FUJITSU Component Thermal Printer
FTP-639USL100/200 series

Fujitsu 3" 24V Driving Flexible Module Printer (FMP)

Overview

The FTP-639USL Series is 24V driven receipt printer unit with cutter for 3 inch wide paper. The unit has our high-speed FTP-639MCL mechanism, cutter and control board, with an integrated paper feed and built-in paper guide section.

The receipt printer unit is most suitable for applications such as Kiosk, ATM, receipt, label, and ticket issuing printers for various other equipment.

Features

- External presenter option
- Ultra high-speed (200mm/sec.)
- Medium duty united (mounting is easy)
- Auto cutter included
- Paper near-end detection function
- Up to 10-inch paper roll diameter
- Rear paper auto loading
- Paper jam detection
- Prints 2-D barcodes

FTP-639USL100 series
horizontal, without presenter

FTP-639USL100 series
vertical, without presenter

FTP-639USL200 series
with presenter

■ Designation

Item		Part Number	Comment
Printer module interface	USB (ver. 2.0)	FTP-639USL103	without presenter and with paper arm
	Serial (RS-232C) / USB (ver. 2.0)	FTP-639USL104	
	USB (ver. 2.0)	FTP-639USL113	without presenter and without paper arm
	Serial (RS-232C) / USB (ver. 2.0)	FTP-639USL114	
	USB (ver. 2.0)	FTP-639USL201	with presenter and with paper arm
	Serial (RS-232C) / USB (ver. 2.0)	FTP-639USL202	
Interface cable	USB interface	FTP-629Y301	
	RS-232C Interface	FTP-629Y302	
	Power for logic, head, motor	FTP-629Y603	

■ Specifications

Item			Specifications		
Part number			FTP-639USL103/104	FTP-639USL113/114	FTP-639USL201/202
Printing method			Thermal-sensitive line dot method		
Dot structure			576 dots/line		
Dot pitch (horizontal)			0.125 mm (dot density:8 dots/mm)		
Effective printing area			72 mm		
Paper	Width		80 mm (standard setting) 82.5 mm paper is available with optional paper guide)		
	Thickness		60 to 100 µm (depending on paper specifications)		
	Diameter		Φ150 mm (standard setting, inner diameter Φ 25.4 mm) *1		
Cutting type			Full or partial	Full or partial	Full
Power supply			24VDC ±10% approx. 5.7A*2		24VDC ±10% approx. 7A*2
Printing speed			Max. 200 mm/s (1600 dotlines/s) (High speed batch image printing, at 25°C)		
Printing digit number			Max. 72 (at 8 x 16 one byte characters)		
Printing specifications	Printing mode		Line mode		
	Character	Types	Alphanumeric KANA: 159, Registered: 94, International: 195, OCR I: 103, OCR II: 23, OCR IV: 103, JIS KANJI: approximately 6800, Extended: 11		
	Barcode types	1 dimension	UPC-A, UPC-E, JAN(EAN)13, JAN(EAN)8, CODE39, ITF, CODABAR, CODE128		
		2 dimension	QR, PDF417		
Character composition, dimensions (H x W), Number of characters			24 x 12 dots (3.0 x 1.5 mm), 48 columns 24 x 24 dots (3.0 x 3.0 mm), 24 columns 16 x 8 dots (2.0 x 1.0 mm), 72 columns 16 x 16 dots (2.0 x 2.0 mm), 36 columns OCR I: 24 x 40, 24 columns OCR III: 24 x 45, 24 columns OCR IV: 36 x 60, 16 columns Extended: 24 x 48, 24 columns		
Interface			Serial (RS232C), USB		
Power supply	For head		24VDC ±5%, voltage Current: average*4 ( ): Peak 12.5% printing ratio 1.0 (2.0) A (at 200 mm/s printing speed,1 division image) 0.8 (1.1) A (at 125 mm/s printing speed, 2 divisions) 0.6 (1.0) A (at 80 mm/s printing speed, 2 divisions) 0.6 (2.0) A (at 80 mm/s printing speed, automatic divison)		
	For printer motor		24VDC ±5%, 1.3 A maximum, 1.0 A average		
	For presenter		24VDC ±5%, 1.3 A maximum, 1.0 A average		
	For cutter		24VDC ±5%, 1.4 A maximum		
	For logic		5VDC ±5%, 0.2 A maximum (converted from 24V)		
Dimensions (WxDxH)	Arm vertical		112.6 x 96.4 x 75.1 mm	112.6 x 94.5 x 75.1	123.0 x 145.2 x 75.1 mm
	Arm horizontal		112.6 x 215.7 x 99.6 mm*3		123 x 264.5 x 99.6 mm)*3
Presenter (receipt length)			n/a	n/a	65 to 254 mm
Weight (approximately, excluding paper)			990 g (with arm)	760 g (without arm)	1200 g (with arm & presenter)

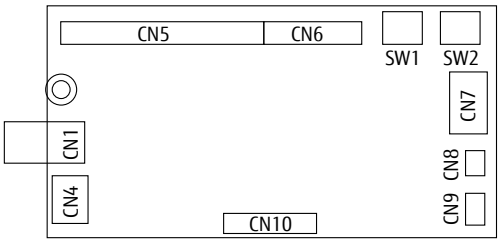
*1: Φ 83 mm paper can be used by changing paper feed shaft. Max. Φ 254 mm (10-inch) paper can be used by using a bigger diameter paper holder.
*2: Super high speed mode, batch printing, at printing rate 25%
*3: Excludes protrusions (screws, dumper, etc.) and cables
*4 : There may be exceptions

Item			Specifications		
Part number			FTP-639USL103/104	FTP-639USL113/114	FTP-639USL201/202
Expected life	Head	Pulse resistance	100 milion pulse/dot (using Fujitsu's standard driving method)		
		Wear resistance	100 km (at max. 12.5% printing ratio, with PD150R (Oji) paper		
	Cutter		1, 000, 000 cuts with PD150R (Oji) paper, cutting frequency min. 3s/cut, at 20°C ± 5°C		
Environmental conditions	Operating temperature		-20°C to +60°C*5	-20°C to +60°C*5	0°C to +50°C*5
	Operating humidity		10 to 85% RH (no condensation)		
	Storage temperature		-25°C to +65°C	-25°C to +65°C	-20°C to +60°C
	Storage humidity		5 to 90% RH (no condensation)		
Detection	Head temperature		By thermistor (applied energy control, abnormal temperature detection)		
	Paper out/Mark detect		By photointerrupter		
	Platen open		By photointerrupter		
	Near end paper		By mechanical switch		
Recommended thermal sensitive paper	Standard paper		TF-60KS-E (Nippon paper), FTP-020P0104 (58mm), PD150R (Oji paper), FTP-020P0701 (58mm)		
	Medium term paper		TF-60KS-F1 (Nippon paper), FTP-020P0102 (58mm) PD170R (Oji paper) P220VBB-1 (Mitsubishi paper)		
	Long term paper		PD160R-N (Oji paper)		
Paper diameter			Max. 150 mm		

*5 : Color density is guaranteed: +5°Cto +40°C with standard paper

■ Dimensions

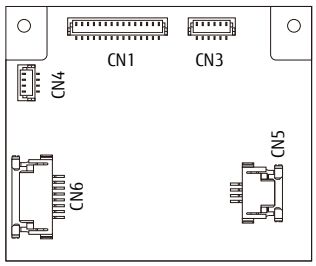
- External dimension chart of the control board



- Connector types of control board for printer and cutter

No.	Name	Function	Remarks
CN1	Power connector	Connect +24V power supply	-
CN2	RS-232 connector	Connect RS-232 interface	depends on model
CN4	USB interface connector	Connect USB interface	depends on model
CN5	Thermal head connector	Connect thermal head	-
CN6	Paper feed motor	Connect paper feed motor	-
CN7	Cutter motor connector	Connect cutter motor	-
CN8	Near end sensor connector	Connect near end switch or sensor	-
CN9	External sensor connector	Connect external sensor	optional
CN10	Presenter connector	Connect control board	depends on model

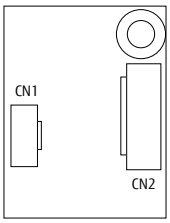
- Presenter control board dimension



- Connector types of control board for presentor

No.	Name	Function	Remarks
CN1	Control board connector	Connect control to board	-
CN3	Paper sensor connector	Connect to paper feed sensor	-
CN5	Paper feed motor connector	Connect to paper feed motor	-
CN6	Motor and sensor connector	Connect to motor and sensor	-

- External view of the RS-232C interface circuit board

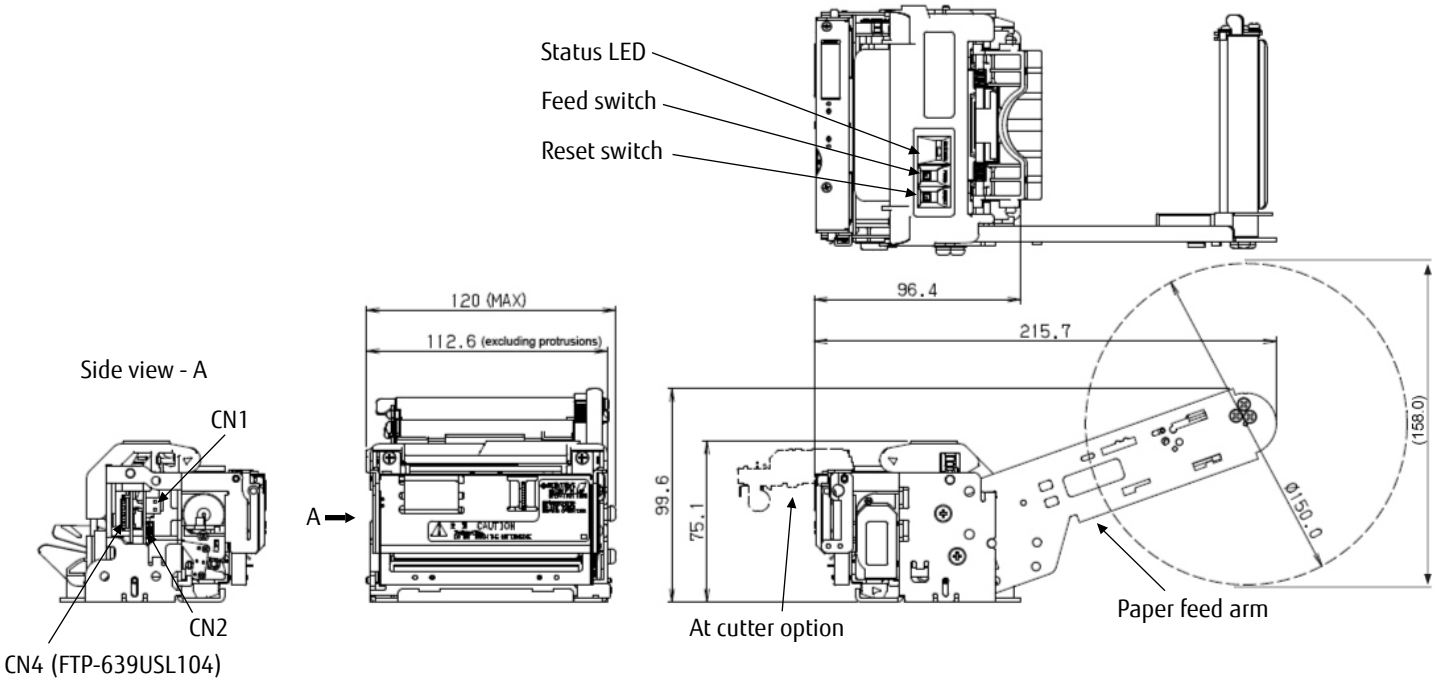


- RS-232C interface connector types

No.	Name	Function	Remarks
CN1	Internal connection connector	Connector for internal connection	-
CN2	RS-232C interface connector	Connector for connecting RS-232C interface	-

■ Dimensions

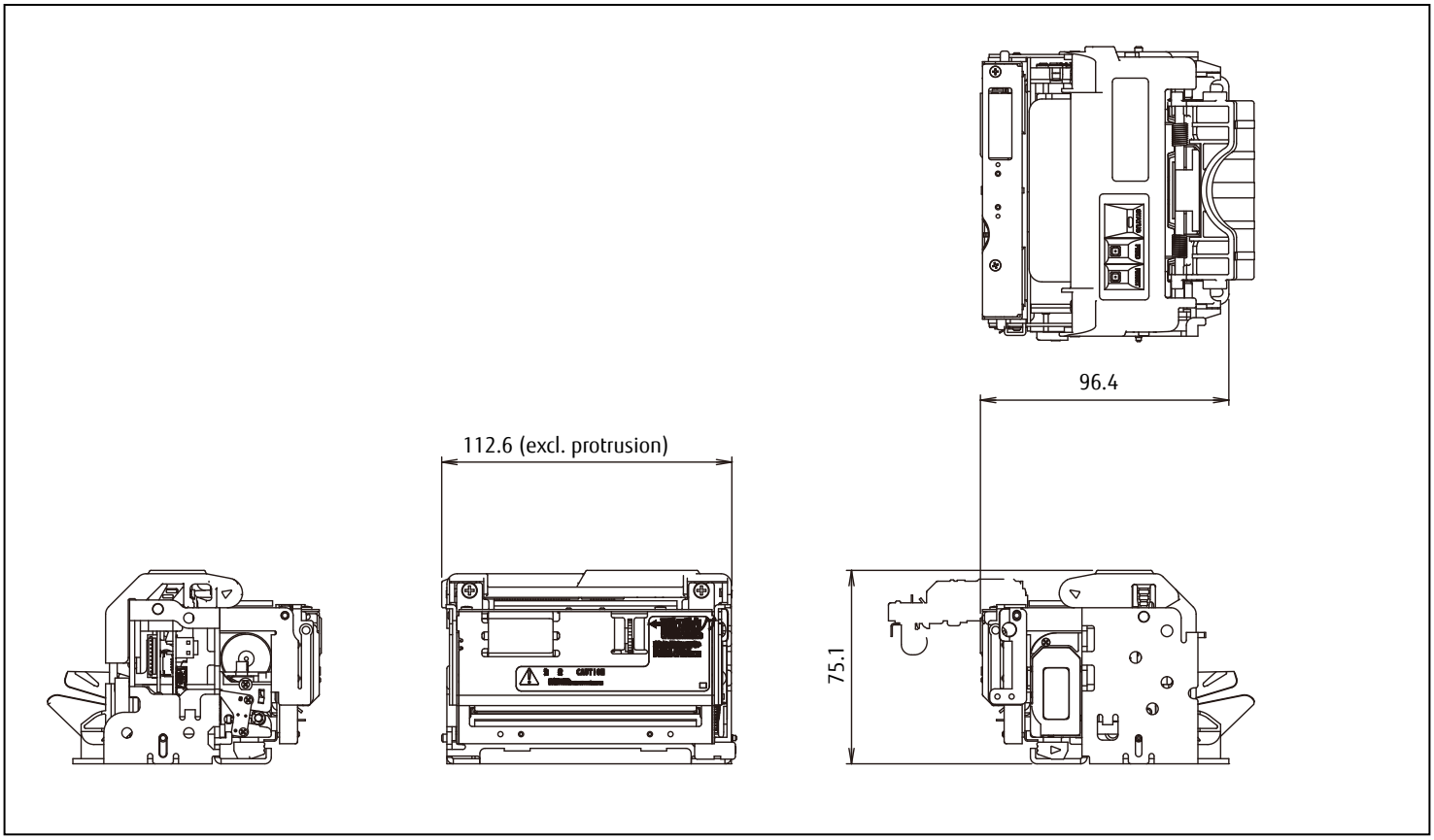
- Printer without presenter and standard arm - FTP-639USL103/104



Unit: mm
Excluding lever and protrusions. ( ) is reference value.

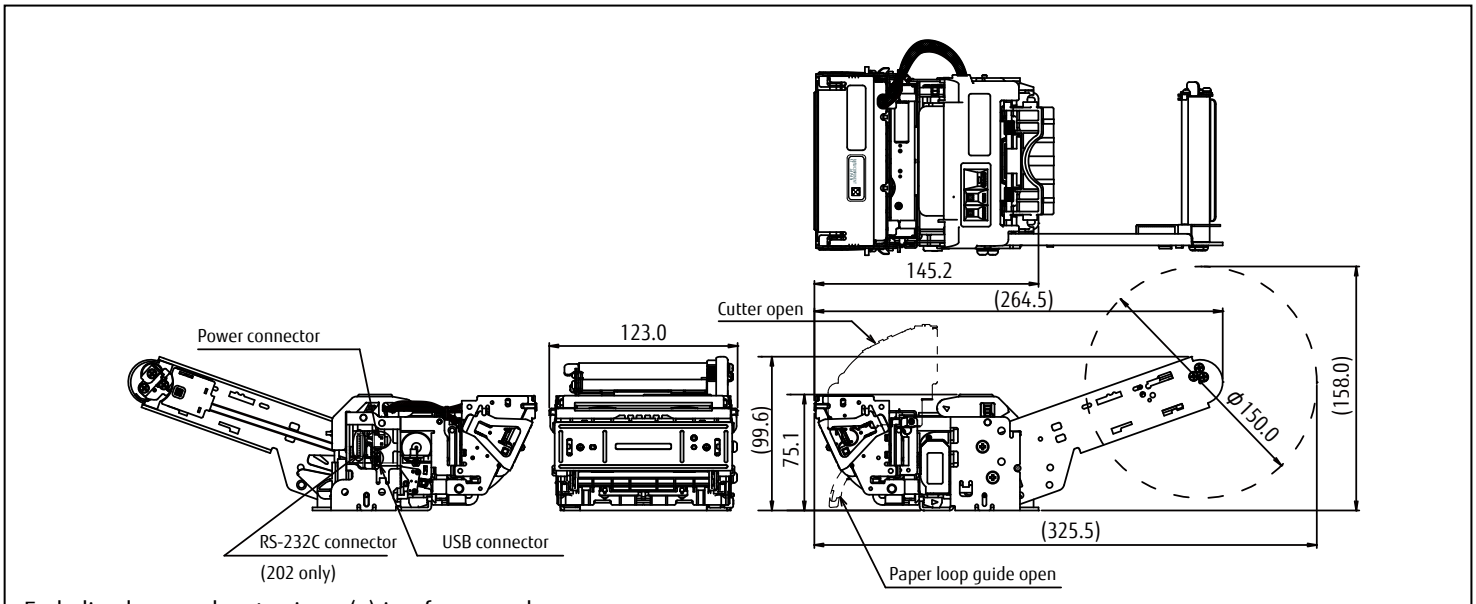
■ Dimensions

- Modular printer without presenter and standard paper roll - FTP-639USL113/114



■ Dimensions

- Modular printer with presenter - FTP-639USL201/202



Excluding lever and protrusions. ( ) is reference value.

■ Connector specifications

No.	Name
CN1	Power connector
CN2	USB interface connector
CN4	RS-232C interface connector

■ Connector pin assignment

• CN1: Power connector

Connector used in the printer: B2PS-VH(LF)(SN) (JST)
Recommended mating connector: VHR-2 (JST)

Pin no.	Signal	I/O	Description	Pin no.	Signal	I/O	Description
1	24V	I	Power supply	2	GND	-	Power ground

■ Connector pin assignment

• CN2: USB interface connector

Connector used in the printer: 51387-0530 (Molex)
Recommended mating connector: UX40-MB-5P (Hirose)

Pin no.	Signal	I/O	Description	Pin no.	Signal	I/O	Description
1	VBUS	I	Bus power supply	2	D-	I/O	Differential data input/output D-
3	D+	I/O	Differential data input/output D+	4	NC	-	Not connected
5	GND	-	Signal ground				

■ Connector pin assignment

• CN4: RS-232C interface connector

Connector used in the printer: S9B-ZR-SM4A-TF (LF) (JST)
Recommended mating connector: ZHR-9 (JST)

Pin no.	Signal	I/O	Description	Pin no.	Signal	I/O	Description
1	FG	-	Frame ground	2	RXD	I	Incoming data
3	TXD	O	Outgoing data	4	DTR	O	Request to send data (data terminal ready)
5	GND	-	Signal ground	6	DSR	I	Consent to send data (data set ready)
7	/STCLIN	I	Detection setting signal	8	/INPRM	I	Initialization requirement signal
9	/ATF	I	Paper feed signal				

· Please note that connectors used in this printer are subject to change without prior notice.
· Please confirm compatability when using equivalent mating connector(s).

■ Host interface specifications

Type	Specification
USB V2.0	Data transmission speed: Full speed mode 12Mbps Data input/output format: Differential input/output
RS-232C	Data transmission speed: 19,200 (460,800; 230,400; 155,200; 38,400; 9,600) bps. Setting can be changed with command Synchronization/transmission method: asynchronous method, full-duplex transmission Flow control: RTS(DTR)/CTS(DSR) signal or XON/XOFF. Can be changed with command Input/output level: RS-232C level

■ Connector pin assignments of printer mechanism (FPC)

No	Signal	Content
1	HT	Moves print position to the next tab
2	LE	Line fee
3	FF	Feeds forms (new page)
4	ESC EM+n	Setting the amount of the feeding at automatic paper feed
5	ESC RS	Sets reverse printing
6	ESC US	Resets reverse printing
7	ESC SP+n	Character spacing setting
8	ESC ! +n	Sets print mode
9	ESC % +n	External registration character specification/cancellation
10	ESC & +y+c1+c2+x+d1to dn	External registration character definition
11	ESC *+m+n1+n2+d1 to dk	Sets bit map image
12	ESC - +n	Underline setting
13	ESC 2	Sets 1/6 inch line feed length
14	ESC 3+n	Sets the fine line feed length
15	ESC ?+n	External registration character deletion
16	ESC @	Printer initialization
17	ESC A+n	Sets the space between the line
18	ESC C+n	Set the page length by character line
19	ESC D+n1 to nk+NUL	Sets the tab position
20	ESC J+n	Feed paper in forward direction and prints
21	ESC K+n	Reverse paper feed
22	ESC R+n	Selects international character
23	ESC V+n	Right rotation 90° specification / cancellation
24	ESC X+m+n	Setting the turning time of the motor excitation
25	ESC c+1+n	Sets internal processing
26	ESC c+5+n	Panel switch enable/disable setting
27	ESC d+n	Printing and n-line feeding
28	ESC e+n	Prints and reverse feed n-lines
29	ESC s+n	Sets printing speed
30	ESC t+n	Character code table selection
31	ESC {+n	Sets/resets upside down printing
32	ESC DEL+n	Platen switch release
33	FS !+n	Kanji printing mode specification
34	FS &	Kanji printing mode collective specification
35	FS - + n	Kanji underline specification /cancellation
36	FS *+ m+n1+n2+d1 to dk	High speed collective image printing specified
37	FS .	Kanji printing mode cancellation
38	FS 2+c1+c2+d1 to dn	External character definition
39	FS 9+n	Sets the detection functions
40	FS C+n	Kanji code system selection

No	Signal	Content
41	FS E+n	Correction of impressed energy
42	FS S+n1+n2	Kanji spacing setting
43	FS W+n	Kanji double height and width printing specification/cancellation
44	FS r+n*1	Parameter transmission
45	GS !+n	Character size specification
46	GS & +m + x + y1 + y2 + d1 to dn	Registered bit image definiton
47	GS '+m+n	Registered bit image printing
48	GS (+E+L1+L2+fn+d1 to d9)	RS-232C communication setting*1
49	GS <	Line feeds to the next mark
50	GS A+m+n	Sets the line feed length after mark detection
51	GS E+n	Sets the print quality
52	GS L+n1+n2	Left margin position setting
53	GS V+m+n	Sets 1/6 inch line feed length
54	GS W+n1+n2	Printing area width setting
55	GS a+n	Automatic status transmission setting*1
56	GS e+m+n	Sets bar code width
57	GS h+n	Sets bar code height
58	GS k+m+n+d1 to dn	Bar code printing
60	GS k+m+k1+k2+k3+k4+p+d1 to dn+NUL	Print 2-barcode (QR)
61	GS k+m+k1+k2+k3+k4+n1+nh+d1 to dn	Print 2D barcode (PDF417)
62	GS s	Paper check*2
63	GS t+n	Paper exit*2
64	GS w+n	Sets bar code length
65	GS x+n	Paper retract*2
66	GS y	Preparation for paper exit*2
67	GS z	Retracting paper*2

*1: These commands are valid with FTP-629DSL350 series serial interface
*2: FTP-639USL201/202 only

■ Options

- Cables

Type		Part Number	Connector	Length
Interface cable	USB	FTP-629Y301	USB A - USB miniB	Approx. 1m (39.4 inches)
	RS-232C	FTP-629Y302	ZHR-9 (JST) Connector is assembled at one side (printer side)	Approx. 0.5m (19.4 inches)
Power supply cable		FTP-629Y603	VHR-2 (JST) Connector is assembled at one side (printer side)	Approx. 0.5m (19.4 inches)

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