# MITSUBISHI Electric Corporation MELSEC A Series

# **CPU Direct Driver**

Supported version TOP Design Studio V1.0 or higher



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We would like to thank our customers for using M2I's "Touch Operation Panel (M2I TOP) Series". Read this manual and familiarize yourself with the connection method and procedures of the "TOP and external device".

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## 2. External device selection Page 3

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## **3.** TOP communication setting Page 4

Describes how to set the TOP communication.

4. External device setting

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Describes how to set up communication for external devices.

#### 5. Cable table

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Describes the cable specifications required for connection.

## 6. Supported addresses

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



# 1. System configuration

The system configuration of TOP and "MITSUBISHI Electric Corporation - MELSEC A CPU Direct" is as follows:

Series	CPU	Link I/F	Communication method	Communication setting	Cable
MELSEC-A	AnN CPU AnS CPU AOJ2H CPU	CPU port	RS-232C	3. TOP communication setting 4. External device setting	<u>5. Cable table</u>

■ Connection configuration

• 1:1 (one TOP and one external device) connection

|--|--|



## 2. External device selection

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

Select Device							
PLC select [CO	M1]						
Filter : [All]			$\sim$		Search :		
						1odel 🔾 V	/endor
Vendor		Model					
M2I Corporation		- 🌠	MELSEC	Q Series			
MITSUBISHI Electric Corp			MELSEC	FX Series			
OMRON Industrial Automa	ation	8	MELSEC	AnN/AnS Series			
LS Industrial Systems		8	MELSEC	AnA/AnU Series			
MODBUS Organization		8	MELSER	/O J2 Series			
SIEMENS AG.		89 89 89 89		/O J3 Series			
Rockwell Automation							
GE Fanuc Automation				/O J4 Series			
PANASONIC Electric Work	s	- <b>X</b>	MELSEC	FX2N-10/20GM 5	eries		
YASKAWA Electric Corpor	ation	<b>\$</b>	MELSEC	iQ-F Series			
YOKOGAWA Electric Corp	oration						
Schneider Electric Industr	ies						
KDT Systems							
RS Automation		~					
PLC Setting[ MELSE		nS Series	]				
Alias Name : Interface :			~				
Protocol :			~		ſ	Comm Ma	anual
String Save Mode :	First LH HL	Chi	ange				
Use Redundancy	,						
Operate Condition : AN							
Change Condition :	TimeOut	5	(Secon	d)			_
	Condition					Edit	J
Primary Option							
Timeout	300	sec					
Send Wait		msec					
Retry	5	\$					
CPU Type	AnS/ AOJ2	+ ~					

Settings			Contents				
ТОР	Model	Check the TOP display and pro	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. Select "MITSUBISHI Electric Corporation".					
	PLC	Select an external device to co					
		Model	Interface	Protocol			
		MELSEC A Series	CPU Direct	CPU Direct			
		Supported Protocol (CPU ty	pe)				
		AnN CPU	AnS CPU	AOJ2H CPU			
		Please check the system confi connect is a model whose syst	the external device you want to				

#### 대한민국대표 터치패널 Touch Operation Panel

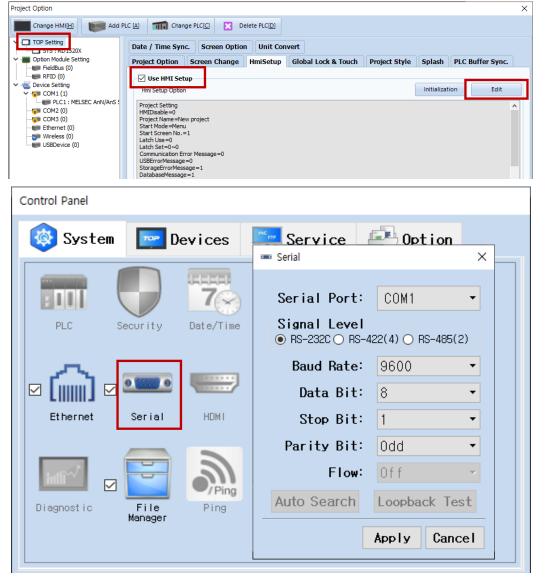
# 3. TOP communication setting

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 in TOP Design Studio.



Items	ТОР	External device	Remarks	
Signal Level (port)	RS-232C	RS-232C	Fixed	
		(CPU port)		
Baud Rate	9600			
Data Bit		8	Fixed	
Stop Bit	1		Fixed	
Parity Bit	Odd			

 $\ensuremath{\mathbb{X}}$  The communication interface for Melsec A Series CPU Direct is fixed to the above configuration values.

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 : MELSEC-A Series"]
  - Set the options of the MELSEC A Series CPU Direct communication driver in TOP Design Studio.

Project Option			×
Change HMI[H] Add PL	C [A] Change PLC[C] Z Delete PLC[D]		
Change HMI[H] Change HMI[H] Change HMI[H] Change HMI[H] Correction Module Setting Correction Module Setting FieldBus (0) FieldBus (0) Common Correction C	C (A) The Change PLC[C] X Delete PLC[D]   PLC Setting[ MELSEC AnN/AnS Series ] Alas Name : PLC1 Interface : CPU Direct   Interface : CPU Direct V Protocol : CPU Direct V   Protocol : CPU Direct V String Save Mode : First LH HL Change   Change Condition : MD S \$ (second)   Change Condition : TimeOut S \$ (second)   Edit Primary Option Edit   Timeout 300 msec   Send Wait 0 msec   Retry S \$   CPU Type AnS/ ADJ2H		mm Manual
٢ >			
		Apply	Close

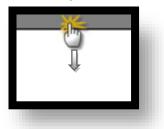
Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External
Protocol	Select "CPU Direct".	device selection".
TimeOut (ms)	Set the time for the TOP to wait for a response from an external device.	
SendWait (ms)	Set the waiting time between TOP's receiving a response from an external device	
	and sending the next command request.	
СРИ Туре	Select the CPU type for the external device.	



#### 3.2. Communication setting in TOP

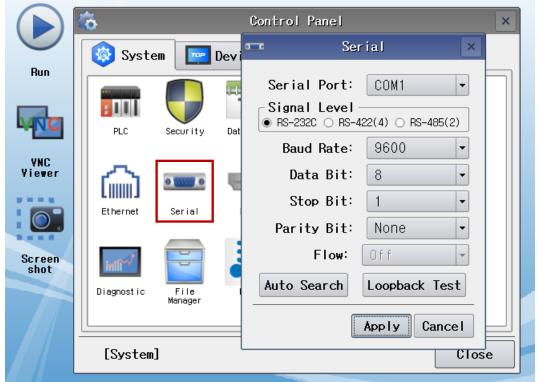
\* This is a setting method when "Use HMI Setup" in the setting items in "3.1 TOP Design Studio" is not checked.

■ 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	El cont
	RS-232C	(CPU port)	Fixed
Baud Rate	9600		
Data Bit		Fixed	
Stop Bit	1		
Parity Bit		bpC	Fixed

X The communication interface for Melsec A Series CPU Direct is fixed to the above configuration values.

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]

	õ	1001	PLC		×
	🔯 System	Driver(COM1)	PLC1(MELSEC AnN/AnS Series)	•	
Run		Interface	CPU Direct 🔻		
		Protocol	CPU Direct 💌		
	PLC	Timeout	300 🖨 msec		
VNC Viewer		Send Wait	0 🖨 msec		
TICWCI	( ແພງ ເ	Retry	5		
	Ethernet	CPU Type	AnS/ AOL -		
Screen shot	Inti <sup>N</sup>				
	Diagnostic				
	[System]	Diagnostic		Apply (	Cancel
///	[0]3CCm]				

Items	Settings	Remarks
Interface	Select "CPU Direct".	Refer to "2. External
Protocol	Select "CPU Direct".	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.	
СРИ Туре	Select the CPU type for the external device.	



#### **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 port (COM1/COM2) 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.

ltems	Conte	Contents		eck	Remarks
System	How to connect the system		OK	NG	1 Custom configuration
configuration	Connection cable nam	OK	NG	1. System configuration	
ТОР	Version information	OK	NG		
	Port in use	OK	NG		
	Driver name	OK	NG		
	Other detailed settings	OK	NG		
	Relative prefix	Project setting	OK	NG	
		Communication diagnostics	ОК	NG	2. External device selection 3. Communication setting
	Serial Parameter	Transmission Speed	ОК	NG	
		Data Bit	ОК	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
External device	CPU name	OK	NG		
	Communication port n	OK	NG		
	Protocol (mode)	OK	NG		
	Setup Prefix	OK	NG		
	Other detailed settings		OK	NG	4. Estemat device estimat
	Serial Parameter	Transmission Speed	ОК	NG	4. External device setting
		Data Bit	OK	NG	
		Stop Bit	OK	NG	
		Parity Bit	OK	NG	
	Check address range		ОК	NG	<u>6. Supported addresses</u> (For details, please refer to the PLC vendor's manual.)



# 4. External device setting

The communication interface for Melsec-A Series CPU Direct is fixed to the target configuration values indicated by the "communication interface setting" in this user manual.



# 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 "Mitsubishi Electric Corporation")



Use the **dedicated cable "TOP422C" (sold by M2I Corp.)** to connect the TOP and the MELSEC-A Series CPU Direc

#### ■ RS-232C (1:1 connection)

CC	M			Cable cro	ss section
Pin	Signal	Pin	Cable connection	Cable color	
arrangement*Note 1)	name	number			
1 5	CD	1		Red	<b>→</b>
(° °)	RD	2		Yellow	$\mathbf{\Psi}$
69	SD	3		Green	
Based on	DTR	4		Blue	
communication	SG	5		White	
cable connector	DSR	6		Black	TOP422C
front,	RTS	7			Dedicated cable
D-SUB 9 Pin male	CTS	8			(25 pin)
(male, convex)		9			Cable cross section

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



# 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.

Туре	Remarks Bit-designated address		Word-designated address	
nput Bit X0000 - X07FF		X0000 - X07FF	X0000 - X07F0	
Output	Bit	Y0000 - Y07FF	Y0000 - Y07F0	
LINK relay	Bit	B0000 - B03FF		
LINK register	Word		W0000 - W03F0	
Special relay	Bit	F0000 - F0255	F0000 - F0240	
ATCH relay	Bit	L0000 - L2047	L0000 - L2032	
nternal relay	Bit	M0000 - M2047	M0000 - M2032	
Special relay	Bit	M9000 - M9255	M9000 - M9240	
Timer - Coil	Bit	TC000 - TC255		
Timer - Contact	Bit	TS000 - TS255		
Timer-Current value	Word		TN000 - TN255	
Counter - Coil	Bit	CC000 - CC255		
Counter - Contact	Bit	CS000 - CS255		
Counter-Current value	Word		CN000 - CN255	
Data register Word		D0000.0 - D1023.15	D0000 - D1023	
File register Word		R0000.0 – R8191.15	R0000 – R8191	