

# BATTERY DRIVE, MICRO LINE THERMAL PRINTER 2" TYPE MECHANISM AND INTERFACE BOARD

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

### ■ OVERVIEW

FTP-624MCL/FTP-624DCL Series is a high speed line thermal printer driven by battery, printing on 2-inch wide paper (58 mm/ 60 mm).

This 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.

### ■ HIGHLIGHTS

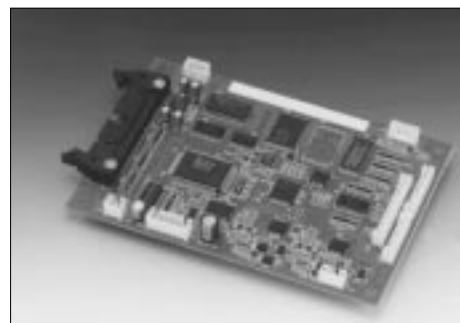
- **High speed printing**  
It can print at 60 mm/s (480 dotlines/s) maximum by using Fujitsu Components' unique head drive control.
- **Compact and lightweight**  
This printer has a low profile of only 20 mm, and a light weight of approximately 80 g.
- **Low power consumption**  
The peak current for head drive is only 2.6 A (8.5 VDC, 64 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-624MCL001**



**FTP-624CU102**



**FTP-624DCL/DSL002**

# FTP-624MCL001/002/FTP-624DCL/DSL002

## ■ DESIGNATION

| Item              |                          | Part number                     |
|-------------------|--------------------------|---------------------------------|
| Printer mechanism |                          | FTP-624MCL001/002* <sup>1</sup> |
| Interface Board   | Centronics               | FTP-624DCL002* <sup>2</sup>     |
|                   | RS-232C                  | FTP-624DSL002* <sup>3</sup>     |
| LSI               | Micro Controller Unit    | FTP-624CU102                    |
| Cables            | Thermal head cable       | FTP-624Y001                     |
|                   | Parallel interface cable | FTP-441Y201                     |
|                   | Serial interface cable   | FTP-624Y301                     |
|                   | Power cables             | FTP-621Y401<br>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 supports ANK and Kanji.

\*3: 002 supports ANK, 103 supports ANK and Kanji.

## ■ GENERAL SPECIFICATIONS

| Item                                                       | Specifications                                                                                                                                                                                                                      |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part number                                                | FTP-624MCL001/002                                                                                                                                                                                                                   |
| Printing method                                            | Thermal-sensitive line dot method                                                                                                                                                                                                   |
| Dot structure                                              | 384 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                                    | 48 mm                                                                                                                                                                                                                               |
| Paper width (MCL001)                                       | 58 mm                                                                                                                                                                                                                               |
| Paper width (MCL002)                                       | 60 mm                                                                                                                                                                                                                               |
| Paper thickness                                            | 60 to 100 $\mu$ m* <sup>1</sup>                                                                                                                                                                                                     |
| Number of columns                                          | 48 columns/line (16 $\times$ 8 dot font)                                                                                                                                                                                            |
| Maximum printing speed                                     | 480 dotlines/s (60 mm/s)<br>Conditions: 1 ply, printing on high sensitive thermal paper,<br>8 columns of "H" /line, double density 16 $\times$ 8 dot font,<br>room temperature, 8.5 VDC drive                                       |
| Character types                                            | JIS ANK : 128 International : 195<br>ASCII : 31                                                                                                                                                                                     |
| Character, dimensions (H $\times$ W), number of characters | 24 $\times$ 12 dots, (3.0 $\times$ 1.5 mm), 32 columns<br>16 $\times$ 8 dots, (2.0 $\times$ 1.0 mm), 48 columns<br>16 $\times$ 16 dots, (4.0 $\times$ 2.0 mm), 24 columns<br>24 $\times$ 24 dots, (6.0 $\times$ 3.0 mm), 16 columns |
| Interface                                                  | Centronics / RS-232C                                                                                                                                                                                                                |

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

(Continued)

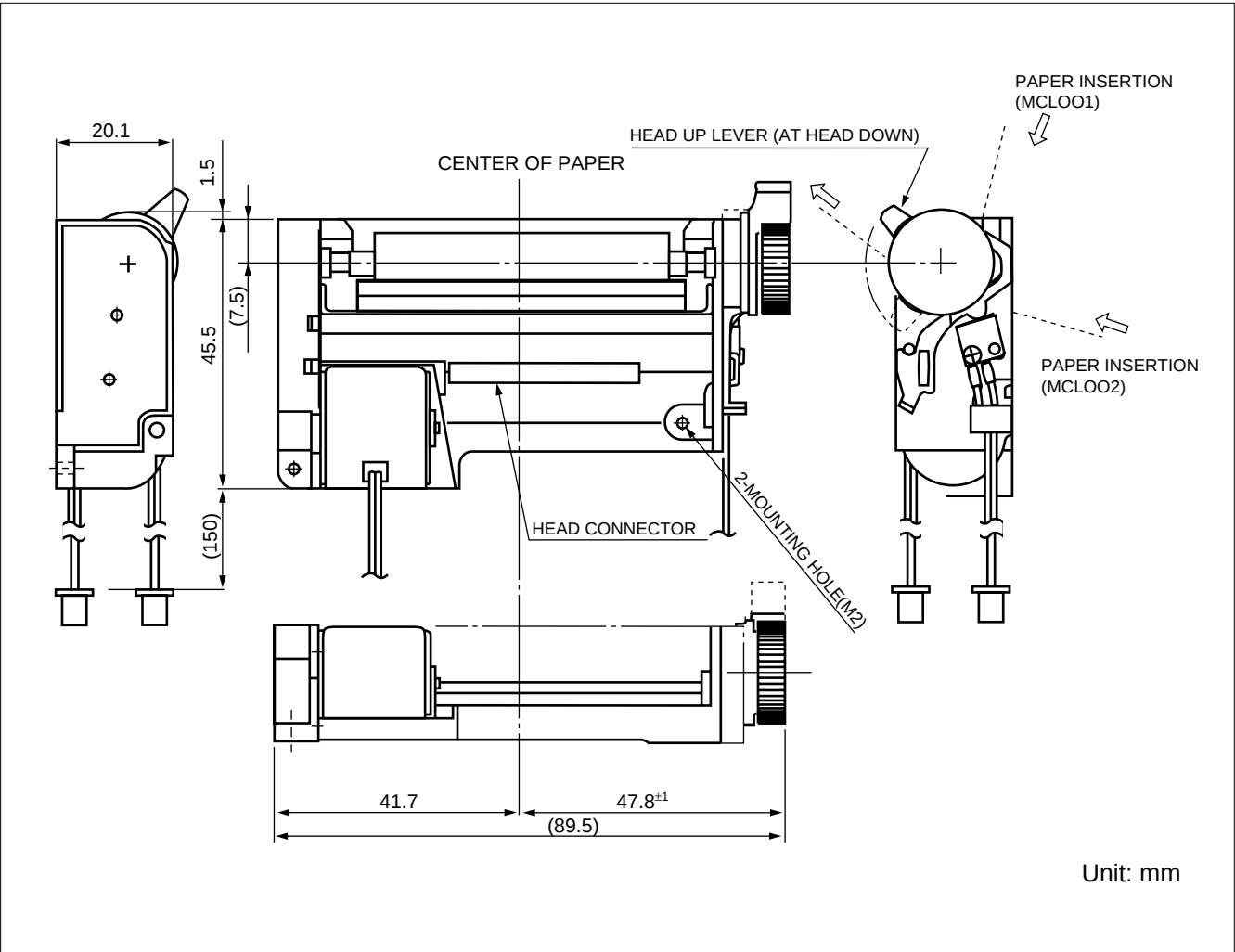
| Item                                |                       | Specifications                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Power supply                        | For head              | Voltage: 4.2 to 8.5 VDC (equivalent to 2 Lithium Ion batteries)<br>Peak current: approx. 2.6 A (conditions: room temp., 7.2 VDC, 64 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 temperature, 7.2 VDC)                                                                                                                                                                                          |
|                                     | For logic             | Voltage: 5 VDC $\pm$ 5%<br>Current: 0.2 A maximum                                                                                                                                                                                                                                                                               |
| Dimensions                          | Mechanism             | 82 (W) $\times$ 46 (D) $\times$ 20 (H) mm (excluding lever and knob diameter)                                                                                                                                                                                                                                                   |
|                                     | Interface board       | 131 (W) $\times$ 89 (D) $\times$ 24 (H) mm                                                                                                                                                                                                                                                                                      |
| Weight (Mechanism)                  |                       | Approximately 80 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 (excluding paper)                                                                                                                                                                                                                                                                                                  |
|                                     | 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 (58 mm width) : FTP-020PU001, FTP-020PG021<br>For rear insertion use (60 mm width) : FTP-020P0020, FTP-020PG106<br>In Europe (58 mm width) : FTP-021P0060-45<br>· Oji Paper : PD150R, PD160R, PD170R<br>· NIPPON Paper : TF50KS-E4, TF60KS-E, TF50KS-E<br>· MITSUBISHI Paper Mills : P220VBB-1, AFP-235 |

\*1: There may be exceptions.

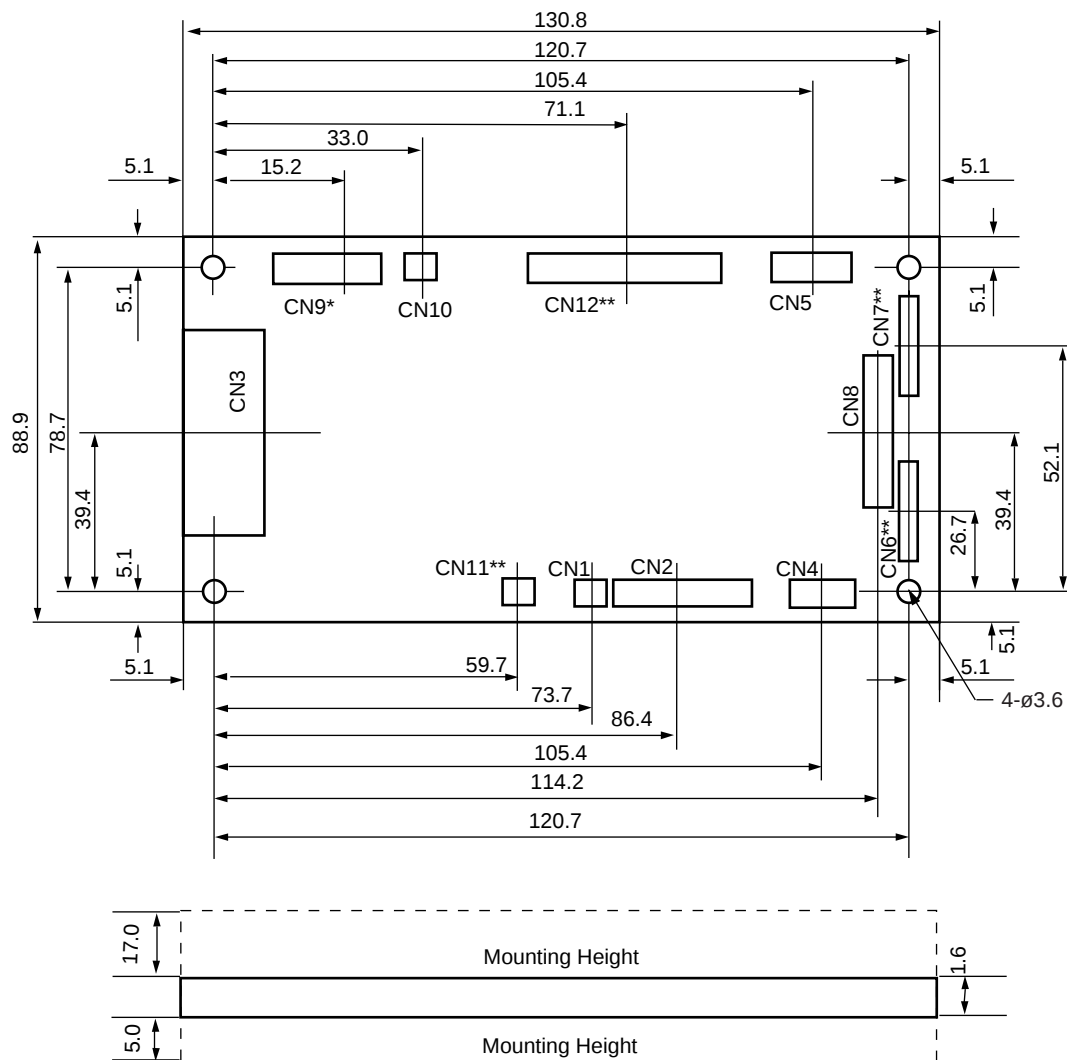
\*2: Guarantee +5°C to +40°C.

■ DIMENSIONS

Printer mechanism



## Interface board



\* CN9 on FTP-624DSL only

\*\*CN6, CN7, CN11, CN12 not used

Unit: mm

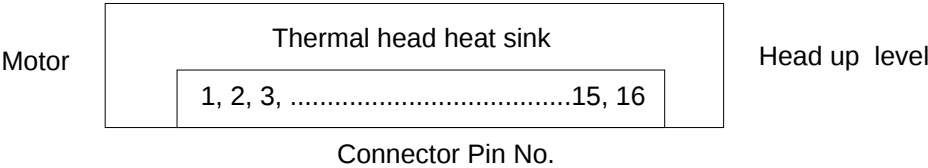
■ CONNECTOR PIN ASSIGNMENT FOR PRINTER MECHANISM

1. Thermal Head

Head side : B16B-PH-K-S-2.2 (J.S.T.) or equivalent  
Board side : PHR-16 (J.S.T.) or equivalent



\*1: Symbol: "—" means a negative logic signal



2. Motor connectors

Motor side : PHR-4 (J.S.T.) or equivalent  
Board side : B4B-PH-K-S (J.S.T.) or equivalent



3. Sensor connectors

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

## ■ 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. | Head up detection                              | 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             |     |                                     |

## ■ INTERFACE, COMMAND, OPTIONS

Please refer to the FTP-624DCL/DSL DATA SHEET.

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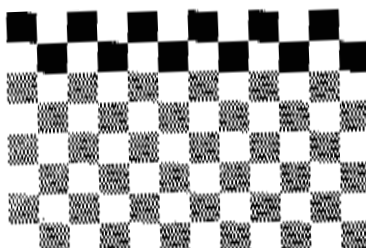
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## PRINT SAMPLE



-ROM / F-ROM

[illegible]

R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[X]^`\_abcdetg  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[Y]^`\_abcdetf  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[Z]^`\_abcdegh  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[a]^`\_bcdefg  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[b]^`\_cdefgh  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[c]^`\_defghi  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[d]^`\_efghij  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[e]^`\_fghijk  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[f]^`\_ghijkl  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[g]^`\_hijklm  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[h]^`\_ijklmn  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[i]^`\_jklmno  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[j]^`\_klmnop  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[k]^`\_lmnopq  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[l]^`\_mnopqr  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[m]^`\_nopqrst  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[n]^`\_opqrstu  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[o]^`\_pqrstuv  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[p]^`\_qrstuvw  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[q]^`\_rstvwxy  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[r]^`\_stvwxyz  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[s]^`\_tvwxyz  
 R9::c;vYwRdEFGHIJkLMNOPRSTUVWxyz[t]^`\_vwxyz

運西集遊池賞蔭梓正轉旋宛  
拾安庭接暗室幽香以棋位依開英  
爲對弈維維門春入遊園因并茂城  
黃千樹先印唱風因細引歌聲離院際  
雨期親近看碑白湖端明新詩戲鳳洲  
淑宮裏影映東永泳沐煥盤舞綺葉蘭  
越閣接圓園取蕉瓦延幾挑燈盪清溪  
還給齋場於巧湧而興元往德押軒橫嶺  
神馳俊爽臨曉柳丁後御恩溫福壽云