

24V DRIVE, FTP-609 SERIES ULTRA HIGH SPEED (200mm/s) 3" TYPE MECHANISM (Cutter option) FTP-639MCL054/354

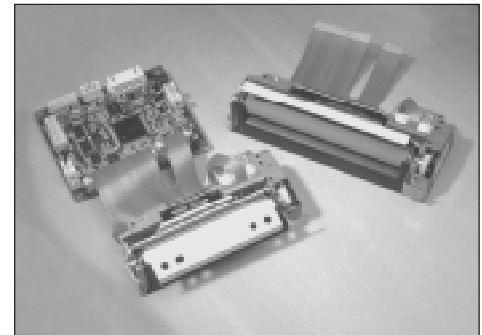
■ OVERVIEW

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.
- **Rear paper insertion with lock type**
Fujitsu Components' unique platen release mechanism allows straight paper path 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 with stand by function of earth frame and shock/vibration resistance by function of solid frame are valid.
- **Compact size**
Depth: 40.5mm, width: 104.2mm, height: 20.5mm
- **High resolution**
8 dots/mm head provides clear print out.
- **2 Color printing**
It can print 2 colors: blue/ black or red/black.



FTP-6x9MCL054 with FTP-629DCL014

■ PART NUMBERS

| Name | | Part Number | |
|-----------------------|------------------|--|---------------------------|
| Printer Mechanism | | FTP-639MCL054 (bottom paper insertion) | |
| Mechanism with Cutter | | FTP-639MCL354 (bottom paper insertion) | |
| LSI | | FTP-629CU101 or 629CU151 | FTP-629SR201 |
| Interface Board | Parallel | FTP-629DCL014 | FTP-629DSL181* |
| | Serial (RS-232C) | FTP-629DSL034 (19.2k bps) | FTP-629DSL181* (115k bps) |
| | USB | --- | FTP-629DSL112 |
| Thermal Head Cable | Extension | --- | FTP-629Y001 |
| Interface Cable | Parallel | FTP-628Y202 | |
| | Serial | FTP-628Y302 | FTP-629Y302 |
| | USB | --- | FTP-629Y301 |
| Power supply cable | Logic | FTP-629Y401 | --- |
| | Head, motor | FTP-629Y601 | |

*: Interface is selectable by DIP switch

■ GENERAL SPECIFICATIONS

| Item | | Specifications | |
|--|---|--|--|
| Part number | | FTP-639MCL054 | FTP-639MCL354 |
| Printing method | | Thermal-sensitive 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 (12X24 dot font max.) | |
| Paper width | | 82.5mm \pm ₁ ⁰ | |
| Paper thickness | | 60 to 150 μ m | 60 to 100 μ m |
| Cutting type | | --- | full or partial |
| Printing speed | | FTP-629DCL/DSL series | FTP-629DSL100 series |
| | Text Bitmap Images | 80 mm/s (640 dotlines/s) line mode 200mm/s (1600 dotlines/s) image mode | 125mm/s (1000 dotlines/s) line mode 200mm/s (1600 dotlines/s) page mode |
| Character types | | Alphanumeric KANA International JIS Kanji (Kanji CG loaded board) | :159 :195 :approx. 6800 |
| Character, dimensions(H×W), number of characters | 24×12 dots,(3.0×1.5mm) 24×24 dots,(3.0×3.0mm) 16×8 dots,(2.0×1.0mm) 16×16 dots,(2.0×2.0mm) | 48 columns 24 columns 72 columns 36 columns | |

(Continued)

FTP-639MCL054/354

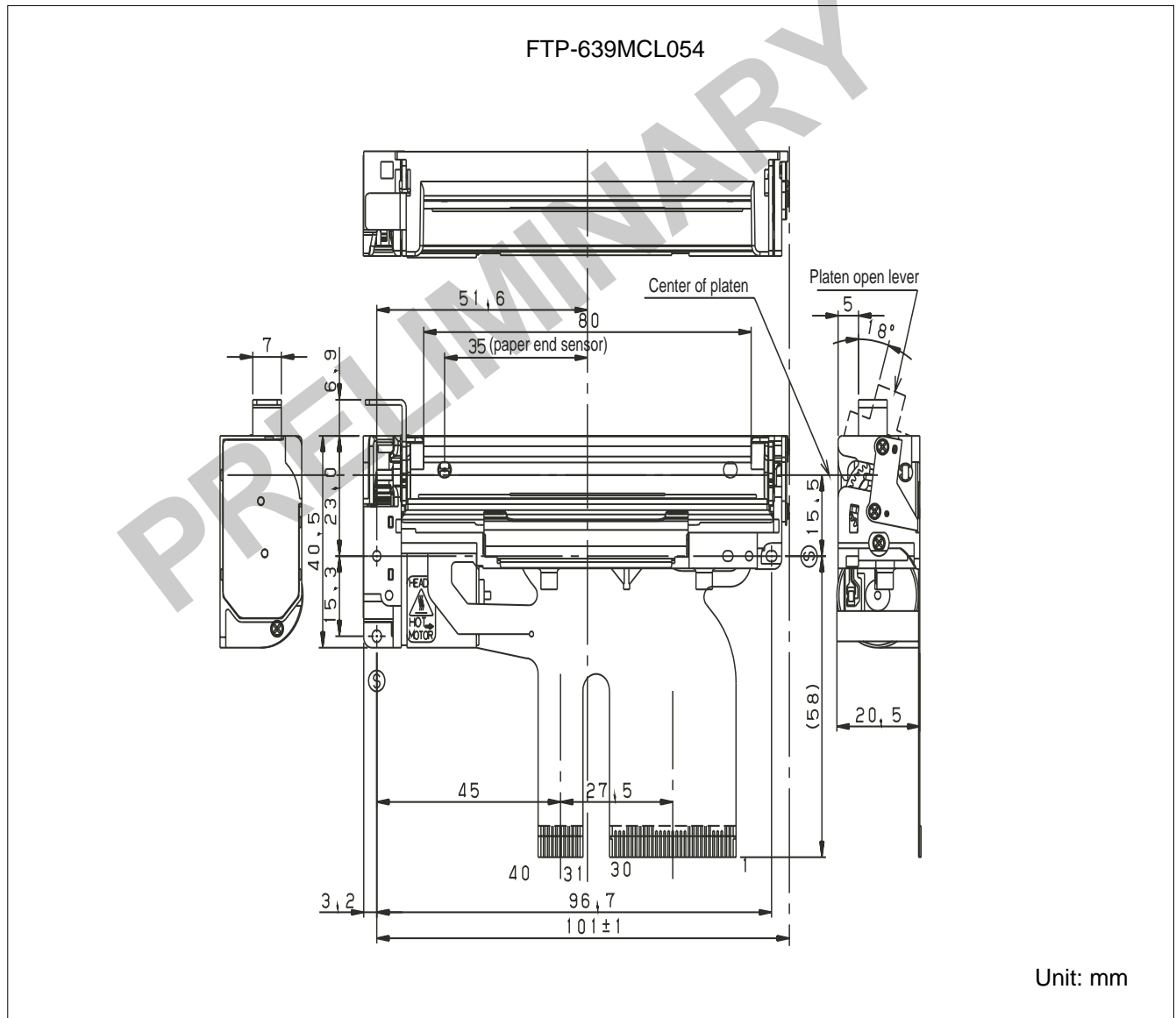
| Item | | Specifications | |
|-------------------------------------|-------------------------------|---|-----------------------------|
| Part number | | FTP-639MCL054 | FTP-639MCL354 |
| Interface | | Centronics / RS-232C standard / USB | |
| Power supply | For head | 24 VDC \pm 5% 1.9A (4A,)(24V , 25% printing ratio) | |
| | For printer motor | 24VDC \pm 5% 1A maximum | |
| | For cutter motor | --- | 24VDC \pm 5% 1.2A maximum |
| | For logic | 5VDC \pm 5% 0.2 A maximum | |
| Dimensions W x D x H | Printer Mechanism | 104.2 x 40.2 x 20.5mm | --- |
| | Printer Mechanism with cutter | --- | 109.7 x 62.5 x 37.7mm |
| | Interface board (standard) | 70 x 60 x 24 mm | |
| | Interface board (hi speed) | 95.1 x 73.6 x 18.6mm | |
| Weight | Printer Mechanism | Approximately 125g | --- |
| | Printer Mechanism with cutter | --- | Approximately 320g |
| | Interface board (standard) | Approximately 30g | |
| | Interface board (hi speed) | Approximately 45g | |
| Life | Head | Pulse durability: 1×10^8 pulse/dot (using Fujitsu Components' standard driving method) Wear resistance: 100 km (at 12.5% print ratio) | |
| | Cutter | --- | 500,000 cuts |
| Environmental conditions | Operating temperature | -25°C to +70°C (Guarantee) | -10°C to +55°C (Guarantee) |
| | Operating humidity | 20 to 85% RH (no condensation) | |
| | Storage temperature | -40°C to +85°C (excluding paper) | -20°C to +60°C |
| | Storage humidity | 5 to 95% RH (no condensation) | |
| Detection | Head temperature | By thermistor | |
| | Paper out/Mark detect | By photointerrupter | |
| | Head release | By slide switch | |
| | Cutter position | By microswitch (inside cutter) | |
| Recommended thermal sensitive paper | High sensitivity paper | TF50KS-E4 (Nippon paper) | |
| | Standard paper | TF60KS-E (Nippon paper), FTP-030P0104 (80mm), PD150R (Oji paper), FTP-030P0701 (80mm) | |
| | Medium term paper | TP60KS-F1 (Nippon paper), FTP-030P0102(80mm), PD170R (Oji paper) P220VBB-1 (Mitsubishi paper) PD160R-N (Oji paper) | |
| | Long term paper | AFP-235 (Mitsubishi paper) TP50KJ-R (Nippon paper) | |

FUNCTION

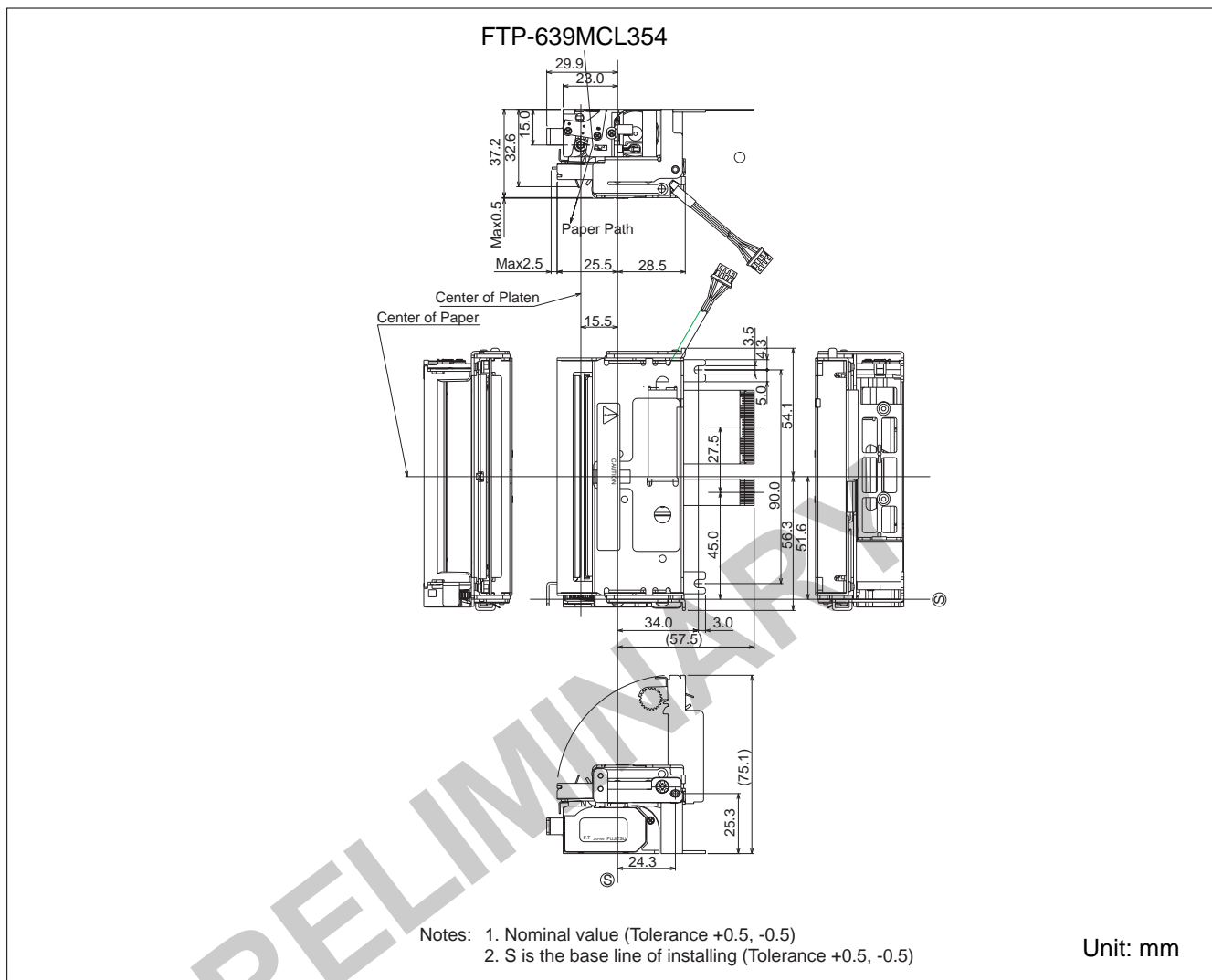
| ITEM | | ITEM | |
|------|--|------|----------------------------------|
| 1. | Test printing | 8. | Cutter trouble detection |
| 2. | Paper-out detection | 9. | Motor power save |
| 3. | Paper near end detection | 10. | Mark detection |
| 4. | Head-up detection | 11. | MCU trouble detection |
| 5. | 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

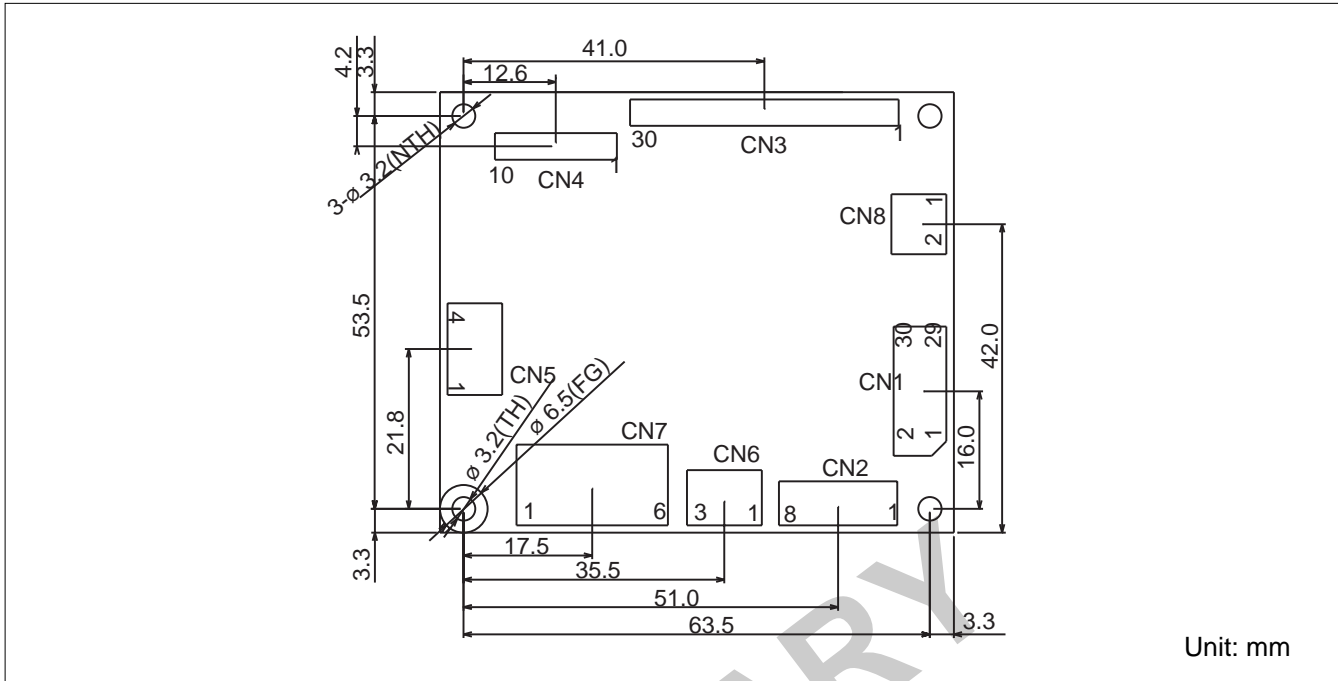
1. Printer mechanism



Printer with cutter



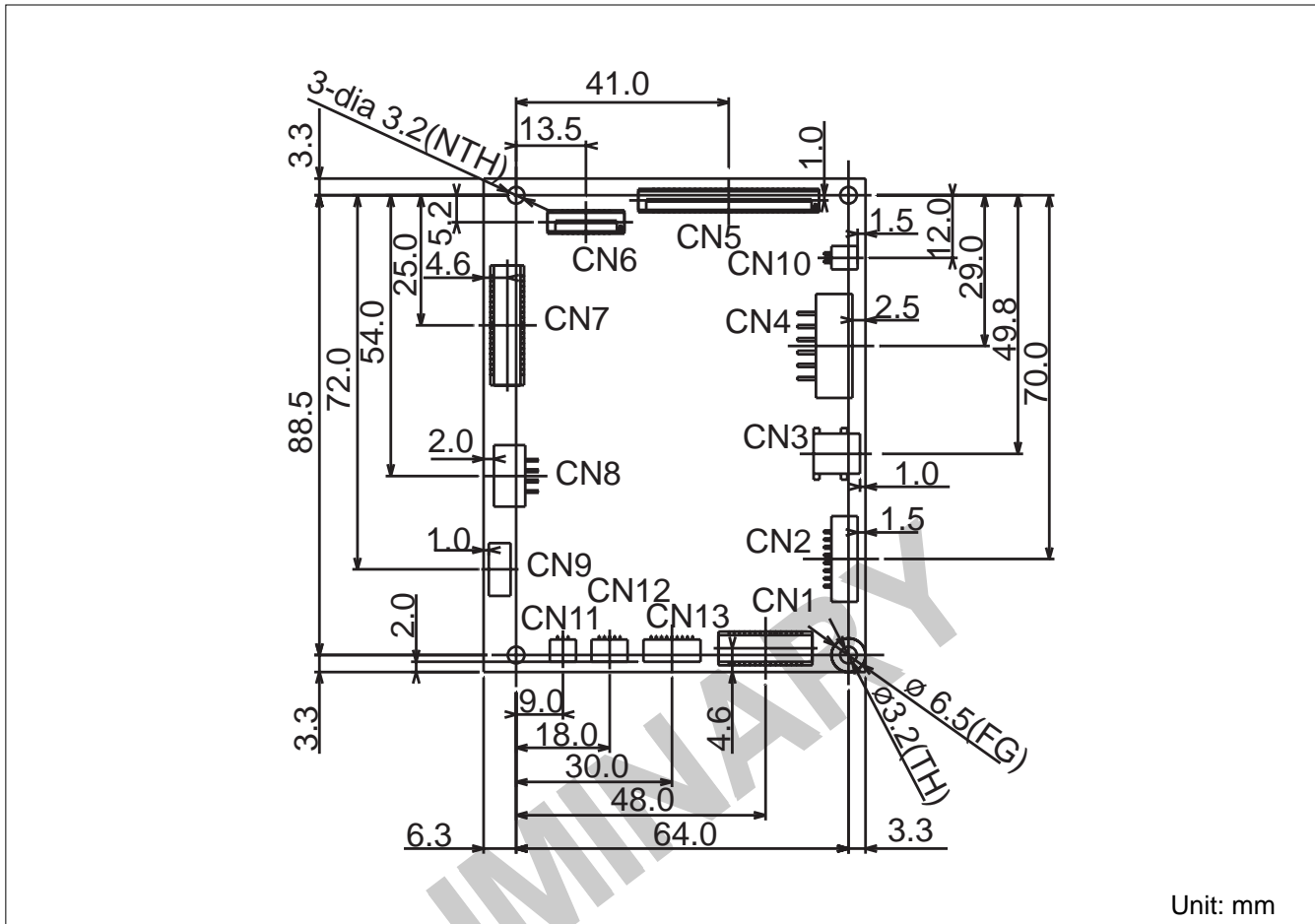
Interface board - FTP-629DCL/DSL0xx



Connectors on Control Board - FTP-629DCL/DSL0xx

| No. | Name | Function |
|-----|----------------------------|-------------------------------------|
| CN1 | Centro I/F Connector | Connection for Centronics Interface |
| CN2 | RS-232C I/F Connector | Connection for RS-232C Interface |
| CN3 | Thermal Head Connector | Connection for Thermal Head (FPC) |
| CN4 | Printer Motor Connector | Connection for Printer Motor (FPC) |
| CN5 | Cutter Connector | Connection for Paper Cutter |
| CN6 | Logic Power Connector | Connection for +5V Power Supply |
| CN7 | Head Motor Power Connector | Connection for +24V Power Supply |
| CN8 | Near End Sensor Connector | Connection for Near End Sensor |

3. Control Board - FTP-629DCL/DSL100 Series



Connectors on Control Board - FTP-629DSL100 Series

| No. | Name | Function | Remark |
|------|-----------------------------------|---|--------|
| CN1 | Centro I/F Connector | Connection for Centronics Interface | |
| CN2 | RS-232C I/F Connector | Connection for RS-232C Interface | |
| CN3 | USB I/F Connector | Connection for USB Interface | |
| CN4 | Power Connector | Connection for +24V Power Supply | |
| CN5 | Thermal Head Connector | Connection for Thermal Head (FPC) | *1 |
| CN6 | Printer Motor Connector | Connection for Printer Motor (FPC) | *1 |
| CN7 | Head/Motor Connector | Connection for Thermal Head/Printer Motor | *1 |
| CN8 | Cutter Connector | Connection for Paper Cutter | |
| CN9 | Conveyance Motor Connector | Connection for Conveyance Motor | |
| CN10 | Near End Sensor Connector | Connection for Near End Sensor | |
| CN12 | Mecha-Tilte/Mark Sensor Connector | Connection for Mecha-Tilte/Mark Sensor | |
| CN13 | Conveyance Motor Connector | Connection for Conveyance Motor | |

*1: When CN5 and CN6 are mounted, CN7 is not mounted. When CN7 is mounted, CN5 and CN6 are not mounted.

■ CONNECTOR PIN ASSIGNMENT OF PRINTER MECHANISM (FPC)

1. Thermal head control circuit side

Part number : 52610-3090 (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 | 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

Connector on circuit side : 52610-1090 (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/A | I/O | Motor coil excitation $\overline{\text{A}}$ |
| 5 | MTA | I/O | Motor coil excitation A | 6 | MT/B | I/O | Motor coil excitation $\overline{\text{B}}$ |
| 7 | MTB | I/O | Motor coil excitation B | 8 | PHK | - | Paper out sensor cathode |
| 9 | VSEN | - | Power for paper sensor | 10 | $\overline{\text{PHE}}$ | O | Paper out sensor emittor |

3. Cutter

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

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

■ INTERFACE COMMAND OPTIONS

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

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