Fanuc LTD

Power Mate i Series

Computer Link Driver

Supported version

TOP Design Studio V1.0 or higher



CONTENTS

We want to thank our customers who use the Touch Operation Panel.

1. System configuration Page 2

Describes the devices required for connection, the setting of each device, cables, and configurable systems.

2. External device selection Page 3

Select a TOP model and an external device.

3. TOP communication setting

Page 4

Describes how to set the TOP communication.

4. External device setting Page 9

Describes how to set up communication for external devices.

5. Cable table

Page 10

Describes the cable specifications required for connection.

6. Supported addresses

Page 11

Refer to this section to check the addresses which can communicate with an external device.



1. System configuration

The system configuration of TOP and "Fanuc LTD. Power Mate i Series " is as follows:				
Series	CPU	Communication method	System setting	Cable
Forme Carios	Dower Moto i Corios	RS-232C	3. TOP communication setting 4.1. External device setting 1	5.1. Cable table 1
	Fower Mater's series	RS–422 (4 wire)	<u>3. TOP communication</u> <u>setting</u> <u>4.1. External device setting 1</u>	5.1. Cable table 1

■ Connection configuration

• 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422 communication.

• 1:N (one TOP and multiple external devices) connection – configuration which is possible in RS422 communication.

1





2. External device selection

■ Select a TOP model and a port, and then select an external device.

Select Device					
PLC select [C	COM2]				
Filter : [All]		~	:	Search :	
				Model	Vendor
Vendor	•	Model			
AJINEXTEK Co., Ltd.	~	Fanuc	: Series		
IEC Standard					
CAS					
A&D					
SEHWA CNM					
SHINHAN Electronics					
BONGSHIN LOADCELL	_				
FANUC Co., Ltd.					
MINEBEA Co., Ltd.					
Azbil Corporation					
KORO TECHNOLOGY					
ROBOSTAR					
Ebmpapst					
CoDeSvs Automation	Alliance Y				
PLC Setting[Fan	uc Series]				
PLC Setting[Fan Alias Nam	uc Series] = : PLC1 = : Serial	~			
PLC Setting[Fam Alias Nam Interfac Protocc	uc Series] = : PLC1 = : Serial : SNP-X	×		Coi	mm Manual
PLC Setting[Fan Alias Nam Interface Protoco String Save Mode	uc Series] e : PLC1 e : Serial ol : SNP-X e : First LH HL	Change		Cor	mm Manual
PLC Setting[Fan Alias Nam Interfac Protocc String Save Mod	uc Series] =: PLC1 =: Serial ol: SNP-X =: First LH HL CY	V V Change		Con	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mod Use Redundar Operate Condition :	uc Series] =: PLC1 =: Serial ol: SNP-X =: First LH HL http://www.accommensionality.org/lineari	Change		Cor	mm Manual
PLC Setting[Fan Alias Nam Interfaci Protocc String Save Mode Use Redundar Operate Condition : Change Condition :	uc Series] : PLC1 : Serial : SNP-X : First LH HL CY TImeOut TImeOut	Change	ond)	Co	mm Manual
PLC Setting[Fan Alias Nam Interfac Protocc String Save Mod Use Redundar Operate Condition : Change Condition :	uc Series] : PLC1 : Serial : SNP-X : First LH HL CCY AND TimeOut Condition	Change	ond)	50	mm Manual
PLC Setting[Fan Alias Nam Interfac Protocc String Save Mod Use Redundar Operate Condition : Change Condition : Primary Option	uc Series] =: PLC1 =: Serial :: SNP-X =: First LH HL CY AND ~ TimeOut Condition	Change	ond)	Co	mm Manual
PLC Setting[Fan Alias Nam Interface String Save Mod Use Redundar Operate Condition : Change Condition : Primary Option Timeout	uc Series] =: PLC1 =: Serial :: SNP-X =: First LH HL CY AND Condition 300	Change 5 (Sec	ond)	Co	mm Manual
PLC Setting[Fan Alias Nam Interfao String Save Mod Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait	uc Series] : PLC1 : Serial : SNP-X : First LH HL KCY AND ~ TimeOut Condition 300 Image: 0 Image: 0 Image: 0	Change 5 (Sec msec msec	ond)	Co	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mode Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry	uc Series] e: PLC1 e: Serial ol: SNP-X e: First LH HL CO TImeOut Condition 300 5	Change 5 (Sec msec msec	ond)	Co.	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mode Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial oi: SNP-X =: First LH HL CC AND Condition 300 5 5 1	Change 5 \$ (Sec msec msec	ond)	Co	mm Manual
PLC Setting[Fam Alias Nam Interfac Protocc String Save Mode Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial ol: SNP-X =: First LH HL CCY AND TImeOut Condition 300 5 5 1	Change 5 \$ (Sec msec	ond)	5	mm Manual
PLC Setting[Fam Alias Nam Interfac Protocc String Save Mod Use Redundar Operate Condition : Change Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial d: SNP-X =: FirstLH HL CY AND TimeOut Condition 300 5 5 1	S (Sec msec	ond)	Co.	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mode Use Redundar Operate Condition : Change Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial oi: SNP-X =: First LH HL CY AND ~ TimeOut Condition 300 © 5 © 1	Change 5 (Sec msec msec	ond)	Co.	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mode Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial oi: SNP-X =: First LH HL CY AND ~ TimeOut 300 0 5 2 1	Change 5 (Sec msec msec	ond)	Co.	mm Manual
PLC Setting[Fan Alias Nam Interfac String Save Mode Use Redundar Operate Condition : Change Condition : Primary Option Timeout Send Wait Retry SNP ID	uc Series] =: PLC1 =: Serial oi: SNP-X =: First LH HL CC AND Condition 300 0 5 1	Change 5 (Sec msec msec	ond)	Co.	mm Manual

Settings		Contents		
ТОР	Model	Check the TOP display and process to select the touch model.		
External device	Vendor	Select the vendor of the external device to be connected to TOP. Please select " Fanuc LTD ."		
	PLC	Select an external device to con		
		Model	Interface	Protocol
		Fanuc Series	Computer Link	SNP-X
		Supported Protocol		
SNP-X				
Please check the system configuration in Chapter 1 to see if the e connect is a model whose system can be configured.				the external device you want to



3. TOP communication setting

The communication can be set in TOP Design Studio or TOP main menu. The communication should be set in the same way as that of the external device.

3.1 Communication setting in TOP Design Studio

(1) Communication interface setting

■ [Project > Project Property > TOP Setting] → [Project Option > "Use HMI Setup" Check > Edit > Serial]

Set the TOP communication interface	e in TOP Design Stud	i0.	
	Change BLC/Cl	lata DI CIDI	:
Cristian Module Setting	Date / Time Sync. Screen Opti	ion Unit Convert	Desired Chile Colorb DLC Duffer Cure
FieldBus (0)	Project Option Screen Change	Hmisetup Global Lock & Touch	Project Style Splasn PLC Buffer Sync.
v · · · · · · · · · · · · · · · · · · ·			Initialization Edit
✓	Start Mode=Menu		^
- 60 COM3 (0) - 60 Ethernet (0)	Latch Use=0 Latch Set=0~0		
USBDevice (0)	Communication Error Message=0 USBErrorMessage=0 StorageErrorMessage=1		
	DatabaseMessage=1 SystemMessage=1		
Control Panel			
🐼 System 🚺	- Devices	Service	🕮 Option
	Deffees	🚥 Serial	X
		Serial Dert:	
		Serial Port.	
PLC Secur	ity Date/Time	Signal Level	
		○ RS-232C ● RS-4	22(4) O RS-485(2)
		Baud Rate:	19200 👻
	•	Data Rit:	8
			0
Ethernet Ser	rial HDMI	Stop Bit:	1 •
		Parity Bit:	None -
belli 🗸 👝 💳		Flow:	Off 🔻
	/Ping	Auto Search	Loopback Test
Diagnostic Fi	ile Ping		
Mail	ager		Apply Cancel

Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
	RS-422	RS-422	
Baud Rate	19.	200	
Data Bit	8		
Stop Bit		1	
Parity Bit	Nc	ne.	

* The above settings are examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

- [Project > Project Property > Device Setting > COM > "PLC1 : Fanuc LTD"]
 - Set the options of the Power Mate i Series communication driver in TOP Design Studio.

Project Option			×
Change HMI[H] Change Add PL	C 🔝 👬 Change PLO	CI Delete PLC(D)	
 TOP Setting SYS : RD 1520X Option Module Setting Fieldbus (0) RFID (0) COM2 (1) COM2 (1) Ethernet (0) Wireless (0) USBDevice (0) 	PLC Setting[Fanue : Alias Name : Interface : Protocol : String Save Mode : Use Redundancy Operate Condition : AND Change Condition : T Change Condition : T Change Condition : Send Wait Retry SNP ID	eries] C1 rial P-X * stLH HL Change b co co co co co co co co co co	Comm Manual
	`		Apply Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select the serial communication protocol between the TOP and an external device.	device selection".
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
SNP ID	Enter SNP ID for external device.	



3.2. Communication setting in TOP

* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.



(1) Communication interface setting

■ [Main Screen > Control Panel > Serial]



Items	ТОР	External device	Remarks
Signal Level (port)	RS-232C	RS-232C	
	RS-422	RS-422	
Baud Rate	192	200	
Data Bit	8	3	
Stop Bit		1	
Parity Bit	Nc	ne.	

* The above settings are setting examples recommended by the company.

Items	Description
Signal Level	Select the serial communication method between the TOP and an external device.
Baud Rate	Select the serial communication speed between the TOP and an external device.
Data Bit	Select the serial communication data bit between the TOP and an external device.
Stop Bit	Select the serial communication stop bit between the TOP and an external device.
Parity Bit	Select the serial communication parity bit check method between the TOP and an external device.



(2) Communication option setting

■ [Main Screen > Control Panel > PLC]

	Ö	100	PLC	×
	🔯 System	Driver(COM1)	PLC1(Fanuc Series) 🕶	
Hun		Interface	Serial 💌	
		Protocol	SNP-X 💌	
	PLC S	Timeout	300 🖨 msec	
VNC		Send Wait	0 🖨 msec	
viewer	1 600 4	Retry	5	
	Ethernet	SNP ID	1	
Screen shot	intî~/*			
	Diagnostic			
	[System]	Diagnostic		Apply Cancel

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select the serial communication protocol between the TOP and an external device.	device selection".
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device and	
	sending the next command request.	
SNP ID	Enter SNP ID for external device. (Configure with TOP Design Studio)	



3.3 Communication diagnostics

■ Check the interface setting status between the TOP and an external device.

- Touch the top of the TOP screen and drag it down. Touch "EXIT" in the pop-up window to go to the main screen.
- Check if the COM port settings you want to use in [Control Panel > Serial] are the same as those of the external device.
- Diagnosis of whether the port communication is normal or not
- Touch "Communication diagnostics" in [Control Panel > PLC].
- The Diagnostics dialog box pops up on the screen and determines the diagnostic status.

ОК	Communication setting normal
Time Out Error	Communication setting abnormal
	- Check the cable, TOP, and external device setting status. (Reference: Communication diagnostics sheet)

Communication diagnostics sheet

- If there is a problem with the communication connection with an external terminal, please check the settings in the sheet below.

Items	Conte	ents	Check		Remarks	
System	How to connect the sy	stem	OK	NG	1 Cretem configuration	
configuration	Connection cable name	e	ОК	NG	1. System configuration	
ТОР	Version information		OK	NG		
	Port in use		OK	NG		
	Driver name	Driver name				
	Other detailed settings		ОК	NG		
	Relative prefix	Project setting	OK	NG		
		Communication	OK	NC	2. External device selection	
		diagnostics	ŬK	NG	3. Communication setting	
	Serial Parameter	Transmission	OK	NC		
		Speed	ŬK	NG		
		Data Bit	ОК	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
External device	CPU name	OK	NG			
	Communication port n	ОК	NG			
	Protocol (mode)	OK	NG			
	Setup Prefix	OK	NG			
	Other detailed settings		OK	NG	4. External device cetting	
	Serial Parameter	Transmission	OK	K NG	4. External device setting	
		Speed	ŬK.			
		Data Bit	ОК	NG		
		Stop Bit	OK	NG		
		Parity Bit	OK	NG		
	Check address range				6. Supported addresses	
			OK	NG	(For details, please refer to the PLC	
					vendor's manual.)	



Refer to the vendor's user manual to identically configure the communication settings of the external device to that of the TOP.



5. Cable table

This chapter introduces a cable diagram for normal communication between the TOP and the corresponding device. (The cable diagram described in this section may differ from the recommendations of "**Power Mate i Series**")

5.1. Cable table





*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

TOP				External device			
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin	
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)	
	RDA	1		4	SDA	→	
15		2	•	3	SDB	$\mathbf{\Psi}$	
(° °)		3	•	2	RDA	Щ	
			RDB 4		1	RDB	
Based on		5		12	SG		
communication	SDA	6	• •	6	RTS+	Based on	
cable connector		7		8	CTS+	communication	
front,		8		5	RTS-	cable connector	
D-SUB 9 Pin male		9	├────� ┢─	7		front.	
(male, convex)	SDB				CTS-	D-SUB 20 Pin male	
						(male, convex)	

■ RS-422 (1:1 connection) User-created cable

*Note 1) The pin arrangement is as seen from the connecting side of the cable connection connector.

RS-422 (1:N connection) – Refer to 1:1 connection to connect in the following way.

ТОР	Cable connection and signal direction	External device	Cable connection and signal	Terminal external device
Signal name		Signal name	direction	Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		0V		0V
	•	RTS+	•	RTS+
	•	CTS+		CTS+
	•	RTS-	•	RTS-
		CTS-]	CTS-



6. Supported addresses

The devices available in TOP are as follows:

The device range (address) may differ depending on the CPU module series/type. The TOP series supports the maximum address range used by the external device series. Please refer to each CPU module user manual and be take caution to not deviate from the address range supported by the device you want to use.

Device	Bit Address	Word Address	32 BIT
	X00000.0-X00127.7	X00000-X00126	
	X00200.0-X00327.7	X00200-X00326	
Input Relay	X00400.0-X00527.7	X00400-X00526	
Device Input Relay Output Relay Internal Relay Keep relay Enhancing Relay Timer Counter	X00600.0-X00727.7	X00600-X00726	
	X01000.0-X01127.7	X01000-X01126	
	Y00000.0-Y00127.7	Y00000-Y00126	
	Y00200.0-Y00327.7	Y00200-Y00326	
Output Relay	Y00400.0-Y00527.7	Y00400-Y00526	
	Y00600.0-Y00727.7	Y00600-Y00726	
	Y01000.0-Y01127.7	Y01000-Y01126	
Internal Relay	R00000.0-R07999.7	R00000-R07998	
Keep relay	K00000.0-K00099.7	K0000-K00098	
Enhancing Relay	E0000.0-E09999.7	E00000-E09998	
Timer	-	T0000-T0498	
Courston		C0000-C0398	
Counter	-	C5000-C5198	
Data table	D00000-D09999.7	D00000-D09998	

*Note 1) When using a bit address that uses decimals, use a word address in units of "16"

*Note 2) The lower 16 BIT data of 32 BIT data is saved in the address whose screen has been registered, and the upper 16 BIT data is saved in the address next to the address whose screen has been registered.

Ex. When saving 32BIT data hexadecimal data 12345678 in address D00100, it is saved to 16BIT device address as follows:

Items	32BIT	16BIT	
Address	D00100	D00100	D00101
Input data (hexadecimal)	12345678	5678	1234