

# 24V DRIVE, HIGH SPEED LINE THERMAL PRINTER 4" MECHANISM, WITH OR WITHOUT CUTTER

## FTP-642MCL001/002 FTP-642MCL301/302

### ■ OVERVIEW

FTP-642MCL/FTP-622DCL Series is an ultra high speed line thermal printer driven by 24 VDC, printing on 4-inch wide paper (112 mm/114 mm) .

This printer is compact and light weight, and the design allows easy head maintenance, head cleaning and head replacement.

This printer is suitable for a variety of applications, such as POS terminals, ticket machines, coupon machines, label printers, medical instruments, etc. A printer with a specially designed cutter is also available.

### ■ HIGHLIGHTS

- **Ultra high speed printing**  
It can print at 80 mm/s (640 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 125 g.
- **Low power consumption**  
The peak current for head driving is approximately 4.1 A (at 80 mm/s printing speed, 50% printing ratio).
- **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.
- **ESC/POS™<sup>\*1</sup> Commands**  
The commands conform to ESC/POS™.
- **Auto Cutter**  
Printer with auto cutter (full cut/partial cut ) is also available.
- **UL Recognized**  
File No.E171434

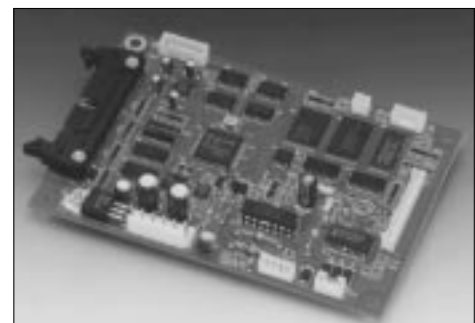
\*1 ESC/POS™ is a registered trademark of SEIKO EPSON Corp.



FTP-642MCL001



FTP-622CU101



FTP-622DCL001

## ■ DESIGNATION

Item		Part number
Printer mechanism	Standard	FTP-642MCL001/002 <sup>*2</sup>
	With Auto cutter	FTP-642MCL301/302 <sup>*3</sup>
Interface board	Centronics Standard	FTP-622DCL001/011 <sup>*4</sup>
	Serial (RS-232C)	FTP-622DSL001/011 <sup>*5</sup>
LSI(MCU)		FTP-622CU101 <sup>*6</sup>
Cables	Thermal head cable	FTP-622Y001
	Parallel (centronics) Interface cable	FTP-622Y201
	Serial (RS-232C) Interface cable	FTP-622Y301
	Power cable	FTP-622Y401

\*2: 001 is for front paper insertion (curl path) and 002 is for rear paper insertion (straight path).

\*3: Constructed with mechanism+cutter+attachment. 301 is for front paper insertion (curl path) and 302 is for rear paper insertion (straight path).

\*4: 001 /011 supports ANK and 101 supports ANK + Kanji (pages 98-103).

\*5: 001/011/012 supports ANK and 111 supports ANK + Kanji (pages 98-103).

\*6: CU101 supports Kanji and cutter control.

## ■ GENERAL SPECIFICATIONS

Item		Specifications	
Part number		FTP-642MCL001/002	FTP-642MCL301/302
Printing method		Thermal-sensitive line dot method	
Dot structure		832 dots/line	
Dot pitch (Horizontal)		0.125 mm (8 dot/mm)—Dot density	
Dot pitch (Vertical)		0.125 mm (8 dot/mm)—Line feed pitch	
Effective printing area		104 mm	
Paper width	MCL001/301	112 mm	
	MCL002/302	114 mm	
Paper thickness		60~100 $\mu\text{m}^{*1}$	60~100 $\mu\text{m}^{*1}$
Cutting type		-----	full or partial
Number of columns		69 columns/line (24×12 dot font)	
Maximum printing speed		640 dot line/s (80 mm/s)	
Character types		Alphanumeric KANA: 159 JIS KANJI (FTP-622DCL101/111): approx.6800 International characters: 195	
Character composition, dimensions (H×W), Number of characters		24 × 12 dots, (3.0 × 1.5 mm), 69 columns 24 × 24 dots, (3.0 × 3.0 mm), 34 columns 16 × 8 dots, (2.0 × 1.0 mm), 104 columns 16 × 16 dots, (2.0 × 2.0 mm), 54 columns	

(Continued)

# FTP-642MCL001/002/301/302

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Item		Specifications	
Part number		FTP-642MCL001/002	FTP-642MCL301/302
Interface		Centronics (ESC/POS™), RS232C	
Power supply	For head	24VDC ± 5%, Voltage Current : average <sup>*2</sup> ( ): Peak 1.61 (2.03) A (at 80 mm/s printing speed, 25% printing ratio) 1.17 (2.03) A (at 50 mm/s printing speed, 25% printing ratio) 1.08 (1.16) A (at 30 mm/s printing speed, 25% printing ratio)	
	For motor	24VDC ± 5%, 1.0 A maximum	24VDC ± 5%, 1.0 A maximum
	For cutter	-----	
	For logic	5VDC ± 5%, 0.5 A maximum	
Dimension	Mechanism (cutter)	138 (W) × 48 (D) × 20 (H) mm (excluding lever)	147 (W) × 69 (D) × 42 (H) mm (w/cutter)
	Interface board	131 (W) × 89 (D) × 24 (H) mm	
Weight (Mechanism+Cutter)		approximately 125 g	approximately 450 g (w/cutter)
Expected life	Mechanism	Pulse durability : 1 × 10 <sup>8</sup> pulse/dot (using Fujitsu Takamisawa's standard driving method) Wear resistance : 50 km (at 25% printing ratio)	
	Cutter	-----	3 × 10 <sup>5</sup> cuts
Environmental conditions	Operating temperature	0 to +50°C <sup>*3</sup>	
	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 (112 mm width) : FTP-040PU001, FTP-040P0701 For rear insertion use (114 mm width) : FTP-040P0020, FTP-040P0702 *Recommended papers · Oji paper : PD150R, PD160R, PD170R · NIPPON paper : TF50KS-E, TF60KS-E, TF60KJ-R · MITSUBISHI paper Mills : P220VBB-1, AFP-235	

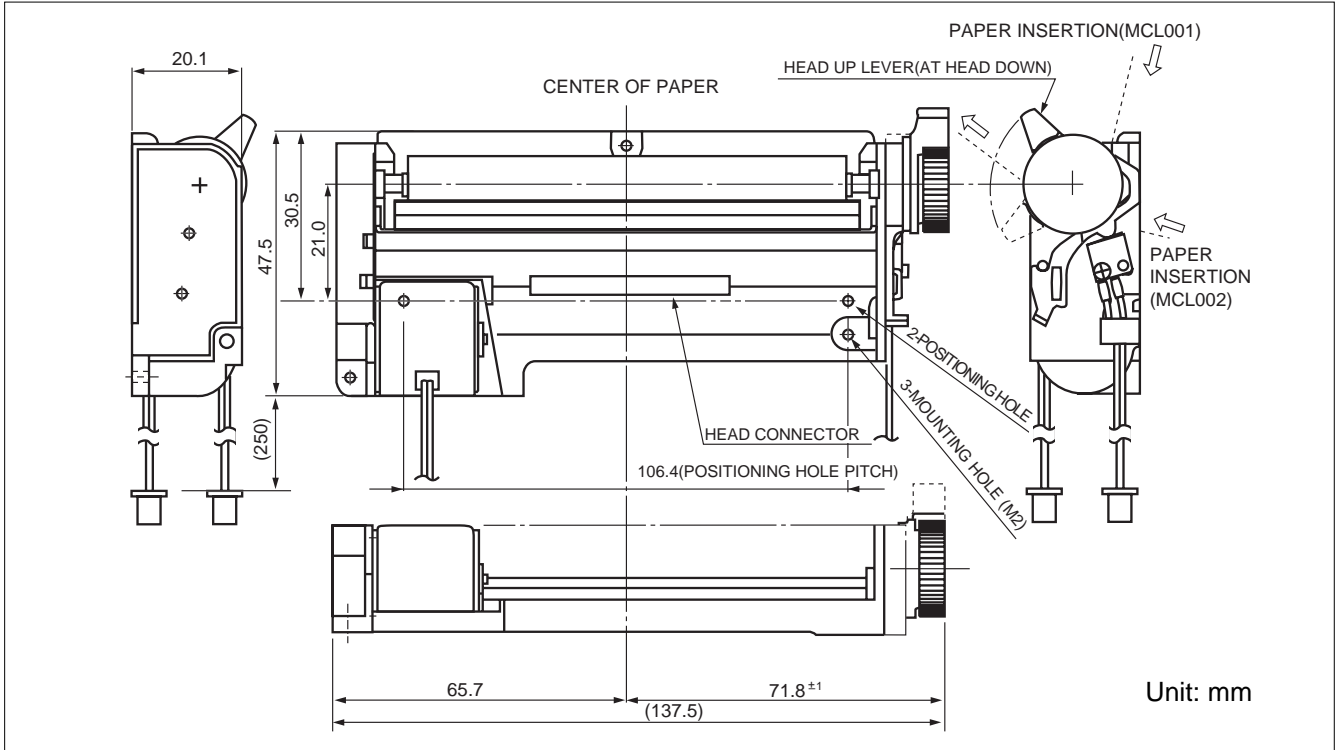
\*1: There may be exceptions.

\*2: 24 VDC, minimum head resistance.

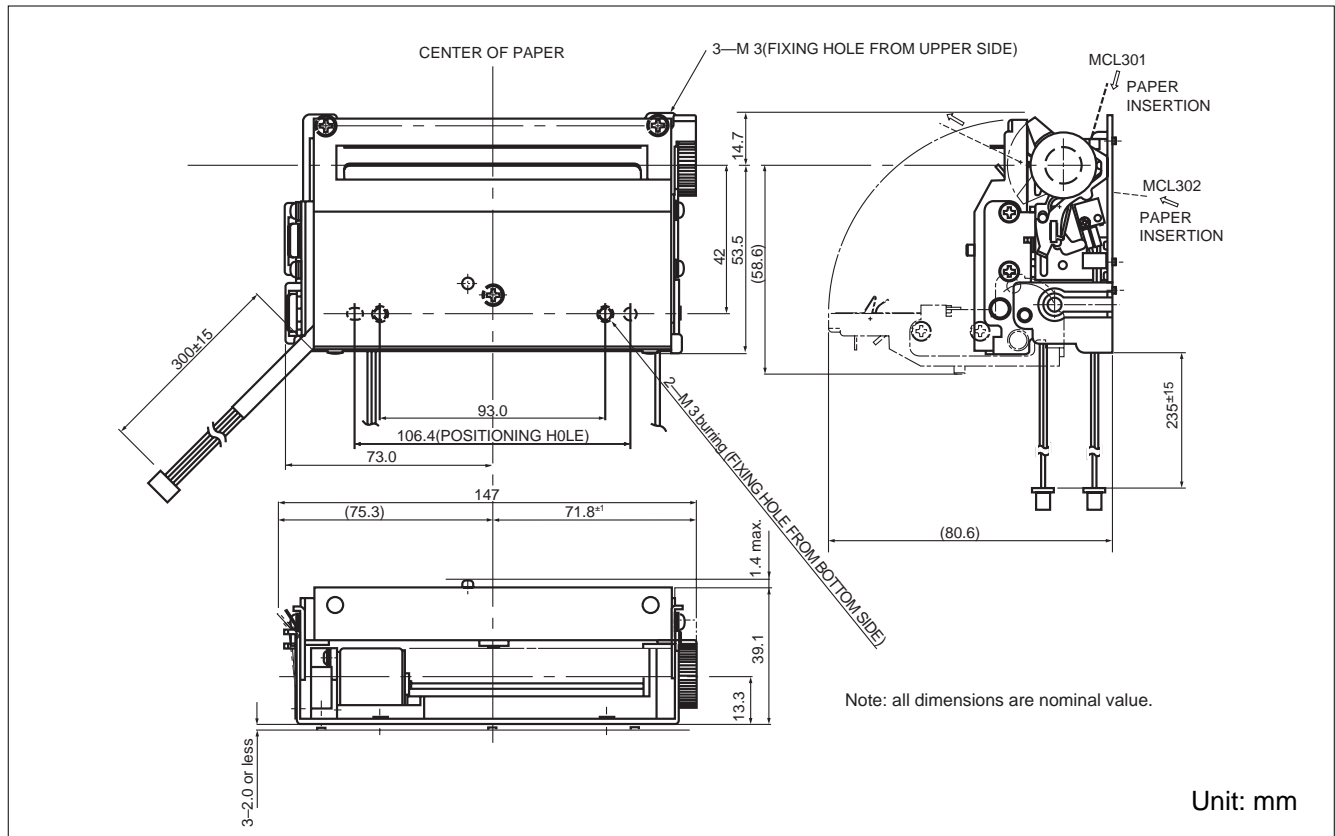
\*3: Guarantee: +5°C ~+40°C.

## ■ DIMENSIONS

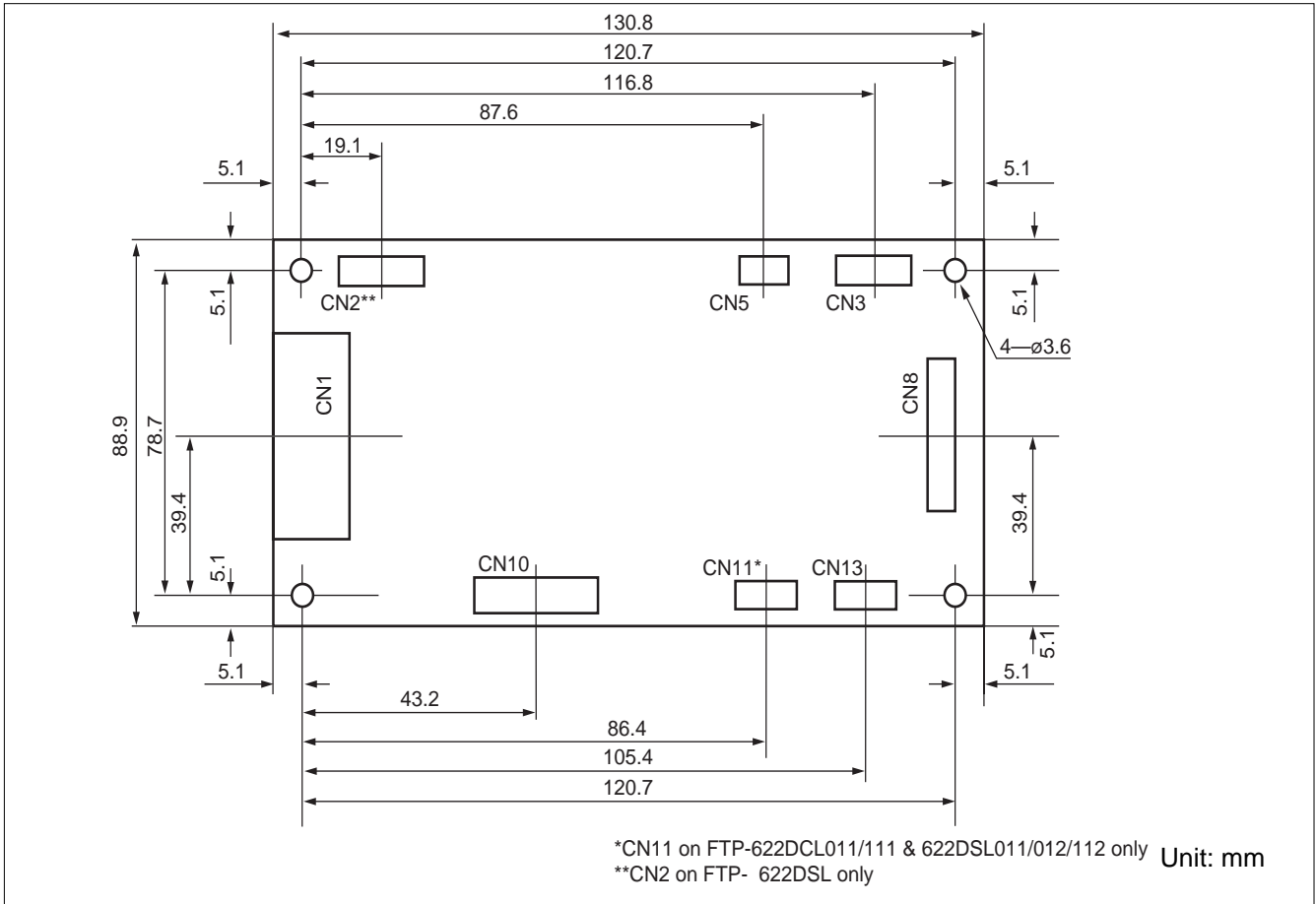
### Mechanism



### Mechanism with cutter



## Interface board



## ■ CONNECTOR PIN ASSIGNMENT FOR PRINTER MECHANISM

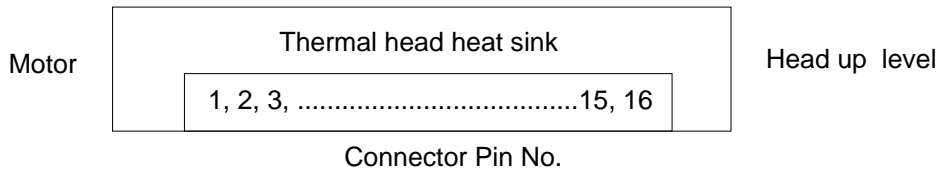
### 1. Thermal Head

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

Board side: PHR-16 (J.S.T.) or equivalent

No.	Signal	Comment
1	VH	Power for head
2	VH	Power for head
3	GND	Head ground
4	GND	Head ground
5	$\overline{\text{STB1}}$	Print enable signal 1
6	$\overline{\text{STB2}}$	Print enable signal 2
7	$\overline{\text{STB3}}$	Print enable signal 3
8	TH*1	Temperature detection
9	$\overline{\text{STB4}}$	Print enable signal 4
10	$\overline{\text{LAT}}$	Print data latching signal
11	$\overline{\text{STB5}}$	Print enable signal 5
12	VDD	Power for logic
13	CLK	Data transmission clock
14	DIN	Print data output signal
15	GND	Head ground
16	VH	Power for head

\*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

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

### 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	VSEN	Power for paper sensor
2	PHE	Photo interrupter emitter
3	PHK	Photo interrupter cathode
4	SW1	Head up detect switch 1
5	SW2	Head up detect switch 2

## 4. Cutter

Mech side : EHR-4 (J.S.T.) or equivalent

Board side : B4B-EH (J.S.T.) or equivalent

No	Cable Color	Name
1	White	Home position 1
2	White	Home position 2
3	Red	Motor energizing signal M+
4	Black	Motor energizing signal M-

## ■ FUNCTION

	ITEM		ITEM
1.	Test printing	8.	Cutter trouble detection
2.	Paper-out detection	9.	Motor power save
3.	Paper near end detection	10.	Mark detection
4.	Head-up detection	11.	MCU trouble detection
5.	Abnormal temperature detection of thermal head	12.	Power on/off sequence protection
6.	Blown fuse detection	13.	Motor protection
7.	Abnormal voltage detection of head	14.	Hardware timer

## ■ INTERFACE, COMMAND, OPTIONS

Please refer to the FTP-622DCL DATA SHEET and the FTP-622DSL DATA SHEET for Interface, Command, and Options.

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