of 2:1 to 3:1
- CODABLOCK
- Code 11
- Code 39 (supports ratios of 2:1 to 3:1
- Code 49 (2-D)
- Code 93
- Code 128 (subsets A, B, C, and UCC case C codes)
- Micro PDF (2-D)
- Plessy
- Postnet
- QR-Code
- MSI
- Standard 2 of 5
- Industrial 2 of 5
- UPC-A, UPC-E, UPC extensions
- RSS
- TLC 39

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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
- 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
- ZBI (Zebra BASIC Interpreter) - accessible on Z4M:
  - Interpreting program module that sits between the communication ports and the ZPLII processing engine
  - Can be used to convert non-ZPL printer programming language to ZPL commands

- Direct interface to peripheral devices such as bar-code scanners, weight scales, and keyboards
- Based on ANSI BASIC computer language

Eltron Programming Language (EPL II)

- 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

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Communications Specifications:

- USB 2.0
- IEEE 1284 Bi-directional parallel interface
- High-speed serial interfaces

  - RS-232C, with DB9F connector
  - Configurable baud rate (300 - 115,200kB), parity, and data bits. Stop bits at 1 or 2.
  - Software (XON/XOFF), hardware (DTR/DSR, or RTS/CTS) communication handshake protocols
  - RS422/485 with optional adapter.

- ZebraNet Wireless Plus Print Server - 802.11b/g - compliant wireless print server
- ZebraNet 10/100 Print Server - Ethernet network print server (10BASE-T, 100BASE-TX)

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Electrical Specifications:

- Auto-detectable 90-265VAC, 48-62 Hz, 5A fused power supply
- Agency approvals: IEC 60950-1 EN 55022 Class B, EN55024, 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, MIC, ZIK, SABS

- Maximum Heat Dissipation (kW) during Printing:

  Mains voltage 230VAC 50Hz, Standby: 16.7 Watts. Normal printing average (continuous printing 6 inch pause test label at 2ips, Darkness 10) : 60.8 Watts.

  Mains voltage 120VAC 60Hz, Standby: 17.4 Watts. Normal printing average (continuous printing 6 inch pause test label at 2ips, Darkness 10) : 62.0Watts.

  Mains voltage 100VAC 50Hz, Standby: 18.2 Watts. Normal printing average (continuous printing 6 inch pause test label at 2ips, Darkness 10) : 62.0 Watts.

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Physical Specifications:

- **Height:** 13.3" (338mm)
- **Width:** 13.4" (341mm)
- **Depth:** 18.7" (475mm)
- **Weight:** 34.7lbs. (16kg)
- **Shipping Weight:** 54 lbs (24.5kg)

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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.

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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 (print head, 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.

- **Print Head 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. Specifically, the ZM400 and ZM600 printers are designed to work only with genuine Zebra printheads, thus maximizing safety and print quality.

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