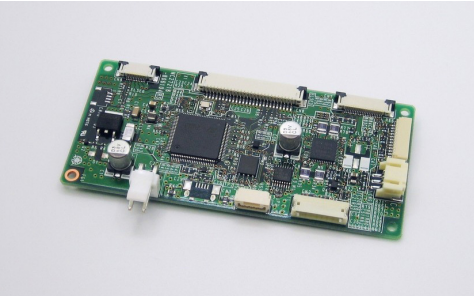
FCL Components Thermal Printer
FTP-x3GDSL483-R series
Interface Board

FCL Components interface board for the FTP-x3GMCL483-R / #03-R series

Features

- USB (full speed) and RS-232C serial interface
- Equipping thermal history control (one stage)
- Supports detection of multiple sensors
- Windows® 7, 8, 10 compatible



FTP-x3GDSL483-R

Part numbers

Part number	Supply voltage	Interface type	Mechanism part numbers
FTP-63GDSL483-R	24VDC	USB/RS-232C	FTP-63GMCL483-R FTP-63GMCL483#03-R
FTP-83GDSL483-R			FTP-83GMCL483-R FTP-83GMCL483#03-R

Interface specifications at host side

Item	Specifications
RS-232C	Data speed: 19,200 (480,800 / 230,400 / 38,400 / 9,600) bps* Synchronous method: Asynchronous, full-duplex communication Handshake: RTS (DTR) / CTS (DSR) control, XON/XOFF control* Output level: RS-232C level
USB Ver. 2.0	Transmission rate: Full speed, (12Mbps max.) Data input/output method: Differential

*: Changeable setting to (***) by command

■ Specifications

Item	Specifications
Dimension	95 x 45 x 17.2 mm (W x D x H)
Weight	Approx. 19g

■ Print/paper feed specifications

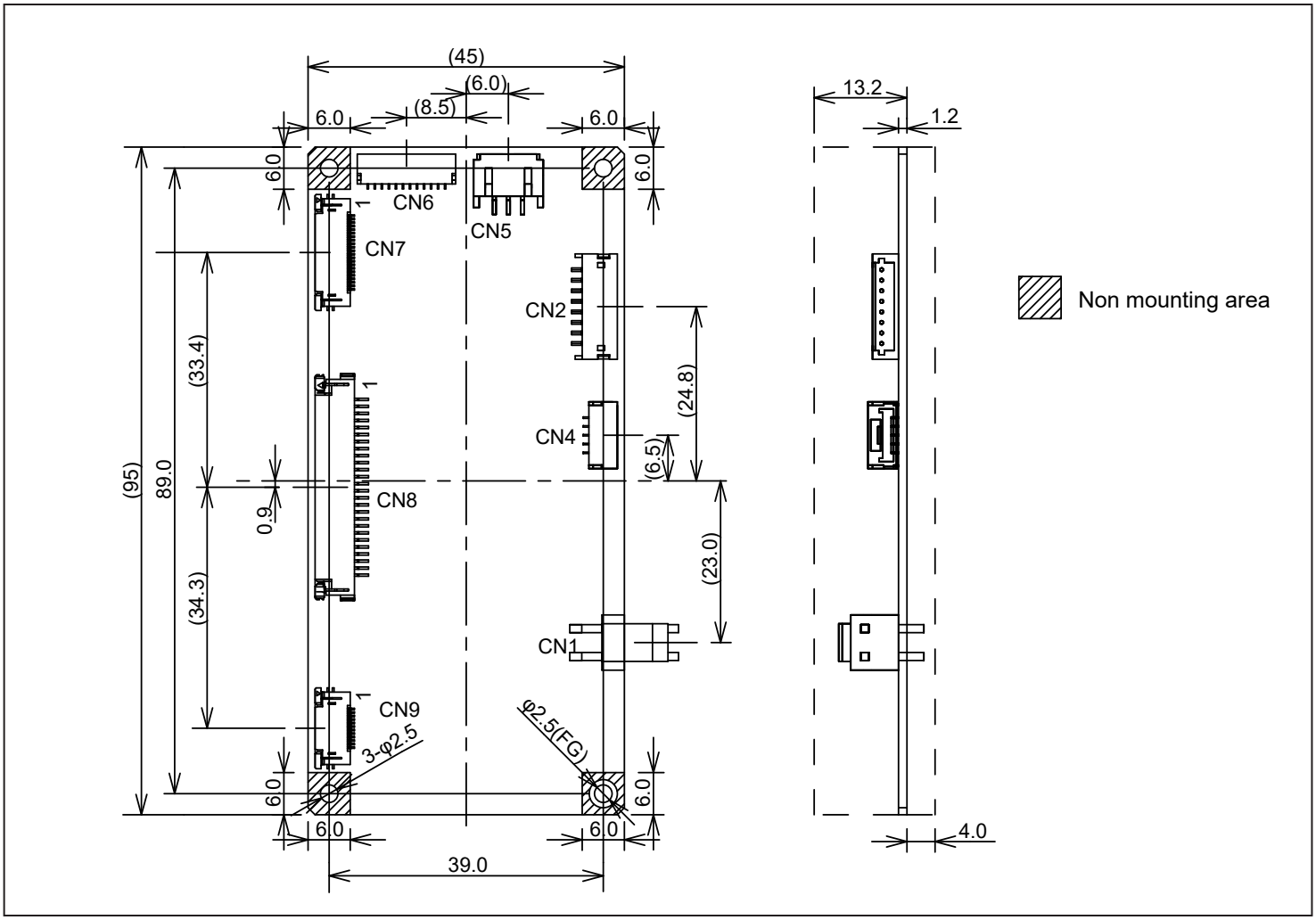
Item			Specifications	
Part number			FTP-63GDSL483-R	FTP-83GDSL483-R
Power supply			24VDC ±10%	
Printing speed			350mm/s max.	200mm/s max.
Printing specifications	Printing mode		Line mode, page mode	
	Character types		Kanji, non-kanji: 6,879 Traditional Chinese: 13,503 Alphanumeric and katakana: 159 International and special characters: 195 OCR: 229 Enlarged characters: 12 External characters: 94 Thai cold 18: 128	
	Character structure *1		8 x 16 dots, 12 x 24 dots, 16 x 16 dots, 24 x 24 dots, 24 x 40 dots, 24 x 48dots, 36 x 60dots	
	Barcode	1D	UPC-A, UPC-E, JAN(EAN)13, JAN(EAN)8 , CODE39 , ITF, CODABAR, CODE128, GS1 DataBar-14, GS1 DataBar-14 Transcated	
		2D	QR Code, PDF417, GS1 DataBar-14 Stacked, GS1 DataBar-14 Omnidirectional, GS1 DataBar Expanded	
	Bit image	Size	Horizontal: 8 to 640 dots Vertical: 1 to 1,023 dots	Horizontal 8 to 960 dots, Vertical 1 to 1,023 dots
		Modification	Black-white reversed	
	Download image	Size	Horizontal: 8 to 640 dots, Vertical: 1 to 512 dots	Horizontal: 8 to 960 dots, Vertical: 1 to 512 dots
		Modification	Black-white reversed, double width size, double height size, quadruple size, up-side down	
Detection function			Mark, paper, near end, thermal head irregularity, power supply irregularity, platen open, cutter irregularity, transmission data irregularity, hardware irregularity, MCU operation irregularity, thermal head's thermal runaway, thermal head's cable disconnection,non-volatile memory irregularity, RAM irregularity	
Environment	Operating temperature/ humidity		0 to +50°C (guarantee: +5 to +40°C with FCL Components recommended thermal paper) 20 to 85%RH (No condensation)	
	Storage temperature/ humidity		-20 to +60°C (excluding paper), 5 to 90%RH (no condensation)	
Mean time between failure (MTBF)			500,000 hours	

*1: Depending on embedded characters

■ Cables (optional)

Item		Part number	Length
Interface cable	USB	FTP-62GY311#01-R	1m
	RS-232C	FTP-628Y302-R	0.5m
Power supply cable		FTP-629Y603-R	0.3m

■ Dimensions



■ Control circuit board and connector types

Symbol	Name	Symbol	Name
CN1	Power supply connector	CN6	Back side mark sensor connector
CN2	RS-232C I/F connector	CN7	Motor sensor connector
CN3	USB mini-B connector	CN8	Thermal head connector
CN4	USB nylon connector with lock	CN9	Cutter connector
CN5	Near end connector		

■ Connector pin assignment

- Power supply connector (CN1)

Mating connector part number: VHR-2N (J.S.T) or equivalent
Recommended cable: AWG#16, cable length 300mm maximum

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	V_P	I	Power input	2	GND	-	Ground

■ RS-232C connector

- RS-232C connector (CN2)

Mating connector part number: ZHR-8 (J.S.T) or equivalent
Recommended cable: AWG#28 to #32, cable length 500mm maximum

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	RXD	I	Receive data signal	2	TXD	O	Transmit data signal
3	RTS (DTR)	O	Request to send signal	4	GND	-	Signal groud
5	CTS (DSR)	I	Clear to send signal	6	/SIN	I	Detection function setting signal
7	/RST	I	Initialization request signal	7	/ATF	I	Paper feed signal

■ USB mini-B connector

- USB mini-B connector (CN3)

Mating connector part number: USB mini-B type
Recommended cable: Cable conforming to USB standard (V2.0 full speed)

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	VBUS	I	VBUS signal	2	D-	I/O	D- signal
3	D+	I/O	D+ signal	4	NC	-	Not connected
5	GND	-	Ground signal	Shell	FG	-	Frame ground

■ USB Nylon connector with lock

- USB Nylon connector with lock (CN4)

Mating connector part number: GHR05V-S (J.S.T.) terminal SSHL-002GA1-P0.2 (Au) or equivalent
Recommended cable: AWG #26 to #30, cable length 1,000mm maximum

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	VBUS	I	VBUS signal	2	D-	I/O	D- signal
3	D+	I/O	D+ signal	4	GND	-	Ground signal
5	FG	-	Frame ground				

■ Near end connector

Near end connector (CN5)
Mating connector part number: PHR-3 (J.S.T.) or equivalent
Recommended cable: AWG #28 to #32, cable length 300mm maximum

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	NVCC	O	Near end sensor power	2	/NES	I	Near end signal input
3	GND	-	Near end signal ground				

■ Back side mark sensor connector

- Back side mark sensor connector (CN6)
  Mating connector part number: SHR-12V-S-B (J.S.T.) or equivalent
  Recommended cable: AWG #28 to #32, cable length 500mm maximum

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	MK1_A	O	Back side sensor 1 Anode	2	MK1_K	I	Back side sensor 1 Cathode
3	MK1_E	I	Back side sensor 1 Emitter	4	MK1_C	O	Back side sensor 1 Collector
5	MK2_A	O	Back side sensor 2 Anode	6	MK2_K	I	Back side sensor 2 Cathode
7	MK2_E	I	Back side sensor 2 Emitter	8	MK2_C	O	Back side sensor 2 Collector
9	MK3_A	O	Back side sensor 3 Anode	10	MK3_K	I	Back side sensor 3 Cathode
11	MK3_E	I	Back side sensor 3 Emitter	12	MK3_C	O	Back side sensor 3 Collector

- Back side mark sensor connector (CN7)
  Mounting connector part number: IMSA-9631S-22Y800 (IRISO) or equivalent
  Contact: 0.5mm pitch, upper side, Au plating
  Recommended cable: Please refer to mechanism specification

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	SW	I	Platen open detection switch	2	SW	O	Platen open detection switch
3	MTM	I	Motor thermistor	4	MTM	O	Motor thermistor
5	MT_B	I/O	Paper motor B phase	6	MT_B	I/O	Paper motor B phase
7	MT_/B	I/O	Paper motor /B phase	8	MT_/B	I/O	Paper motor /B phase
9	MT_A	I/O	Paper motor A phase	10	MT_A	I/O	Paper motor A phase
11	MT_/A	I/O	Paper motor /A phase	12	MT_/A	I/O	Paper motor /A phase
13	VSEN	-	Paper detection sensor power	14	PHK3	I	Paper detection sensor 3 Cathode
15	PHE3	I	Paper detection sensor 3 Emitter	16	PHC3	O	Paper detection sensor 3 Collector
17	PHK2	I	Paper detection sensor 2 Cathode	18	PHE2	I	Paper detection sensor 2 Emitter
19	PHC2	O	Paper detection sensor 2 Collector	20	PHK1	I	Paper detection sensor 1 Cathode
21	PHE1	I	Paper detection sensor 1 Emitter	22	PHC1	O	Paper detection sensor 1 Collector

■ Thermal head connector

- Thermal head connector (CN8)

  Mounting connector part number: IMSA-9616S-26Y800 (IRISO) or equivalent

  Contact: 1.0mm pitch, upper side, Au plating

  Recommended cable: Please refer to mechanism specification

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	VH	-	Head drive power	2	VH	-	Head drive power
3	VH	-	Head drive power	4	VH	-	Head drive power
5	CLK	O	Head clock	6	/LAT	O	Head data latch
7	/STB2	O	Head strobe 2	8	/STB1	O	Head strobe 1
9	TM	I	Head thermistor	10	GND	-	Ground
11	GND	-	Ground	12	GND	-	Ground
13	GND	-	Ground	14	GND	-	Ground
15	GND	-	Ground	16	GND	-	Ground
17	GND	-	Ground	18	GND	-	Ground
19	VDD	-	Head logic power	20	/STB4	O	Head strobe 4
21	/STB3	O	Head strobe 3	22	DO	O	Head data in
23	VH	-	Head drive power	24	VH	-	Head drive power
25	VH	-	Head drive power	26	VH	-	Head drive power

- Thermal head connector (CN9)

  Mounting connector part number: IMSA-9631S-12Y800 (IRISO) or equivalent

  Contact: 0.5mm pitch, upper side, Au plating

  Recommended cable: Please refer to mechanism specification

No.	Signal	I/O	Content	No	Signal	I/O	Content
1	CMT_B	I/O	Cutter motor B phase	2	CMT_B	I/O	Cutter motor B phase
3	CMT_/B	I/O	Cutter motor /B phase	4	CMT_/B	I/O	Cutter motor /B phase
5	CMT_A	I/O	Cutter motor A phase	6	CMT_A	I/O	Cutter motor A phase
7	CMT_/A	I/O	Cutter motor /A phase	8	CMT_/A	I/O	Cutter motor /A phase
9	N.C	-	Not connected	10	VSEN	-	Home detection sensor power
11	CPHE	I	Home detection sensor Emitter	12	CPHK	I	Home detection sensor Cathode

Note: Symbol “-” means a negative logic signal.
“I” or “O” means a signal direction from the interface board side

■ Commands

Command	Content
HT	Horizontal tab
LF	Line feed
FF	Feeds forms (new page)
ESC FF	Data print in page mode
ESC EM n	Auto loading amount setting
ESC RS	Sets reverse printing
ESC US	Resets reverse printing
ESC SP n	Character spacing setting
ESC ! n	Sets print mode
ESC $ nL nH	Horizontal absolute position setting
ESC % n	Download character specification/cancellation
ESC & y c1 c2 x d1~dn	Download character definition*1, 3
ESC * m nL nH d1~dk	Prints bit image
ESC - n	Undeline setting
ESC 2	Sets default line spacing
ESC 3 n	Sets the line feed length
ESC ? n	Download character deletion*1, 3
ESC @	Printer reset
ESC A n	Set the space between the line
ESC C n	Sets the page length by character line
ESC D n1~nk NUL	Set the tab position
ESC E n	Emphasis printing specification/cancellation
ESC J n	Feeds paper in forward direction and prints
ESC K n	Print and backward paper feed
ESC L	Page mode selection
ESC R n	Selects internationl character
ESC S	Line mode selection
ESC T n	Print direction setting in page mode
ESC V n	Right rotation 90° specification/cancellation
ESC W xL xH yL yH dxL dxH dyL dyH	Print area setting in page mode
ESC X m n	Setting the turning time of the motor excitation
ESC Y SOH ESC x a SYN d1~d2	Printer type setting
ESC ¥ nL nH	Horizontal relative position setting
ESC a n	Position alignment
ESC c 1 n	Sets internal processing
ESC c 5 n	External input signal valid/invalid setting
ESC d n	Printing and n-line feeding
ESC e n	Printing and n-line back forward feeding
ESC s n	Sets printing speed
ESC t n	Character code table selection
ESC { n	Sets/resets updside down printing
ESC DEL n	Nonvolatile memory deletion*1, 3

Command	Content
FS ! n	Kanji printing mode collective specification*2
FS &	Kanji printing mode specification*2
FS * m nL nH d1~dk	High-speed batch image print
FS - n	Kanji underline specification/cancellation*2
FS .	Kanji printing mode cancellation*2
FS 2 c1 c2 d1~dn	User defined character definition*1, 2, 3
FS 9 n	Sets the detection functions
FS C n	Kanji code system selection*2
FS E n	Correction of impressed energy
FS S n1 n2	Kanji spacing setting*2
FS W n	Specify/cancel double-tall, double wide Kanji characters*2
FS r n	Parameter transmission (serial mode)
GS ! n	Character size setting
GS $ nL nH	Vertical absolute position setting in page mode
GS & m x yL yH d1~dn	Download image definition*1, 3
GS ‘ m n	Download image print*3
GS (E pL pH fn a b8 ~ b1 (fn=3)	Memory switch setting*1
GS (E pL pH fn a (fn=4)	Memory switch transmission
GS (E pL pH fn d1~d9 (fn=67)	RS-232C communication setting*1, 4
GS (E pL pH fn d1 ~ d9 (fn=68)	USB communication setting*1
GS (E pL pH fn a n (fn=70, a=5)	Mark width setting*1
GS (E pL pH fn a n (fn=72, a=1)	Language model setting*1
GS (E pL pH fn a n (fn=72, a=11)	Paper detection sensor setting*1
GS (E pL pH fn a n (fn=72, a=12)	Paper detection method setting*1
GS (E pL pH fn a n (fn=72, a=13)	Mark detection sensor setting*1
GS (E pL pH fn a n (fn=72, a=14)	Mark detection method settng*1
GS (E pL pH fn a (fn=73, a=1)	Language model transmission
GS (E pL pH fn a (fn=73, a=11)	Paper detection sensor transmission
GS (E pL pH fn a (fn=73, a=12)	Paper detection method transmission
GS (E pL pH fn a (fn=73, a=13)	Mark detection sensor transmission
GS (E pL pH fn a (fn=73, a=14)	Mark detection method transmission
GS (K pL pH fn	Print control setting
GS (K pL pH fn n (fn=49)	Print density setting
GS (K pL pH fn n (fn=50)	Print speed setting*5
GS (K pL pH fn n (fn=97)	Number of head division setting
GS <	Line feeds to the next mark
GS A m n	Sets the line feed length after mark detection
GS E n	Sets print quality
GS H n	HRI character printing position selection
GS L nL nH	Sets left margin
GS V m n	Cut paper
GS W nL nH	Print area width setting
GS ¥ nL nH	Vertical relative position setting in page mode

Command	Content
GS a n	Automatic status transmission setting
GS e m n	Bar code width setting
GS f n	HRI character font selection
GS h n	Bar code height setting
GS k m n d1 ~ dn	Bar code print
GS k m k1 k2 k3 k4 {p1 d(1,1)~d(1,j)}~ {pi d(i,1)~d(i,j)} NUL	QR code print
GS k m k1 k2 k3 k4 nL nH d1 ~ dn	PDF417 code print
GS k m n k pL pH d1 ~ dp	Bar code (GS1 DataBar) print
GS k m n k1 k2 k3 k4	Bar code (GS1 DataBar) setting
GS w n	Set bar code horizontal size

■ Commands notes

*1: Makes write/erase to the nonvolatile memory.
*2: Only the model equipped with the Kanji character corresponds
*3: Only the model equipped with the extended nonvolatile memory.
*4: This product unsupported 460.8kbps described in the command specification. Please use in the range of 9.6kbps to 230.4kbps. This command writes to the flash memory by parameters. Please see command specification.
*5: The relationship between Speed level and Print speed is shown in the table below.

Speed level	Print speed	
	FTP-63GMCL483	FTP-83GMCL483
Level 1	not used	not used
Level 2	not used	not used
Level 3	not used	not used
Level 4	not used	not used
Level 5	not used	not used
Level 6	not used	not used
Level 7	50mm/s	not used
Level 8	100mm/s	50mm/s
Level 9	not used	not used
Level 10	150mm/s	not used
Level 11	200mm/s	100mm/s
Level 12	250mm/s	not used
Level 13	280mm/s	not used
Level 14	300mm/s	not used
Level 15	350mm/s	200mm/s

*6: The relationship between head division and simultaneous energizing dots is shown below.
Simultaneous energizing dots = Number of line dots / number of head division
(E.g. Number of line dots: 640 dots Number of head division: 4 Simultaneous energizing dots: 640 dots / 4= 160 dots)

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