FUJITSU THE POSSIBILITIES ARE INFINITE

# BATTERY DRIVE, FTP-604 Series

# 4” TYPE MECHANISM AND INTERFACE BOARD

# FTP-644MCL001/002/FTP-624DCL/DSL

## ■ OVERVIEW

FTP-644MCL/FTP-624DCL/DSL Series is a high speed line thermal printer driven by battery, printing on 4-inch wide paper (112 mm/ 114 mm).

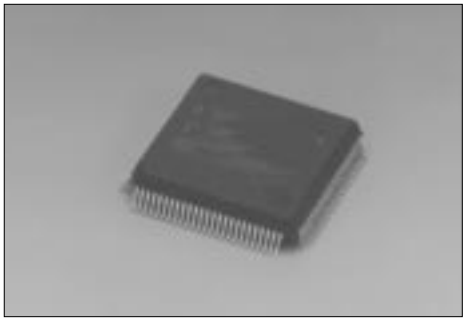
The printer is compact and lightweight, and the design allows easy head maintenance, head cleaning and head replacement.

This printer is suitable for a variety of applications, such as hand held terminals, POS terminals, ticket machines, coupon machines, label printers, etc.

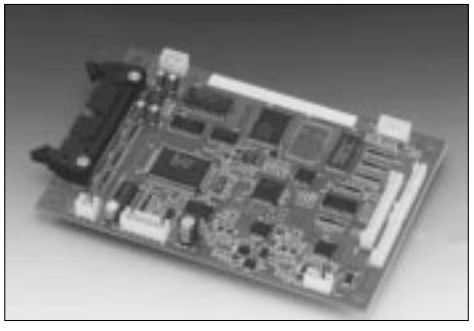
**FTP-644MCL001**

## ■ HIGHLIGHTS

- **High speed printing**
  It can print at 50 mm/s (400 dotlines/s) maximum by using Fujitsu Components' unique head drive control.
- **Compact and lightweight**
  The printer has a low profile of only 20 mm, and a light weight of approximately 125 g.
- **Low power consumption**
  The peak current for head drive is only 3.5 A (8.5VDC, 128 dots on).
- **Easy head access**
  It is designed for easy head cleaning and head replacement.
- **Paper auto loading function**
  Thermal paper can be loaded without head-up lever operation.
- **UL recognized**
  File No. E171434



**FTP-624CU102**



**FTP-624DCL/DSL002**

## ■ DESIGNATION

| Item | | Part number |
|---|---|---|
| Printer mechanism | | FTP-644MCL001/002*1 |
| Interface Board | Centronics | FTP-624DCL002*2 |
| | RS-232C | FTP-624DSL002*3 |
| LSI | Micro Controller Unit | FTP-624CU102 |
| Cables | Thermal head cables | FTP-624Y002, FTP-624Y003 |
| | Parallel interface cable | FTP-441Y201 |
| | Serial interface cable | FTP-624Y301 |
| | Power cable (logic, head and motor) | FTP-621Y401, FTP-621Y601 |

*1: 001 is for front paper insertion (curl path) and 002 is for rear paper insertion (straight path).
*2: 002 supports ANK, 102 support ANK and Kanji.
*3: 002 supports ANK, 103 support ANK and Kanji.

## ■ GENERAL SPECIFICATIONS

| Item | Specifications |
|---|---|
| Part number | FTP-644MCL001/002 |
| Printing method | Thermal-sensitive line dot method |
| Dot structure | 832 dots/line |
| Dot pitch (Horizontal) | 0.125 mm (8 dots/mm)—Dot density |
| Dot pitch (Vertical) | 0.125 mm (8 dots/mm)—Line feed pitch |
| Effective printing area | 104 mm |
| Paper width (MCL001) | 112 mm |
| Paper width (MCL002) | 114 mm |
| Paper thickness | 60 to 100 μ m*1 |
| Number of columns | 104 columns/line (16 × 8 dot font) |
| Maximum printing speed | 400 dotlines/s (50 mm/s)<br>[Condition] 1 ply, printing on high sensitive thermal paper,<br>8 columns of “H” /line, double density 16 × 8 dot font,<br>room temperature, 8.5 VDC drive |
| Character types | JIS ANK : 128 International : 195<br>ASCII : 31 |
| Character composition, dimensions (H×W), Number of characters | 24 × 12 dots, (3.0 × 1.5 mm), 69 columns<br>16 × 8 dots, (2.0 × 1.0 mm), 104 columns<br>16 × 16 dots, (4.0 × 2.0 mm), 52 columns<br>24 × 24 dots, (6.0 × 3.0 mm), 34 columns |
| Interface | Centronics / RS-232C |

*(Continued)*

*(Continued)*

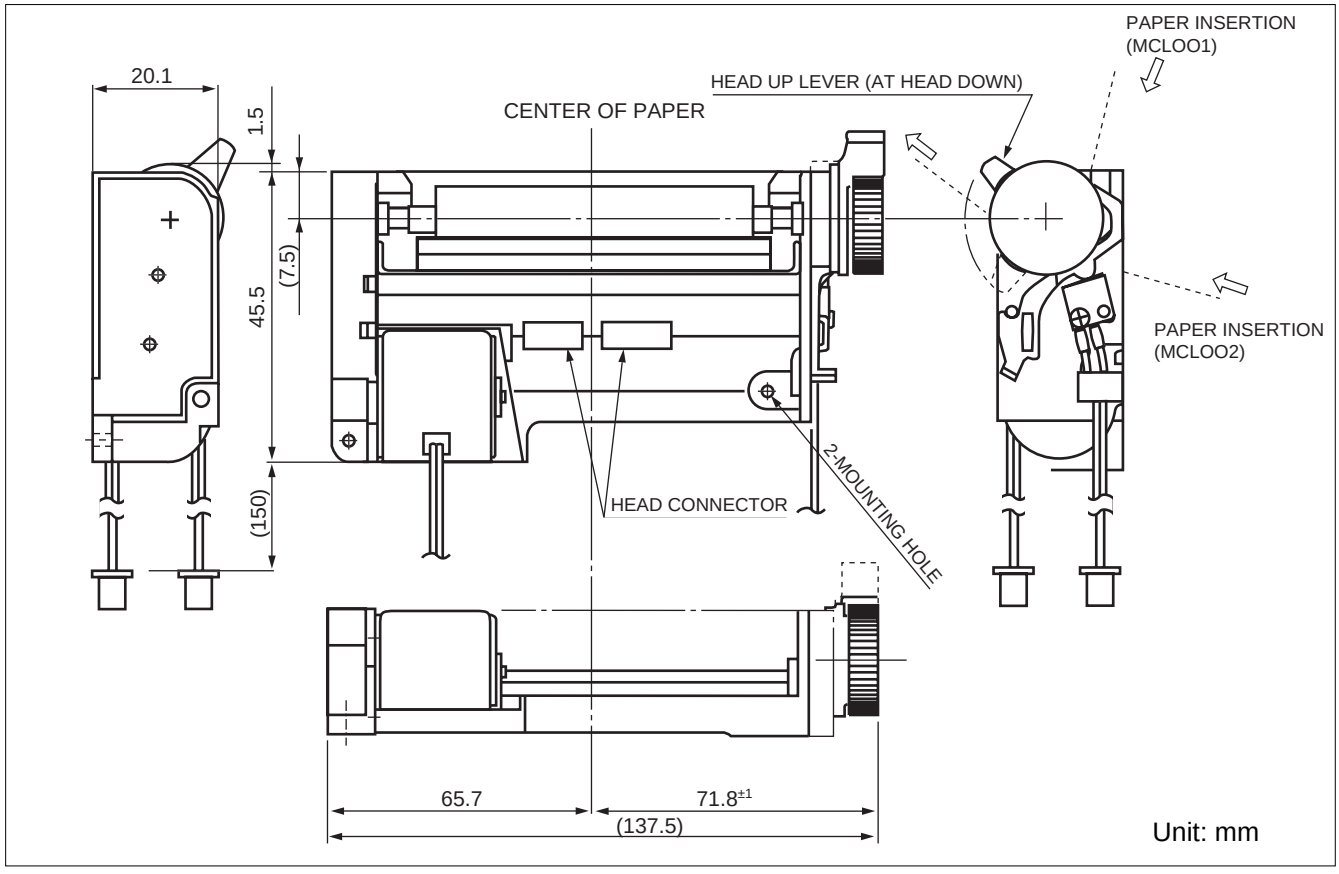
| Item | | Specifications |
|---|---|---|
| Power supply | For head | Voltage: 4.2 to 8.5 VDC (equivalent to 2 Lithium Ion batteries)<br>Peak current: approx. 3.5 A (conditions: room temp., 7.2VDC, 128 dots on) |
| | For motor | Voltage: 4.2 to 8.5 VDC (equivalent to 2 Lithium Ion batteries)<br>Peak current: approx. 0.8 A (conditions: room temp., 7.2 VDC) |
| | For logic | Voltage: 5 VDC ± 5%<br>Current: 0.2 A maximum |
| Dimensions | Mechanism | 138 (W) × 46 (D) × 20 (H) mm (excluding lever and knob diameter) |
| | Interface board | 131 (W) × 89(D) × 24 (H) mm |
| Weight (Mechanism) | | approximately 125 g |
| Expected life | Mechanism | Pulse durability: $1 \times 10^8$ pulse/dot (using Fujitsu Takamisawa's standard driving method)<br>Wear resistance: 50 km (at 12.5% print ratio) |
| Environmental conditions | Operating temperature | 0 to +50°C*2 |
| | Operating humidity | 20 to 85% RH (no condensation) |
| | Storage temperature | –20 to +60°C |
| | Storage humidity | 5 to 95% RH (no condensation) |
| Detection | Head temperature | By thermistor (applied energy control, abnormal temperature detection) |
| | Paper out/Mark detect | By photointerrupter |
| | Head-up | By microswitch |
| Recommended thermal sensitive paper | | For front insertion use (112 mm width) : FTP-040PU001, FTP-040PG021<br>For rear insertion use (114 mm width) : FTP-040P0020, FTP-040PG106<br>In Europe (112 mm width) :FTP-041P0060-45<br>· Oji Paper : PD160R, PD170R, PD150R<br>· NIPPON Paper : TF50KS-E4, TF60KS-E,TF50KS-E<br>· MITSUBISHI Paper Mills : P220VBB-1, AFP-235 |

*1: There may be exceptions.

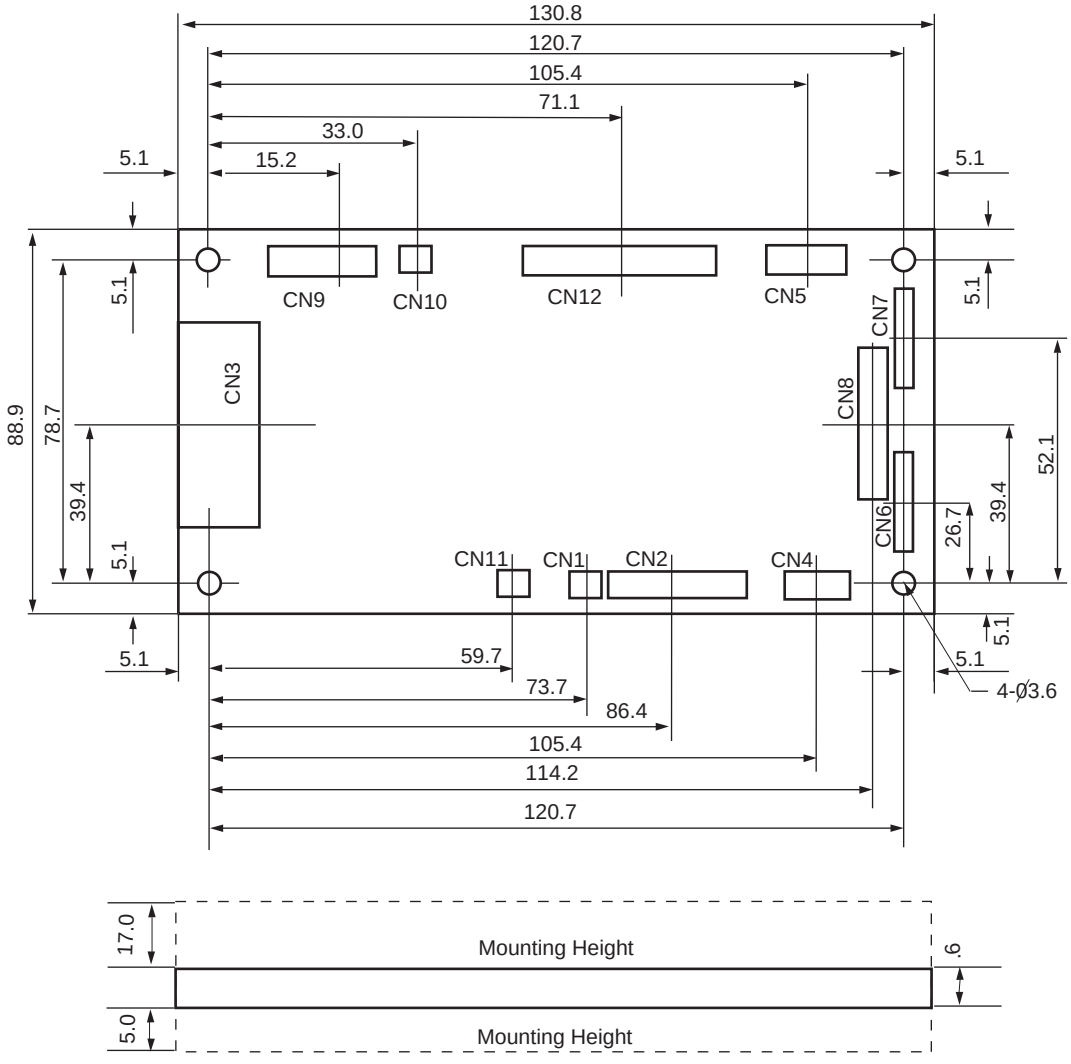
*2: Guarantee +5°C to +40°C.

## ■ DIMENSIONS

### Printer mechanism



**Interface board**




* CN9 on FTP-624DSL only

** CN8, CN11, CN12 not used

Unit: mm

## ■ FUNCTION

| | ITEM | | ITEM |
|---|---|---|---|
| 1. | Test printing | 8. | Motor power save |
| 2. | Paper-out detection | 9. | Mark detection |
| 3. | Paper near end detection | 10. | MCU trouble detection |
| 4. | Head-up detection | 11. | Power on/off sequence protection |
| 5. | Abnormal temp. of thermal head detection | 12. | Motor protection |
| 6. | Blown fuse detection | 13. | Hardware timer |
| 7. | Abnormal voltage detection of head | | |

## ■ CONNECTOR PIN ASSIGNMENT FOR PRINTER MECHANISM

### 1. Thermal Head

Head side 1 : B11B-PH-K-S-2.2 (J.S.T.) or equivalent
2: B10B-PH-K-S-2.2 (J.S.T.) or equivalent
Board side 1: PHR-11 (J.S.T.) or equivalent
2: PHR-12 (J.S.T.) or equivalent

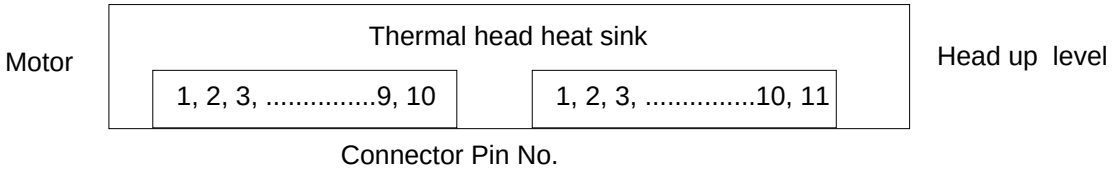
Connector Thermal Head 1

| No. | Signal | Comment |
|---|---|---|
| 1 | STB5 | Print enable signal 5 |
| 2 | STB6 | Print enable signal 6 |
| 3 | STB7 | Print enable signal 7 |
| 4 | STB8 | Print enable signal 8 |
| 5 | CLK | Data transmission clock |
| 6 | LAT | Print data latching signal |
| 7 | DIN | Print data output signal |
| 8 | GND | Head ground |
| 9 | GND | Head ground |
| 10 | VH | Power for head |
| 11 | VH | Power for head |

Connector Thermal Head 2

| No. | Signal | Comment |
|---|---|---|
| 1 | VH | Power for head |
| 2 | VH | Power for head |
| 3 | GND | Head ground |
| 4 | GND | Head ground |
| 5 | TH*1 | Temperature detection |
| 6 | STB1 | Print enable signal 1 |
| 7 | STB2 | Print enable signal 2 |
| 8 | STB3 | Print enable signal 3 |
| 9 | STB4 | Print enable signal 4 |
| 10 | VDD | Power for logic |

*1: Symbol: "‾" means a negative logic signal




### 3. Sensor connectors

Sensor : PHR-5 (J.S.T.) or equivalent
Board side : B5B-PH-K-S (J.S.T.) or equivalent

| No. | Signal | Comment |
|---|---|---|
| 1 | $\overline{B}$ | Stepping motor coil excitation |
| 2 | B | Stepping motor coil excitation |
| 3 | $\overline{A}$ | Stepping motor coil excitation |
| 4 | A | Stepping motor coil excitation |

| No. | Signal | Comment |
|---|---|---|
| 1 | VSEN | Power for paper sensor |
| 2 | PHE | Photo interrupter emittor |
| 3 | PHK | Photo interrupter cathode |
| 4 | SW1 | Head up detect switch 1 |
| 5 | SW2 | Head up detect switch 2 |

## Fujitsu Components International Headquarter Offices

**Japan**
Fujitsu Component Limited
Gotanda-Chuo Building
3-5, Higashigotanda 2-chome, Shinagawa-ku
Tokyo 141, Japan
Tel: (81-3) 5449-7010
Fax: (81-3) 5449-2626
Email: promothq@ft.ed.fujitsu.com
Web: www.fcl.fujitsu.com

**North and South America**
Fujitsu Components America, Inc.
250 E. Caribbean Drive
Sunnyvale, CA 94089 U.S.A.
Tel: (1-408) 745-4900
Fax: (1-408) 745-4970
Email: marcom@fcai.fujitsu.com
Web: www.fcai.fujitsu.com

**Europe**
Fujitsu Components Europe B.V.
Diamantlaan 25
2132 WV Hoofddorp
Netherlands
Tel: (31-23) 5560910
Fax: (31-23) 5560950
Email: info@fceu.fujitsu.com
Web: www.fceu.fujitsu.com

**Asia Pacific**
Fujitsu Components Asia Ltd.
102E Pasir Panjang Road
#04-01 Citilink Warehouse Complex
Singapore 118529
Tel: (65) 6375-8560
Fax: (65) 6273-3021
Email: fcal@fcal.fujitsu.com
www.fcal.fujitsu.com