ZEBRA

QLn420 Mobile Printer

Specifications are provided for reference and are based on testing the QLn420™ printer using genuine Zebra® supplies. 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

- Apple® iOS, Android™, and Windows® Mobile connectivity
- Direct thermal printing of barcodes, text and graphics
- 203 dpi resolution (8 dots per mm)
- Print speed up to 4" / 102 mm per second
- CPCL, EPL™ and ZPL® programming languages
- XML support
- Resident fixed and scalable fonts
- 400 MHz 32-bit ARM processor with 128 MB RAM (8 MB available for user applications)
- 256 MB Flash supports downloadable programs, receipt formats, fonts and graphics (64 MB available for user storage)
- Serial and USB ports (both support strain relief)
- PowerPrecision+ 4900 mAh Li-Ion rechargeable battery
- Built-in battery charger
- Black mark and gap media sensing using fixed center position sensors
- Easy-to-use peel and present mode
- Label present sensor for issuing batch labels one at a time
- Tear bar for easy media dispensing
- Supports vertical and horizontal printing
- Printer can be used in any orientation
- Center-loading media locking for variable roll widths
- "Clamshell" design for easy media loading
- Management: Mirror, SNMP, Web server, Profile Manager, AirWatch® and Wavelink Avalanche®
- Large, easy-to-read LCD control panel (240 x 128 pixels)

- LCD can be customized using WML (text and icons)
- 5-way navigation buttons, two software defined keys
- Printer alerts on the display, help menus
- Tolerance of multiple drops from 6' (1.82 m) to concrete
- Label odometer
- NTP (Network Time Protocol) support via Wi-Fi or Ethernet
- QR barcode links to web-based help pages
- Zebra Print Touch™ simplifies Bluetooth® pairing and launches web-based help pages with Near Field Communication (NFC) enabled devices

CHARGING OPTIONS

- Charge the battery inside the printer using:
  - AC adapter
  - QLn420-EC charging and Ethernet cradle
- Charge the battery outside the printer using:
  - SC2 smart battery single charger
  - Quad charger (same as QL Plus™ series)

OPTIONAL FEATURES

- ZebraNet™ 802.11a/b/g/n radio with support for:
  - WEP, TKIP and AES encryption
  - WPA and WPA2
  - 802.1x (with WEP, WPA, or WPA2)
    - EAP-FAST, EAP-TTLS, EAP-TLS, PEAP, LEAP
  - 802.11d and 802.11i
  - Simultaneous Bluetooth 3.0 dual radio
  - Wi-Fi® Certification
  - Fast roaming using Pairwise Master Key (PMK) caching, Opportunistic Key Caching (OKC), or EAP Fast Session resumption
  - Support for Ad Hoc mode
- Bluetooth 3.0 radio
  - Security modes 1 – 4
  - "Made for iPod® / iPhone® / iPad®" (MFi) certified
  - Key Bonding
- 10 / 100 Ethernet support (via charging cradle)
- Linerless printing (with silicone platen roller only)
- ZBI 2.x™ — powerful programming language that lets printers run standalone applications, connect to peripherals, and much more

ACCESSORIES

- Spare batteries
- AC adapter
- SC2 smart battery single charger
- Quad battery charger (same as QL Plus series)
- QLn420-EC — charging and Ethernet cradle
- Forklift mount accessories
  - Heavy-duty mount with fanfold tray
  - Plate for RAM-arm mounting
  - Cradle for easy attach / detach
  - DC converters for powering and charging from forklift batteries
- 8-18VDC power supply with lighter adapter
- Stand for tabletop use
- Shoulder strap
- Hand strap
- Soft case (IP54 rating when used)
- Hard case for heavy abrasion environments
- Serial and USB cables with strain relief

LINK-OS® SOFTWARE SOLUTIONS

Profile Manager — Advanced, server based device management for networked printers, operates via a web browser interface

Cloud Connect — Secure, direct, encrypted and authenticated connections to the web for printing and device management

Virtual Devices — Use legacy and non-Zebra command languages to print labels and tags

Zebra Utilities — Print from iOS, Android, Windows Mobile devices

Print Station — Driverless printing from Android devices

AirWatch Connector — Manage from within the AirWatch environment

Mulitplatform Software Development Kit — Simplifies printing application development with support for Blackberry, Apple, Android, WinCE®, WinMobile, Windows desktop and Linux/Unix platforms

ZEBRALINK™ SOFTWARE SOLUTIONS

ZebraDesigner™ Pro — An intuitive, easy-to-use software program for creating complex label designs

ZebraNet Bridge Enterprise — Centrally manage Zebra printers anywhere on your global network

ZebraDesigner Driver — Zebra driver certified for use with Windows: 2003, 2008, XP, Vista®, 7, 8

Zebra Setup Utility — Single printer configuration utility

ZBI-Developer™ — Programming utility makes it dramatically easier to create and test complex ZBI 2.x programs and distribute them to the printer

Zebra Validated Solutions can be found at
www.zebra.com/validation

CPCL PROGRAMMING LANGUAGE

- Communicates in printable ASCII characters
- Compatible with servers, PCs, mobile terminals and smartphone hosts
- Downloadable objects include graphics, bitmap fonts, label templates and formats
- Automatic memory allocation for format while printing
- Automatic serialization of fields
- Automatic printhead temperature compensation
- Format inversion (white on black)
- Four position field rotation (0º, 90º, 180º, 270º)
- Programmable label odometer
- Monitor and report battery voltage and temperature
- Easy network and security configuration

CPCL BARCODE SYMBOLOGIES

- Barcode Ratios: 1.5:1, 2:1, 2.5:1, 3:1, 3.5:1
- Linear Barcodes: Code 39, Code 93, UCC / EAN128, Code 128, Codabar (NW-7), Interleaved 2-of-5, UPC-A, UPC-E, 2 and 5 digit add-on, EAN-8, EAN-13, 2 and 5 digit add-on
- 2D Barcodes: PDF417, MicroPDF417, MaxiCode, QR Code, GS1 / DataBarTM (RSS) family, Aztec, MSI / Plessey, FIM Postnet, Data Matrix, TLC39

CPCL GRAPHICS

- Lines, boxes and patterns
- PCX Images

INTERNET PROTOCOLS (OVER 802.11 OR ETHERNET)

- UDP / TCP
- DHCP / BootP
- FTP / Mirror
- HTTP
- SMTP / POP3
- Telnet
- LPD
- SNMP

CPCL FONT SPECIFICATIONS 203 DPI (8 DOTS / MM)

Fonts	Matrix (in dots) (H x W)	Minimum Character Size (H x W)	Maximum CPI
0 Standard	9 x 8	.044" x .039"	25.4
1 (Minimum Width)	48 x 13	.236" x .064"	15.6
1 (Maximum Width)	48 x 39	.236" x .192"	5.2
2 (OCR-A)	12 x 20	.059" x .099"	10.2
4 Size 0 (Minimum Width)	47 x 11	.232" x .054"	18.5
4 Size 0 (Maximum Width)	47 x 43	.232" x .212"	4.7
5 Size 0 (Minimum Width)	24 x 7	.118" x .034"	29
5 Size 0 (Maximum Width)	24 x 23	.118" x .113"	8.8
6 (MICR)	27 x 28	.133" x .138"	7.3
7	24 x 12	.118" x .059"	16.9

- Standard Fonts: 25 bitmapped, 1 smooth, scalable (CG Triumvirate Bold Condensed*)
- Optional Fonts: downloadable bitmapped / scalable fonts
- International Character Sets (optional): Chinese 16x16 (traditional), 16x16 (simplified), Japanese 16x16, 24x24; Korean Mincho
- Scalable text feature
- Standard resident fonts can be rotated in 90° increments
- Supports user-defined fonts, graphics and logos
- Text concatenation to assign different character styles
- Allows text magnification 1 to 16 times the original size
- Proportional and fixed-width fonts

*Contains UFST® from Agfa Monotype Corporation

APPLICATION FLEXIBILITY

QLn printers are designed to support a wide variety of applications and media types. Please consult the CPCL, ZPL or EPL programming manuals for configuration details. Zebra recommends qualifying any application with thorough testing.

ZPL PROGRAMMING LANGUAGE

- Supports version X.16 (and onwards)
- Communicates in printable ASCII characters
- Compatible with servers, PCs, mobile terminals and smartphone hosts
- Downloadable objects include graphics and bitmap fonts, label templates and formats
- 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)
- Programmable label odometer
- Slew command
- Programmable label quantities with print, pause
- Status messages to host upon request

ZPL BARCODE SYMBOLOGIES

- Barcode Ratios: 2:1, 3:1, 5:2, 7:3
- Linear Barcodes: Code 11, Code 39, Code 93, Code 128, ISBT-128, UPC-A, UPC-E, EAN-8, EAN-13, UPC-A and UPC-E with EAN 2 or 5 digit extensions, Planet Code, Plessey, POSTNET, Standard 2 of 5, Industrial 2 of 5, Interleaved 2 of 5, LOGMARS, MSI, Codabar, and GS1 DataBar (RSS)
- 2D Barcodes: PDF417, MicroPDF-417, Code 49, TLC39, Maxicode, Codablock, Data Matrix, QR code, Aztec

ZPL GRAPHICS

- Lines, boxes (with optional rounded corners)
- Circles, ellipses
- Images (several different formats, see ZPL programming guide)
- Compressed images

ZPL FONT SPECIFICATIONS 203 DPI (8 DOTS / MM)

Fonts	Matrix (in dots) (H x W)	Type†	Minimum Character Size (H x W)	Maximum CPI
A	9 x 5	U-L-D	.044" x .030"	33.3
B	11 x 7	U	.054" x .044"	22.7
C, D	18 x 10	U-L-D	.089" x .059"	16.9
E	28 x 15	OCR-B	.138" x .098"	10.2
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"	10.8
GS	24 x 24	SYMBOL	.118" x .118"	8.5
P	20 x 18	U-L-D	.098" x .089"	N / A
Q	28 x 24	U-L-D	.138" x .118"	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
Ø	15 x 12	U-L-D	Scalable (Smooth) Font	

† U = Uppercase   L = Lowercase   D = Descenders

- Character Fonts: Standard bitmapped Zebra fonts: A, B, C, D, E (OCR-B), F, G, H, (OCR-A), GS, P, Q, R, S, T, U, V and Ø Smooth font (CG Triumvirate Bold Condensed)
- Supports Unicode UTF-8, UTF-16, and several other single- and multi-byte international character sets (see ZPL programming guide for more details)
- Supports user-defined fonts and graphics — including custom logos
- Bitmap fonts are expandable up to 10 times, height and width independent. Fonts E and H (OCR-B and OCR-A), however, are not considered in spec when expanded.
- Smooth scalable font Ø (CG Triumvirate Bold Condensed) is expandable dot-by-dot, height and width independent
- Unicode Swiss 721 font available

EPL PROGRAMMING LANGUAGE (EPL2)

- ASCII EPL2 programming language (Page Mode)
- Field rotations
- Variable field support (up to 100)
- Counter support (up to 10)
- Variable-field addition and subtraction
- Form, fonts and graphics storage
- Simple set of formatting commands

EPL FONT SPECIFICATIONS 203 DPI (8 DOTS / MM)

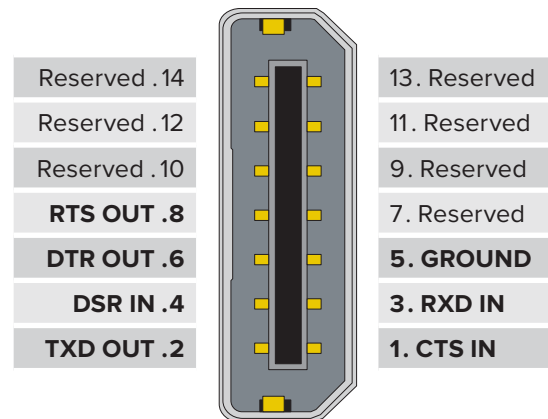| Fonts	Weight (dot)	Height (dot)	CPI
1	8	12	20.3
2	10	16	16.9
3	12	20	4.5
4	14	24	12.7
5	32	48	5.6

EPL BARCODE SYMBOLOGIES

- Linear Barcodes: Code 39, Code 128A, B and C (User selectable / Auto), UCC / EAN-128, Code 93, Codabar, Interleaved 2 of 5, UPC-A, UPC-E, UPC-A with 2 and 5 add on, UPC-E with 2 and 5 add on, EAN 13, EAN 8, EAN 13 with 2 and 5 add on, EAN 8 with 2 and 5 add on, Postnet (5, 9, 11, and 13 digit), Japanese Postnet, Plessey (MSI-1), MSI-3, German Post Code and GS1 DataBar (formerly RSS)

- 2D Barcodes: Maxicode (modes 2,3,4,6), PDF417, MacroPDF417, QR Code, Data Matrix, and Aztec

CABLED COMMUNICATIONS SPECIFICATIONS

- USB 2.0 Full-speed Interface (12 Mbps)
  - Mini-B connector with optional strain relief
- Serial Interface: 14-pin RS-232C port for communication to terminal or other host up to 115.2 Kbps
  - Default Parameters: Baud Rate-19,200; Parity- None; Data Bits-8; Stop Bits-1; Handshaking RTS/CTS
  - Software (XON/XOFF) or hardware (RTS/CTS) communication handshake protocols
  - Serial Port Pin definitions

Pin Number	Signal Name	Signal Type	Description
3	RXD	Input	Receive Data
2	TXD	Output	Transmit Data
6	DTR	Output	Data-terminal ready. Set high when printer is on. Provides +5VDC @ 300 mA max.
5	GND		Ground
4	DSR	Input	Data-set ready. Low-to-high transition turns printer on. High-to-low transition turns printer off (if enabled).
8	RTS	Output	Request to Send
1	CTS	Input	Clear to Send
7, 10 – 14			Reserved

Insertion Side Shown

Reserved . 14	13 . Reserved
Reserved . 12	11 . Reserved
Reserved . 10	9 . Reserved
RTS OUT . 8	7 . Reserved
DTR OUT . 6	5 . GROUND
DSR IN . 4	3 . RXD IN
TXD OUT . 2	1 . CTS IN

ENVIRONMENTAL SPECIFICATIONS

- Operating Temperature: -4°F to 122°F (-20°C to 50°C)
- Charging Temperature: 32°F to 104°F (0°C to 40°C)
- Cradle Temperature: 32°F to 122°F (0°C to 50°C)
- Storage Temperature: -13°F to 158°F (-25°C to 65°C)
- Relative Humidity:
  - Operation: 10% to 90% non-condensing
  - Storage: 10% to 90% non-condensing
- IP Rating: 43 (IP54 with soft case)

ELECTRICAL SPECIFICATIONS

- PowerPrecision+ battery:
  - 7.4 V, 5.0 AH (nominal) removable, rechargeable Li-Ion
  - Life: 300 cycles (full charge and discharge) recommended, 600 cycles maximum
  - Available status via front panel or remotely: Health, cycle count, date first used, serial number
  - Max charge time: 6 hours
- Print duty cycle: 3,000 inches / day (76,000 mm / day)
- DC charging input: 12 VDC ± 10% at 2A maximum

PREVENTATIVE MAINTENANCE

Zebra recommends cleaning the QLn series printers 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 are cleaned with 70% isopropyl alcohol (IPA) or blown air to remove any particles.
- **Battery** — It is recommended that the battery be fully discharged several times by cycling it to maximize performance.

MEDIA SPECIFICATIONS

NOTE: For optimum print quality and printer performance, use of genuine Zebra supplies is recommended.

Attribute	QLn420
Minimum Media Width	2.0" (51 mm)
Maximum Media Width	4.4" (112 mm)
Maximum Print Width	4.1" (104 mm)
Minimum Media Thickness	3.2 mil (0.081 mm)
Maximum Media Thickness	7.5 mil (0.190 mm)
Minimum Label Length	0.5" (12.7mm)
Maximum Label Length	32" (813mm)
Media Roll ID	0.75" (19mm) or 1.375" (34.9mm)

PHYSICAL SPECIFICATIONS

Attribute	QLn420
Height	7.35" (187 mm)
Width	6.5" (165 mm)
Depth	3.25" (82.5 mm)
Weight (with battery)	2.45 lbs (1.1 kg)

QLn420 is 5% smaller by volume than the QL420™

AGENCY APPROVALS

- Emissions: FCC Part 15, Subpart B, EN55022 Class-B, EN60950, EN55024 and VCCI class B
- Susceptibility: EN55024, EN61000-4-2, EN61000-4-3, EN61000-4-4, and EN61000-4-5
- Safety: CE, UL, TUV, CSA

For more information, visit www.zebra.com/qln420

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