

BATTERY DRIVE, 4" HIGH SPEED THERMAL PRINTER FTP-648MCL103/104, Easy Loading Method FTP-608 Series

■ OVERVIEW

The easy loading FTP-608 MCL Series is ultra compact high speed, battery driven thermal printer, printing 4-inch wide paper (114mm) where platens are removable. Our unique platen removal mechanism improved paper loading and maintenance.

The FTP-608 MCL series can be used for a variety of applications, such as portable terminals, POS, ticket issuing terminals, label printers, banking terminals, and measurement and medical equipment.



■ HIGHLIGHTS

- Easy loading type
- Our unique platen removal mechanism improved paper loading and maintenance.
- Ultra compact
- Height 20.5 mm, width 139.5mm, depth 40.5 mm for the 4 inch model.
- High speed printing
It can print at 50 mm/s (400 dotlines/s) maximum by using Fujitsu's unique head drive control.
- High resolution printing
- Label paper capability.
- RoHS compliant

■ PART NUMBERS

| Item | | Part Number |
|-------------------|--------|---|
| Printer mechanism | | FTP-648MCL103 (front insertion type) with platen open detect switch FTP-648MCL104 (bottom insertion type) with platen open detect switch |
| LSI for driving | | FTP-628CU601R |
| Interface board | USB | FTP-648DSL622R |
| | Serial | FTP-648DSL623R |
| Cables | USB | FTP-629Y301 |
| | Serial | FTP-628Y302 |
| | Power | FTP-628Y402 |

■ SPECIFICATIONS

| Item | | Specifications |
|--|--------|--|
| Part number | | FTP-648MCL103/104 |
| Printing method | | Thermal line dot method |
| Dot structure | | 832 dots/line |
| Dot pitch (horizontal) | | 0.125mm (8dots/mm) - Dot density |
| Dot pitch (vertical) | | 0.125mm (8dots/mm) - Line feed pitch |
| Effective printing area | | 104mm |
| Number of columns | | ANK 69 columns/line (maximum 12 x 24 dot font) |
| Paper width | MCL103 | 112mm |
| | MCL104 | 114mm +0/-1 |
| Paper thickness | MCL103 | 60 to 115 μ m (some paper may not be used because of characteristics) |
| | MCL104 | 60 to 150 μ m |
| Printing speed | | Maximum 50mm/sec. (400 dot lines/sec.) 7.2V |
| Character types | | Alphanumeric, katakana: 159 types International and special characters: 195 types OCR I: 103 types OCR III: 23 types OCR IV: 103 types Extended numeric: 11 types JIS Kanji level 1, level 2, non-Kanji: about 6,800 types |
| Character, dimensions (WxH), number of columns | | 12 x 24 dots, 69 columns: ANK 24 x 24 dots, 34 columns: ANK, Kanji 8 x 16 dots, 104 columns: ANK 16 x 16 dots, 52 columns: ANK, Kanji 24 x 40 dots, 34 columns: OCR I 24 x 48 dots, 34 columns: OCR III 36 x 60 dots, 23 columns: OCR IV 24 x 48 dots, 34 columns: Extended numeric |

■ SPECIFICATIONS

| Item | | Specifications | |
|-------------------------------------|----------------------------|---|--|
| | | FTP-648MCL103/104 | |
| Interface | | Conforms to RS232C / USB | |
| Operating Voltage | for print head | 4.2 VDC to 8.5 V, average current 0.75A (2.3 A peak) Printing ratio: 12.5%, printing speed 50mm/sec., 7.2V | |
| | for motor | 4.2VDC to 8.5V, 1A maximum | |
| | for logic | 2.7 to 5.25 VDC, 0.2A maximum | |
| Dimensions | Mechanism | 139.5 x 40.5 x 20.5mm (W x D x H) | |
| | Interface board | 69 x 52 x 20mm (W x D x H) | |
| Weight | Mechanism | Approximately 160 g | |
| | Interface board | Approximately 22g | |
| Head life | | Pulse resistance: 100 million pulses/dot (under our standard conditions). Abrasion resistance: paper traveling distance 50km (print ratio: 12.5% or less) | |
| Operating environment | Operating temperature* | 0°C to +70°C | |
| | Operating humidity | 20 to 85% RH (no condensation) | |
| | Storage | -40°C to +80°C (paper not included) | |
| | Storage humidity | 5 to 90% RH (no condensation) | |
| Detection function | Head temperature detection | Detected by thermistor | |
| | Paper out/ mark detection | Detected by photo interruptor | |
| Recommended thermal sensitive paper | | High sensitive paper | TF50KS-E4 (Nippon paper) |
| | | Standard paper | TK60KS-E (Nippon paper) PD150R (Oji paper) FTP-040P0020 (114mm) |
| | | Medium life paper | TK60KS-F1 (Nippon paper) PD170R (Oji paper) P220VBB-1 (Mitsubishi paper) |
| | | Long life paper | PD160R-N (Oji paper) AFP-235 (Mitsubishi paper) HA220AA (Nippon paper) |
| | | Label paper | HW54T (Nippon paper) |

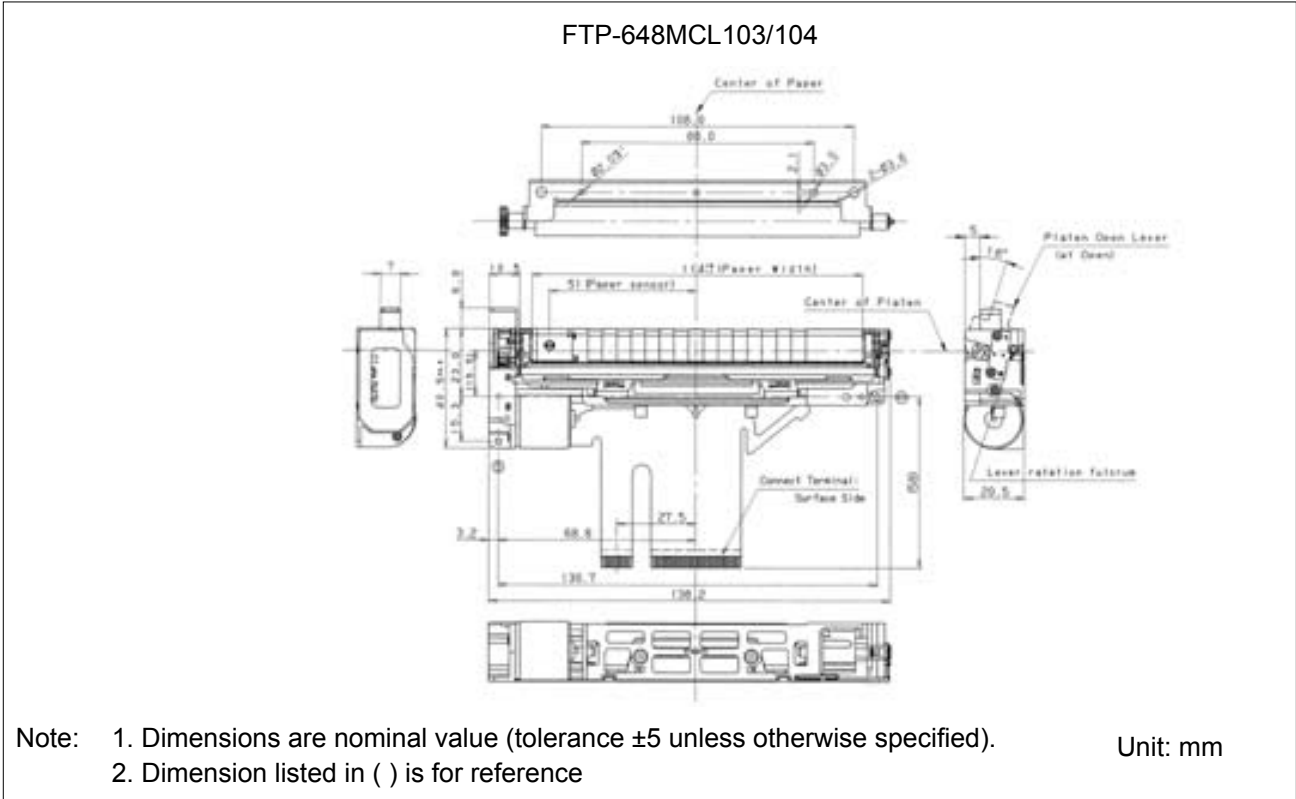
*+5°C to +40°C printing density assurance range (0 to 50°C capability)

■ FUNCTION

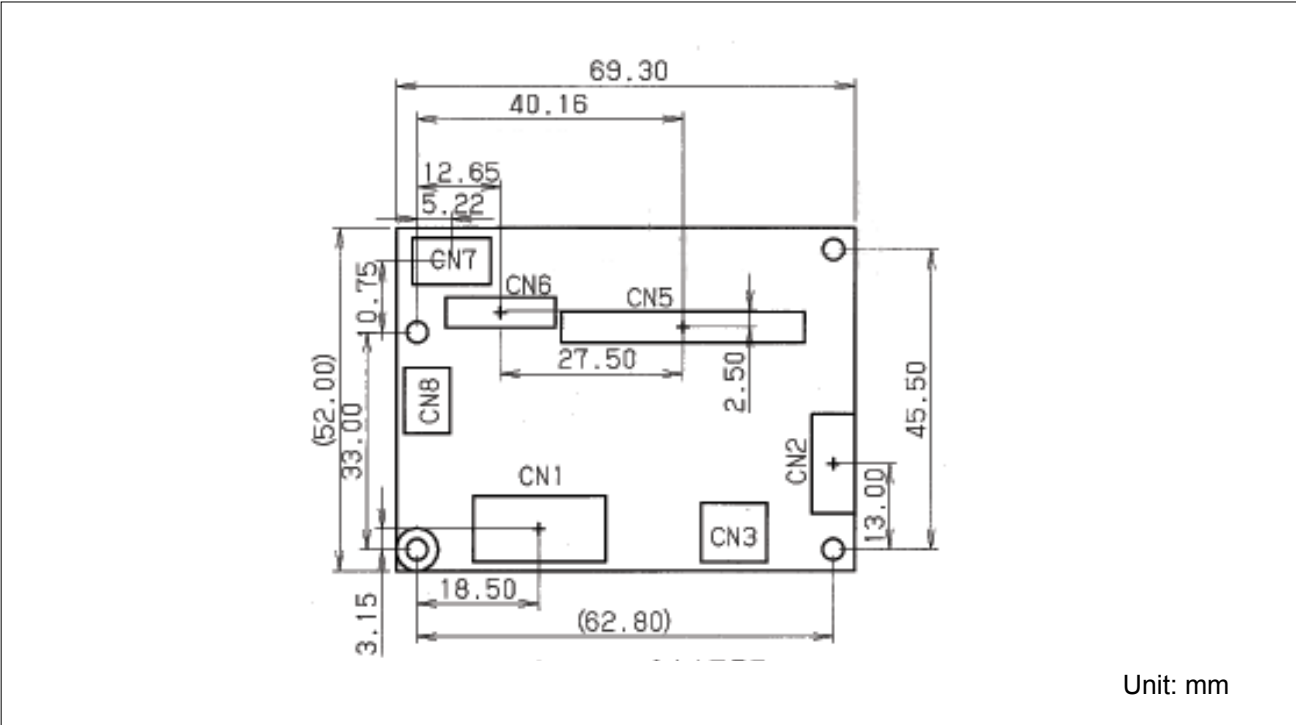
| | Item | | Item |
|----|--|-----|-------------------------------------|
| 1. | Test print function | 8. | Motor power saving function |
| 2. | Paper out detection | 9. | Mark detection function |
| 3. | Paper near end detection | 10. | MCU operation abnormality detection |
| 4. | Platen open detect | 11. | Power ON/OFF sequence protection |
| 5. | Thermal head temperature abnormality detection | 12. | Motor over-current protection |
| 6. | Blow-out fuse detection | 13. | Hardware timer |
| 7. | Head voltage abnormality detection | | |

DIMENSIONS

1. Printer mechanism: 4 inch



2. Interface board



FTP-648 MCL103/104

1. Thermal head, control circuit side connector:

CN1: 52610-3071 (Molex)

CN2: 52610-1071 (Molex)

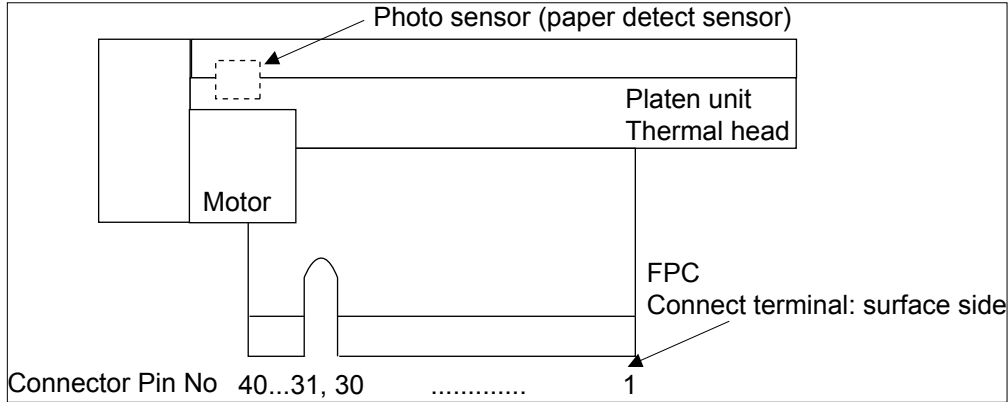
2. Pin assignment (flexible) of the printer mechanical side:

CN1: the platen release switch side is defined as No. 1

CN2: the motor excitation signal side is defined as No. 1 (31)

| No | Signal | Contents |
|----|-----------------|--------------------|
| 1 | SW | Platen open switch |
| 2 | SW | Platen open switch |
| 3 | VH | Head drive power |
| 4 | VH | Head drive power |
| 5 | VH | Head drive power |
| 6 | DI | Data in |
| 7 | STB 7 | Strobe 7 |
| 8 | STB 6 | Strobe 6 |
| 9 | STB 5 | Strobe 5 |
| 10 | STB 4 | Strobe 4 |
| 11 | AE02 | |
| 12 | AE01 | |
| 13 | L-GND | Logic ground |
| 14 | GND | Head ground |
| 15 | GND | Head ground |
| 16 | GND | Head ground |
| 17 | GND | Head ground |
| 18 | GND | Head ground |
| 19 | TM | Head thermistor |
| 20 | TM | Head thermistor |
| 21 | STB 3 | Strobe 3 |
| 22 | STB 2 | Strobe 2 |
| 23 | STB 1 | Strobe 1 |
| 24 | Vdd | Logic power |
| 25 | CLK | Clock |
| 26 | LAT | Data latch |
| 27 | DO | Data out |
| 28 | VH | Head drive power |
| 29 | VH | Head drive power |
| 30 | VH | Head drive power |

| No | Signal | Contents |
|----|--------------|-----------------------------|
| 31 | PHK | Cathode |
| 32 | VSEN | Paper sensor power |
| 33 | PHE | Emitter |
| 34 | MT A | Excitation signal A |
| 35 | MT \bar{A} | Excitation signal \bar{A} |
| 36 | MT B | Excitation signal B |
| 37 | MT \bar{B} | Excitation signal \bar{B} |
| 38 | TM | Motor thermistor |
| 39 | TM | Motor thermistor |
| 40 | NC | Not connected |



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