

# 24V DRIVE, FTP-609 SERIES

## ULTRA HIGH SPEED (200mm/s)

## 3" TYPE MECHANISM (Cutter option)

### FTP-639MCL103/383-R

#### ■ OVERVIEW

The FTP-609MCL Series thermal printer (driven by 24VDC) provides ultra-high speed printing (200mm/s) for 2-inch and 3-inch wide paper.

This series is suitable for a variety of applications, such as POS/ECR, kiosk terminals, ticket machines, label printers, banking machines, measuring devices, medical equipment, etc.

#### ■ HIGHLIGHTS

- **Ultra high speed printing**  
It can print at 200 mm/s (1600 dotlines/s) maximum by using Fujitsu Components' unique head drive control.
- **High resolution**  
8 dots/mm head provides clear print out.
- **ELM (Easy Loading Mechanism) with lock type**  
Fujitsu Components' unique platen release mechanism allows easy paper setting and easy head maintenance.
- **Auto Cutter**  
Printer with auto cutter (full cut/ partial cut) is available. It can be mounted on top of the mechanism.
- **Multi-featuring diecast frame**  
By application of multi-featuring diecast frame, continuous print by function of heat-sink, high ESD stand by function of earth frame and shock/vibration stand by function of solid frame are valid.
- **Compact size**  
Depth: 40.5mm, width: 82.2mm, height: 20.5mm for the 2-inch model. The 3-inch model has a width of 104.2mm
- **RoHS compliant**



FTP-6x9MCL103R with FTP-629DSL034R

# FTP-639MCL103/383-R

## ■ PART NUMBERS

| Name                                 |                   | Part Number            |                 |                        |
|--------------------------------------|-------------------|------------------------|-----------------|------------------------|
| Printer mechanism                    | Detachable platen | FTP-639MCL103R         | FTP-639MCL105R  | FTP-639MCL103R         |
| Mechanism with cutter                | Detachable platen | FTP-639MCL383#01/#02R* | FTP-639MCL385R  | FTP-639MCL383#01/#02-R |
| LSI                                  |                   | FTP-629CU101R          | FTP-629SR201    | FTP-629CU301R          |
| Interface board                      | Parallel          | FTP-629DCL014R         | FTP-629DSL181R* |                        |
|                                      | Serial (RS232C)   | FTP-629DSL034R         | FTP-629DSL181R* | FTP-629DSL301R         |
|                                      | USB               | ---                    | FTP-629DSL112R  | FTP-629DSL301R         |
| Thermal head cable extension         |                   | ---                    | FTP-629Y001     | ---                    |
| Interface cable (board to mechanism) | Parallel          | FTP-628Y202            |                 | ---                    |
|                                      | Serial            | FTP-628Y302            | FTP-629Y302     |                        |
|                                      | USB               | ---                    | FTP-629Y301     |                        |
| Power supply cable                   | Logic             | FTP-629Y401            | ---             | ---                    |
|                                      | Head, motor       | FTP-629Y601            |                 | FTP-629Y602            |

\*1: #01 is for full cut, #02 is for partial cut

\*2: Interface is selectable by DIP switch

## ■ GENERAL SPECIFICATIONS

| Item                    |                                                                                                                            | Specifications                                                                                                                                      |                                                                                               |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Part number             |                                                                                                                            | FTP-639MCL103/105-R                                                                                                                                 | FTP-639MCL383/385#01/#02-R                                                                    |
| Printing method         |                                                                                                                            | Thermal sensitive line dot method                                                                                                                   |                                                                                               |
| Dot structure           |                                                                                                                            | 576 dots/line                                                                                                                                       |                                                                                               |
| Dot pitch (horizontal)  |                                                                                                                            | 0.125mm (8dots/mm) - Dot density                                                                                                                    |                                                                                               |
| Dot pitch (vertical)    |                                                                                                                            | 0.125mm (8dots/mm) - Line feed pitch                                                                                                                |                                                                                               |
| Effective printing area |                                                                                                                            | 72 mm                                                                                                                                               |                                                                                               |
| Number of columns       |                                                                                                                            | ANK 48 columns/line (12 x 24 dot font) OCR 24 columns                                                                                               |                                                                                               |
| Paper width             |                                                                                                                            | 80mm +0/-1                                                                                                                                          |                                                                                               |
| Paper thickness         |                                                                                                                            | 60 to 100μm (there may be exceptions)                                                                                                               |                                                                                               |
| Cutting type            |                                                                                                                            | ---                                                                                                                                                 | ELM full or partial                                                                           |
| Printing speed          | FTP-629DCL/DSL series                                                                                                      | 80mm/sec. (640 dot lines/sec.) line mode<br>200mm/sec. (1600 dot lines/sec.) image mode                                                             |                                                                                               |
|                         | FTP-629DSL100 series<br>FTP-629DSL300 series                                                                               | 125mm/sec. (1000 dot lines/sec.) line mode<br>200mm/sec. (1600 dot lines/sec.) page mode                                                            |                                                                                               |
| Character types         | Alphanumeric, Kana:<br>International:<br>JIS Kanji (Kanji CG loaded board):<br>OCRI<br>OCRIII<br>OCRIV<br>Extended numeric | 159 types<br>195 types<br>about 6,800 types                                                                                                         | 159 types<br>195 types<br>about 6,800 types<br>103 types<br>23 types<br>103 types<br>11 types |
|                         | Character, dimensions (WxH), number of columns                                                                             | 24x12 dots, (3.0x1.5mm) 48 columns<br>16x16 dots, (2.0x2.0mm) 24 columns<br>24x24 dots, (3.0x3.0mm) 72 columns<br>8x16 dots, (1.0x4.0mm) 36 columns | 24 columns, OCRI<br>24 columns, OCRIII<br>16 columns, OCRIV<br>24 columns, extended numeric   |
| Interface standard      |                                                                                                                            | Centronics / RS232C /USB                                                                                                                            | Serial/USB                                                                                    |

# FTP-639MCL103/383-R

(Continued)

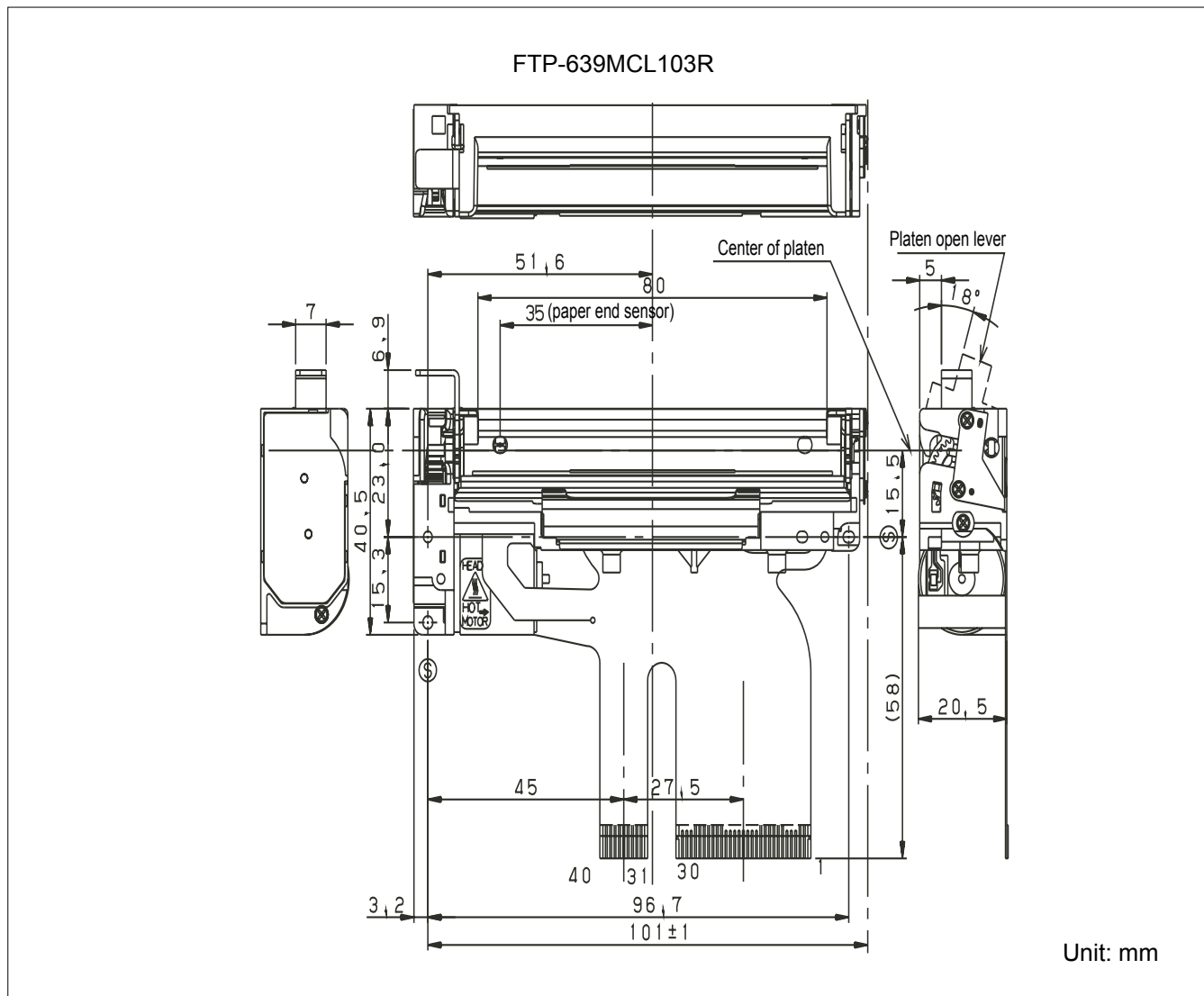
| Item                                |                                | Specifications                                                                                                              |                             |
|-------------------------------------|--------------------------------|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------|
| Part number                         |                                | FTP-639MCL103/105-R                                                                                                         | FTP-639MCL383#01/#02-R      |
| Power supply                        | For head                       | 24 VDC $\pm 5\%$ , 1.9A (4A) (24V, 25% printing ratio)                                                                      |                             |
|                                     | For printer motor              | 24 VDC $\pm 5\%$ 1A maximum                                                                                                 |                             |
|                                     | For cutter motor               | ---                                                                                                                         | 24 VDC $\pm 5\%$ 1A maximum |
|                                     | For logic                      | 5 VDC $\pm 5\%$ 0.2A maximum                                                                                                |                             |
| Dimension<br>W x D x H              | Printer mechanism              | 104.2 x 40.2 x 20.5mm                                                                                                       | ---                         |
|                                     | Printer mechanism with cutter  | ---                                                                                                                         | 112.5 x 70.3 x 37.4mm       |
|                                     | Interface board (DCL/DSL)      | 70 x 60 x 21.6mm                                                                                                            |                             |
|                                     | Interface board (DSL100)       | 95 x 73.5 x 11.6mm                                                                                                          |                             |
|                                     | Interface board (DSL300)       | 77 x 50 x 21.5mm                                                                                                            |                             |
| Weight                              | Printer mechanism              | Approximately 125g                                                                                                          | ---                         |
|                                     | Printer mechanism with cutter  | ---                                                                                                                         | Approximately 350g          |
|                                     | Interface board (std)          | Approximately 25g                                                                                                           |                             |
|                                     | Interface board (medium speed) | Approximately 45g                                                                                                           |                             |
|                                     | Interface board (high speed)   | Approximately 20g                                                                                                           |                             |
| Life                                | Head                           | Pulse durability: 100M pulse/dot (using Fujitsu's standard driving method)<br>Wear resistance: 100km (at 12.5% print ratio) |                             |
|                                     | Cutter                         | ---                                                                                                                         | 1,000,000 cuts minimum      |
|                                     | Platen                         | 5,000 times (open/close)                                                                                                    |                             |
| Environmental conditions            | Operating temperature          | -10°C to +60°C (guarantee)                                                                                                  | 0°C to +50°C (guarantee)    |
|                                     | Operating humidity             | 20 to 85% RH (no condensation)                                                                                              |                             |
|                                     | Storage temperature            | -40°C to +70°C                                                                                                              | -20°C to +60°C              |
|                                     | Storage humidity               | 5 to 95% RH (no condensation)                                                                                               |                             |
| Detection                           | Head temperature               | By thermistor                                                                                                               |                             |
|                                     | Paper out/Mark detect          | By photointerruptor                                                                                                         |                             |
|                                     | Head release                   | By slide switch                                                                                                             |                             |
| Recommended thermal sensitive paper | High sensitive paper           | TF50KS-E4 (Nippon paper)                                                                                                    |                             |
|                                     | Standard paper                 | TF60KS-E2 (Nippon paper), FTP-030P0104 (80mm)<br>PD150R (Oji paper), FTP-030P0701 (80mm)                                    |                             |
|                                     | Medium life storage paper      | TF60KS-F1 (Nippon paper), FTP-030P0102 (80mm)<br>PD170R (Oji paper)<br>P220VBB-1 (Mitsubishi paper)<br>PD160R-N (Oji paper) |                             |
|                                     | Long life storage paper        | AFP-235 (Mitsubishi paper)<br>TP50KJ-R (Nippon paper)<br>HA220AA (Nippon paper)                                             |                             |

## ■ FUNCTION

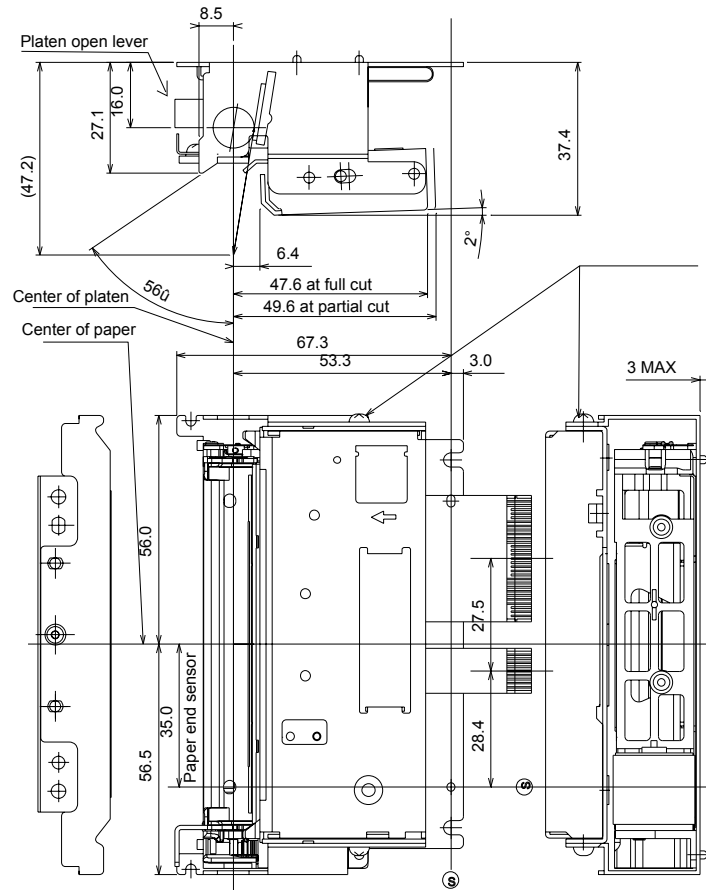
| ITEM |                                          | ITEM |                                  |
|------|------------------------------------------|------|----------------------------------|
| 1.   | Test printing                            | 8.   | Cutter trouble detection         |
| 2.   | Paper-out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

## ■ DIMENSIONS

### 1. Printer mechanism



FTP-639MCL383#01/#02-R



Unit: mm

## ■ CONNECTOR PIN ASSIGNMENT OF PRINTER MECHANISM (FPC)

### 1. Thermal head control circuit side

Part number : 52610-3071 (Molex) or equivalent

| No | Signal                   | I/O | Contents               | No | Signal                   | I/O | Contents               |
|----|--------------------------|-----|------------------------|----|--------------------------|-----|------------------------|
| 1  | SW                       | O   | Platen open switch     | 2  | SW                       | -   | Platen open switch     |
| 3  | VH                       | -   | Power for thermal head | 4  | VH                       | -   | Power for thermal head |
| 5  | VH                       | -   | Power for thermal head | 6  | VH                       | -   | Power for thermal head |
| 7  | DI                       | I   | Data in                | 8  | $\overline{\text{STB3}}$ | I   | Print enable 3         |
| 9  | $\overline{\text{STB4}}$ | I   | Print enable 4         | 10 | VDD                      | -   | Power for logic        |
| 11 | TM                       | -   | Head Thermistor        | 12 | GND                      | -   | Head GND               |
| 13 | GND                      | -   | Head GND               | 14 | GND                      | -   | Head GND               |
| 15 | GND                      | -   | Head GND               | 16 | GND                      | -   | Head GND               |
| 17 | GND                      | -   | Head GND               | 18 | GND                      | -   | Head GND               |
| 19 | GND                      | -   | Head GND               | 20 | GND                      | -   | Head GND               |
| 21 | TH                       | O   | Thermistor             | 22 | $\overline{\text{STB1}}$ | I   | Print enable 1         |
| 23 | $\overline{\text{STB2}}$ | I   | Print enable 2         | 24 | $\overline{\text{LAT}}$  | I   | Print data latch       |
| 25 | CLK                      | I   | Clock                  | 26 | DO                       | O   | Data out               |
| 27 | VH                       | -   | Power for thermal head | 28 | VH                       | -   | Power for thermal head |
| 29 | VH                       | -   | Power for thermal head | 30 | VH                       | -   | Power for thermal head |

### 2. Motor, Sensor (CN4)

Connector on circuit side : 52610-1071 (Molex) or equivalent

| No. | Signal | I/O | Contents                 | No. | Signal                   | I/O | Contents                 |
|-----|--------|-----|--------------------------|-----|--------------------------|-----|--------------------------|
| 1   | NC     | -   | Not connected            | 2   | TM                       | O   | Motor temperature sensor |
| 3   | TM     | -   | Motor temperature sensor | 4   | MT $\overline{\text{A}}$ | I/O | Motor coil excitation /A |
| 5   | MT A   | I   | Motor coil excitation A  | 6   | MT $\overline{\text{B}}$ | I/O | Motor coil excitation /B |
| 7   | MT B   | I   | Motor coil excitation B  | 8   | PHK                      | -   | Paper out sensor cathode |
| 9   | VSEN   | I   | Power for paper sensor   | 10  | $\overline{\text{PHE}}$  | O   | Paper out sensor emittor |

### 3. Cutter (CN5)

Connector type: B4B-PH-SM4-TB (J.S.T.) or equivalent

| No. | Signal | I/O | Contents                    | No. | Signal | I/O | Contents                    |
|-----|--------|-----|-----------------------------|-----|--------|-----|-----------------------------|
| 1   | SW1    | -   | Cutter home position switch | 2   | SW2    | O   | Cutter home position switch |
| 3   | M+     | O   | Cutter motor drive          | 4   | M-     | I   | Cutter motor drive          |

## ■ INTERFACE COMMAND OPTIONS

Please refer to the FTP-629DCL/DSL, FTP-629DCL/DSL100, or FTP-629DSL300 series datasheet.

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