

# FCL COMPONENTS

## 24V, FTP-607 Series

### 3" HIGH SPEED THERMAL PRINTER

**FTP-637MCL411/421** - *ACTIVE*

**FTP-637MCL401/601** - *DISCONTINUED*

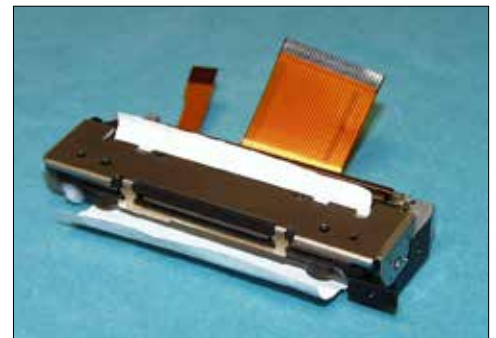
#### ■ OVERVIEW

The FTP-637 MCL series are 24V driven high-speed printers with with a long life, ultra low profile auto cutter.

The FTP-637 MCL Series can be used for a variety of applications, such as POS terminals, ticket vending machines, label printers, banking terminals, measurement and medical equipment.

#### ■ HIGHLIGHTS

- **Ultra low profile**  
Height 21.8 mm, width 103.2/104.5 mm, depth 42.2 mm
- **High speed printing**  
Using FCL Components unique head drive control, maximum print speeds of 100/170/150mm per second can be achieved.
- **Auto Cutter**  
Long life, guillotine style cutter with a dedicated motor.
- **Easy paper loading**  
FCL Components' unique lever assisted platen release mechanism allows for easy paper loading and easy head maintenance.
- **Multifunctional die-cast frame**  
The rugged die-cast frame provides excellent ESD performance, is shock/vibration resistant and the heat-sink allows for continuous printing.
- **RoHS compliant**



FTP-637MCL401/411/421/601

# FTP-637MCL401/411/421/601

## ■ PART NUMBERS

			Part Number	
Easy Load Model with low profile cutter			FTP-637MCL401 (Partial cut: single tab) FTP-637MCL411 (Partial cut: single tab) FTP-637MCL421 (Partial cut: double tab) FTP-637MCL601 (Partial cut: single tab)	
LSI for driving		MCL401/411/421	FTP-627CU430	
		MCL601	FTP-627CU351	To be discontinued, no replacement planned
Interface board for Mech/Cutter	USB/RS-232C	MCL401/411/421	FTP-637DSL430#01 (Japanese font) FTP-637DSL430#02 (Chinese font)	
		MCL601	FTP-638DSL382	To be discontinued, no replacement planned
	USB	MCL601	FTP-637DSL384	To be discontinued, no replacement planned
	RS-232C	MCL601	FTP-637DSL386	To be discontinued, no replacement planned
Interface cables	USB		FTP-629Y301	
	Serial (RS232C)		FTP-628Y302	
Power cables		MCL401/411/421	FTP-629Y601	
		MCL601	FTP-629Y602	

## ■ SPECIFICATIONS

Item		Specifications
Part number		FTP-637MCL401/411/421/601
Printing method		Thermal-line dot method
Dot structure		576 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		72 mm
Number of columns		ANK 48 columns/line (maximum 12 x 24 dot font)
Paper width		80 mm +1/-0
Paper thickness		80 μm (not all papers can be used due to the paper characteristics)
Printing Speed	MCL401/421	Maximum 100mm/sec. (800 dot line/sec.)
	MCL411	Maximum 170mm/sec. (1,360 dot line/sec.)
	MCL601	Maximum 150mm/sec. (1,200 dot line/sec.)
Character types		Alphanumeric, kana: 159 types International characters: 195 types JIS Kanji (Kanji CG loaded board): about 6800 types
Character, dimensions (W×H), number of columns		12 × 24 dots, (1.5 × 3.0 mm), 48 columns: ANK 24 × 24 dots, (3.0 × 3.0 mm), 24 columns: ANK 8 × 16 dots, (1.0 × 2.0 mm), 72 columns: ANK 16 × 16 dots, (2.0 × 2.0 mm), 36 columns: ANK

# FTP-637MCL401/411/421/601

## ■ SPECIFICATIONS

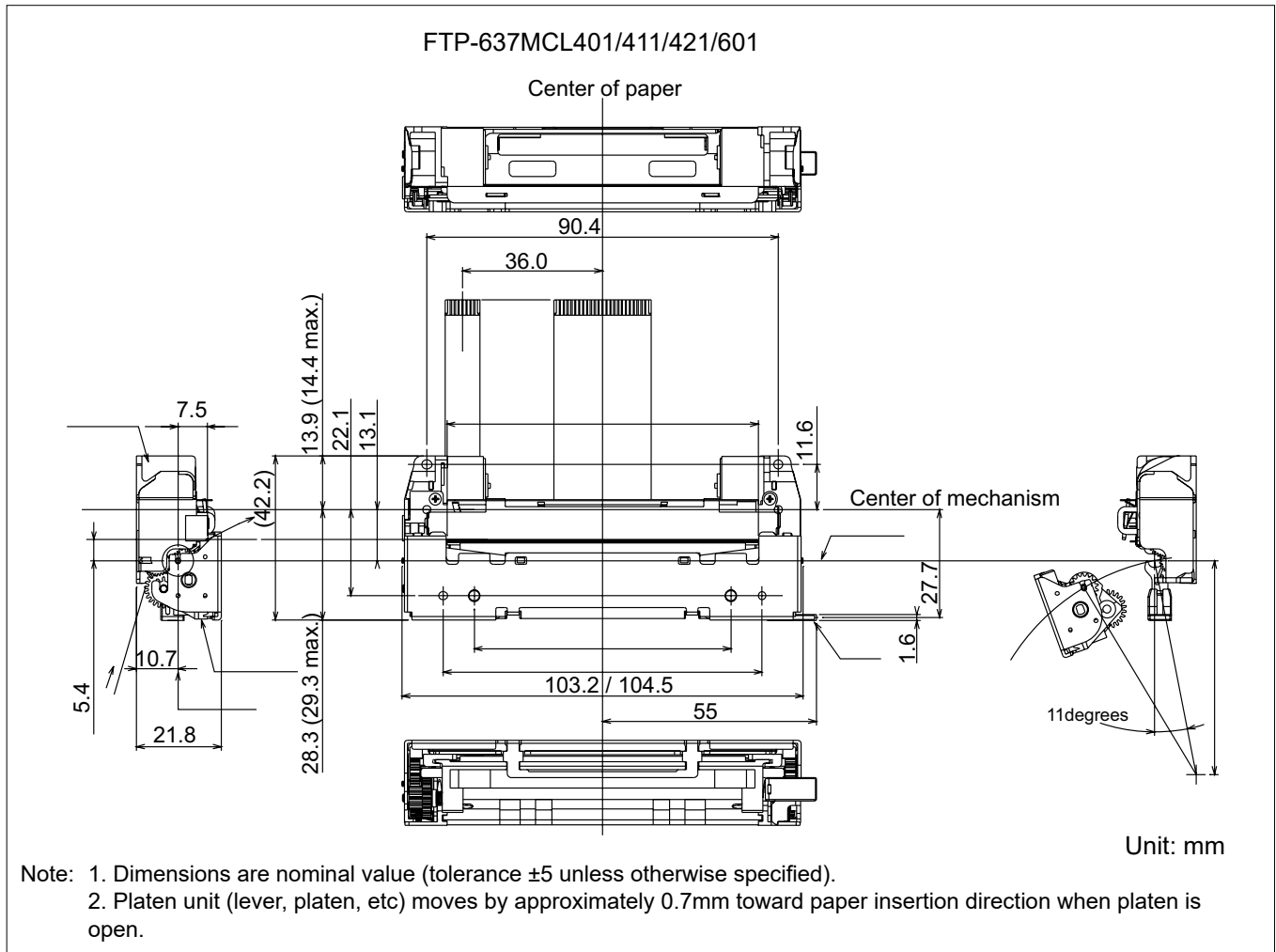
Item			Specification	
Interface			Conforms to RS232C/USB	
Power supply	For print head	MCL401/411/421	24VDC±5% approx. 4.4A at 25°C, Rav=1,500Ω, concurrent applied dot number 288dots	
		MCL601	24VDC ±5% approx. 8.0A at 25°C, Rav=800Ω, concurrent applied dot number 288dots	
	For motor	MCL401/421	24 VDC ±5%, 1.0 A maximum	
		MCL411	24 VDC ±5%, 0.8 A maximum	
		MCL601	24 VDC ±5%, 1.1 A maximum	
	For cutter	MCL401/421	24 VDC ±5%, 1.1 A maximum	
		MCL411	24 VDC ±5%, 1.2 A maximum	
		MCL601	24 VDC ±5%, 1.3 A maximum	
	For logic	MCL401/421	4.75 to 5.25 VDC, 0.1 A maximum	
		MCL411	3.3 to 5.25 VDC, 0.1 A maximum	
		MCL601	4.75 to 5.25 VDC, 0.2 A maximum	
	Dimensions	Mechanism with cutter	MCL401/421	103.2 x 42.2 x 21.8 mm (WxDxH)
MCL411/601			104.5 x 42.2 x 21.8 mm (WxDxH)	
Interface board		DSL3xx	69.3 x 52 x 21.2mm (WxDxH)	
		DSL4xx	40 x 70 x 16.2 mm (WxDxH)	
Weight	Mechanism with cutter		Approximately 401:118g / 411:124g / 421: 118g / 601:124g	
	Interface board		Approximately DSL3xx: 30g / DSL4xx: 20g	
Life	Head	MCL401/421	Pulse durability: 50 million pulses/dot (print ratio: 12.5% or less).	
		MCL411	Pulse durability: 100 million pulses/dot (print ratio: 12.5% or less).	
		MCL601	Pulse durability: 100 million pulses/dot (print ratio: 12.5% or less).	
		MCL401/421	Abrasion resistance: paper traveling distance 50km	
		MCL411	Abrasion resistance: paper traveling distance 100km	
		MCL601	Abrasion resistance: paper feed length 100km.	
	Cutter	MCL401	500,000 cuts	
		MCL421	400,000 cuts	
		MCL411/601	1,000,000 cuts	
Platen		5,000 times (open/close)		
Operating environment	Operating temperature		0°C to +50°C (+5°C to +40°C printing density assurance range)	
	Operating humidity		20 to 85% RH (no condensation)	
	Storage temperature		-20°C to +60°C (paper not included)	
	Storage humidity		5 to 95% RH (no condensation)	
Detection function	Head temperature detection		Detected by thermistor	
	Paper out/mark detection		Detected by photo-interruptor	
	Platen release		Detected by sliding switch	
Recommended thermal sensitive paper			High sensitive paper	TF50KS-E4 (Nippon)
			Standard paper	TF60KS-E (Nippon), PD150R (Oji)
			Medium life paper	TF60KS-F1 (Nippon), PD170R (Oji), P220VBB-1 (Mitsubishi)
			Long life paper	PD160R (Oji), AFP-235 (Mitsubishi), TP50KJ-R (Nippon), HA220AA (Nippon)

## ■ FUNCTION OF INTERFACE BOARD

Item	Item
1. Test print function	8. Cutter trouble detect
2. Paper out detection	9. Motor power saving function
3. Paper near end detection	10. Mark detection function
4. Platen open detection	11. MCU operation abnormality detection
5. Thermal head temperature abnormality detection	12. Power ON/OFF sequence protection
6. Blow-out fuse detection	13. Motor over-current protection
7. Head voltage abnormality detection	14. Hardware timer

## ■ DIMENSIONS

### 1. Printer mechanism



## 1. Connector (FPC) specification (CN4)

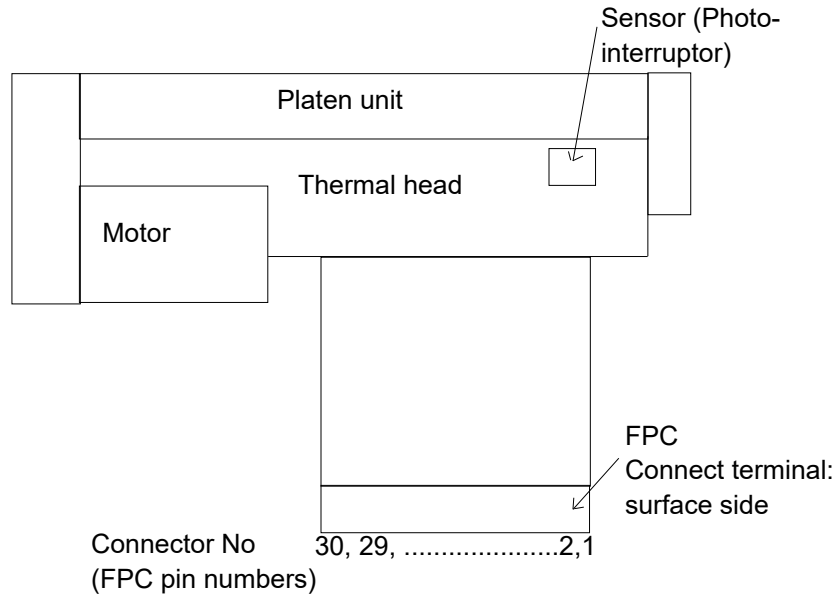
### (1) Connector

Mechanical unit side: FPC connector

Remote side (housing site): 52610-3071 (made by Molex)

### (2) Pin assignment on the mechanical side

No	Signal	I/O	Contents
1	PHK	—	Photointerrupter (Cathode)
2	VSEN	I	Ground power supply for paper sensor
3	PHE	O	Emitter for photo interrupter
4	VH	I	Head drive power
5	VH	I	Head drive power
6	VH	I	Head drive power
7	DI	I	Data input
8	$\overline{\text{STB3}}$	I	Strobe 3
9	$\overline{\text{STB4}}$	I	Strobe 4
10	VDD	—	Logic Power
11	GND	—	Head ground
12	GND	—	Head ground
13	GND	—	Head ground
14	GND	—	Head drive power
15	GND	—	Head drive power
16	GND	—	Head drive power
17	TM	O	Thermistor
18	$\overline{\text{STB1}}$	I	Strobe 1
19	$\overline{\text{STB2}}$	I	Strobe 2
20	$\overline{\text{LAT}}$	I	Data Latch
21	CLK	I	Clock
22	VH	I	Head drive power
23	VH	I	Head drive power
24	VH	I	Head drive power
25	SW	—	Platen open switch
26	SW	—	Platen open switch
27	MT A	I	Motor excite signal A
28	$\overline{\text{MT A}}$	I	Motor excite signal $\overline{\text{A}}$
29	MT B	I	Motor excite signal B
30	$\overline{\text{MT B}}$	I	Motor excite signal $\overline{\text{B}}$



## 2. Cutter (CN5)

Connector on control circuit side: 52610-0871 Molex or equivalent

No.	Signal	I/O	Contents	No.	Signal	I/O	Contents
1	VSEN	I	Paper sensor power	2	PHE	O	Photo interruptor (emitter)
3	PHK	—	Photo interruptor (cathode)	4	MT A	I	Motor excite signal A
5	MT $\bar{A}$	I	Motor excite signal A	6	MT B	I	Motor excite signal B
7	MT $\bar{B}$	I	Motor excite signal B	8	NC	—	Not connected

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