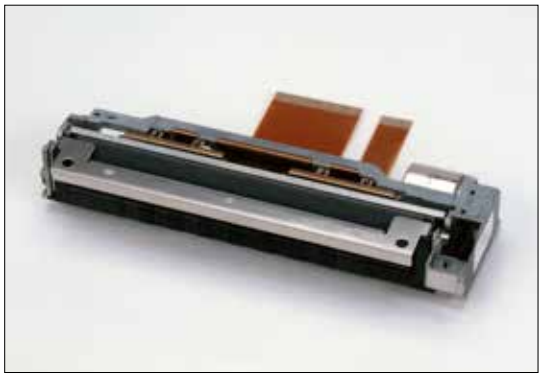
FCL COMPONENTS

BATTERY DRIVE,
4" HIGH SPEED THERMAL PRINTER
FTP-648MCL103 *ACTIVE*
FTP-648MCL104 *Discontinued - March 2024*
Easy Loading Method

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 FCL Components'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 ptich (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 80µm (some paper may not be used because of characteristics)
	MCL104	60 to 115µm
Printing speed		Maximum 50mm/sec. (400 dot lines/sec.) 7.2V
Character types		Alphanumeric, katakana: 159 types International and special characters: 195 types OCRI 103 types OCRIII 23 types OCRIV 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: OCRI 24 x 48 dots, 34 columns: OCRIII 36 x 60 dots, 23 columns: OCRIV 24 x 48 dots, 34 columns: Extended numeric

SPECIFICATIONS

Item		Specifications	
		FTP-648MCL103/104	
Interface		Conforms to RS232C / USB	
Operting 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	Approximately160 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 rance (0 to 50˚C capability)

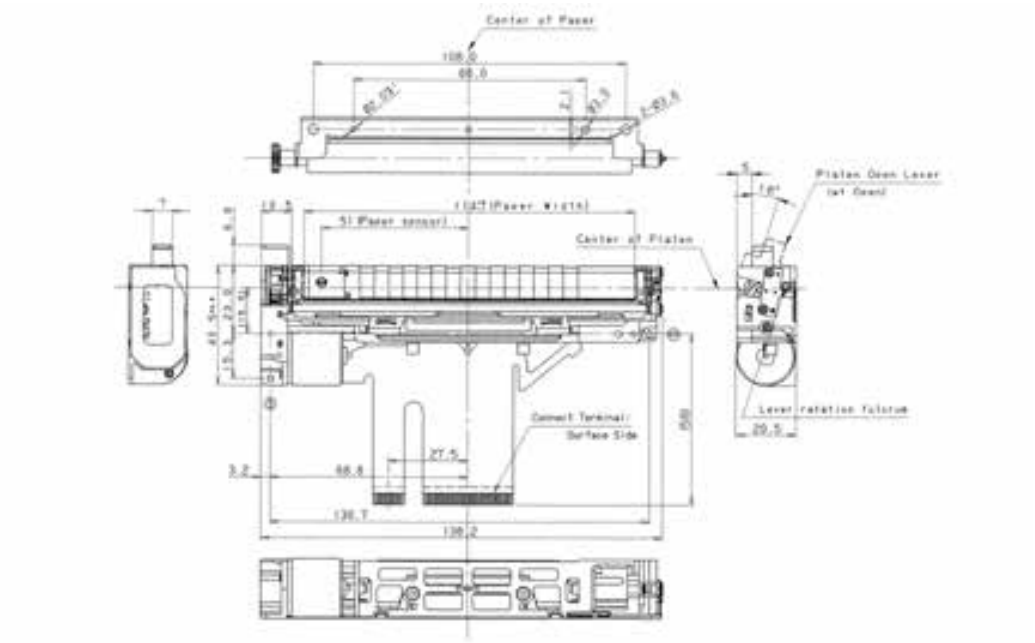
FUNCTION

	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

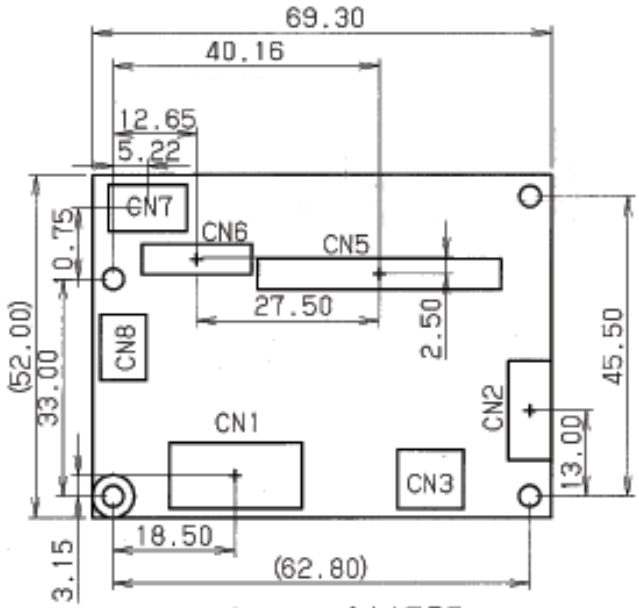
FTP-648MCL103/104



Note: 1. Dimensions are nominal value (tolerance ±5 unless otherwise specified).
2. Dimension listed in ( ) is for reference

Unit: mm

2. Interface board



Unit: mm

FTP-648 MCL103/104

1. Thermal head, control circuit side connector:

CN1: 52610-3071 (Molex)

CN2: 52610-1071 (Molex)

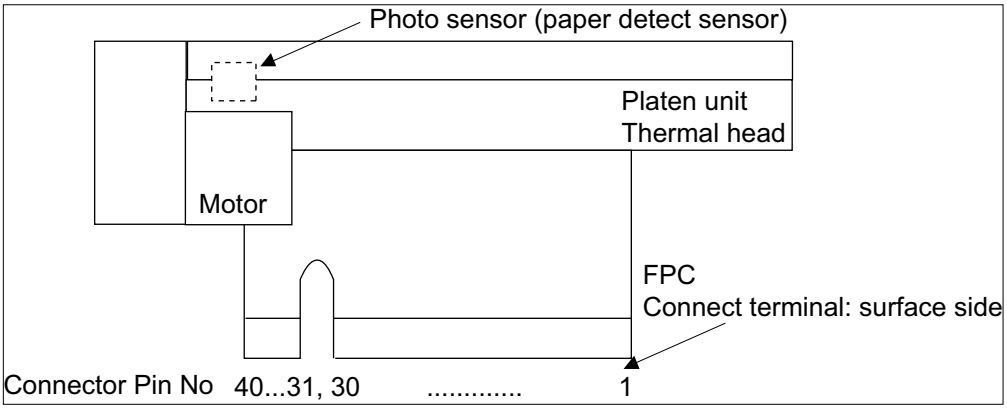
2. Pin assignment (flexible) of the printer mechanical side:

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

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

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

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



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