# **MITSUBISHI Electric Corporation MELSEC AnA/AnU Series**

# **Computer Link Driver** V1.0 or higher

Supported version TOP Design Studio



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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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Describes how to set up communication for external devices.

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Describes the cable specifications required for connection.

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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 AnA/AnU Computer Link" is as follows:

Series	CPU	Link I/F	Communication method	System setting	Cable
MELSEC-	A2ACPU A2ACPU-S1 A3ACPU A2UCPU A2UCPU-S1 A3UCPU	AJ71C24-S6 AJ71C24-S8	RS-232C	3. TOP communication setting 4.1. External device setting 1	
			RS-422 ( 4 wire )		<u>5.1. Cable table 1</u>
		AJ71UC24	RS-232C		
AnA/AnU	A4UCPU		RS-422 ( 4 wire )		
	A1SJ71C24-R2 A2USCPU A1SJ71UC24- A2USHCPU-S1 A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71UC24-	A1SJ71C24-R2 A1SJ71UC24-R2	RS-232C	3. TOP communication <u>setting</u>	E 2 Cable table 2
		A1SJ71C24-R4 A1SJ71UC24-R4	RS-422 ( 4 wire )	4.2. External device setting 2	

#### Connection configuration

• 1:1 (one TOP and one external device) connection – configuration which is possible in RS232C/422/485 communication.

• 1:N (one TOP and multiple external devices) connection - configuration which is possible in RS422/485 communication.





## 2. External device selection

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

PLC select [CO	M1]				
Filter : [All]			$\sim$	Search :	
				Mode	I 🔿 Vendor
Vendor		Model			
M21 Corporation			MELSEC Q Series		
MITSUBISHI Electric Corp	ioration		MELSEC FX Series		
OMRON Industrial Autom	ation	- <i>🌮</i> -	MELSEC AnN/AnS Series		
LS Industrial Systems		80	MELSEC AnA/AnU Series		
MODBUS Organization		8	MELSERVO J2 Series		
SIEMENS AG.			MELSERVO 13 Series		
Rockwell Automation					
GE Fanuc Automation			MELSERVU J4 Series		
PANASONIC Electric Wor	ks		MELSEC FX2N-10/20GM S	eries	
YASKAWA Electric Corpo	ration	<b>\$</b>	MELSEC iQ-F Series		
YOKOGAWA Electric Corp	oration				
Schneider Electric Indust	ries				
KDT Systems					
RS Automation		<b>~</b>			
elect Device					
PLC Setting[ MELSE	C AnA/A	nU Series	]		
Alias Name : Interface :	PLC1	ink	×		
Protocol :	MC Protoco	I 1C ACPU	~	Co	mm Manual
String Save Mode :	First LH HL	Cha	nge		
Use Redundancy	v				
	n				
Operate Condition : AN	- ×				
Operate Condition : AN Change Condition :	TimeOut	5	(Second)		
Operate Condition : AN Change Condition :	TimeOut Condition	5	(Second)		Edit
Operate Condition : AN Change Condition :	TimeOut Condition	5	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout	TimeOut Condition	5 (	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout Send Wait	TimeOut Condition	5 ; ■ msec ■ msec	(Second)		Edit
Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry	TimeOut Condition	5 :	(Second)		Edit
Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station Num	TimeOut Condition	5 :	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout Send Wait Retry Station Num Pc No	TimeOut   Condition   300   0   5   0   255	5 :	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout Send Wait Retry Station Num Pc No	JimeOut   Condition   300   0   5   0   255	5 msec msec msec	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout Send Wait Retry Station Num Pc No	300 1   300 1   0 1   0 1   0 1   1 1   255 1	5 € msec msec	(Second)		Edit
Operate Condition : AN Change Condition : Primary Option Timeout Send Wait Retry Station Num Pc No	300 []   0 []   5 []   0 []   255 []	5 € msec € msec €	(Second)		Edit
Operate Condition : A Change Condition : Primary Option Timeout Send Wait Retry Station Num Pc No	300 1   0 1   5 1   0 1   255 1	5 € msec msec 5 € msec 5 €	(Second)		Edit

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 "MITSUBISHI Electric Corporation".			
	PLC	Select an external device to cor	nnect to TOP.	Protocol	
		MELSEC AnA/AnU Series	Computer Link	MC Protocol 1C ACPU	
		Supported Protocol			
		Please check the system config connect is a model whose syste	guration in Chapter 1 to see if em 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]



Items	ТОР		External device	Remarks
Signal Level (port)		DC 422	RS-232C	
	RS-232C	RS-422	RS-422	
Baud Rate	19200			
Data Bit	8			
Stop Bit	1			
Parity Bit	None.			

\* 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 : MELSEC-AnA/AnU Series"]
  - Set the options of the MELSEC AnA/AnU Series Computer Link communication driver in TOP Design Studio.

Project Option				×
Change HMI[H] Add PLC [A]	Change PLC[C]	Delete PLC[D]		
• - TOP Setting SYS : RD1520X • Option Module Setting • FieldBus (0) • RFID (0) • COM1 (1) • COM2 (0) • COM3 (0) • Ethernet (0) • Wireless (0) USBDevice (0)	LC Setting[ MELSEC AnA/Ant Alias Name : PLC1 Interface : Computer Link Protocol : MC Protocol I String Save Mode : First LH HL Use Redundancy Derate Condition : TimeOut mange Condition : TimeOut Condition Primary Option imeout 300 © end Wait 0 © tation Num 0 © c No 255 ©	J Series ]	Con	nm Manual
< >>			Apply	Close

Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "MC Protocol 1C ACPU".	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.	
Station Num	Enter the prefix of an external device.	
PC No	Set the prefix of TOP.	



#### 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)		DC 422	RS-232C	
	RS-232C	KS-422	RS-422	
Baud Rate	19200			
Data Bit	8			
Stop Bit	1			
Parity Bit	None.			

\* 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]



Items	Settings	Remarks
Interface	Select "Computer Link".	Refer to "2. External
Protocol	Select "MC Protocol 1C ACPU".	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.	
Station Num	Enter the prefix of an external device.	
PC No	Set the prefix of TOP.	



#### **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.

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



## 4. External device setting

#### 4.1 External device setting 1 (AJ71C24, AJ71UC24)

Configure the communication settings using the DIP Switch of the serial communication unit. For a more detailed setting method than that described in this example, refer to the PLC user manual.

Serial communication unit's RUN LED must be ON for communication to be possible.



**Step 1.** Configure the communication protocol format by configuring the Mode Setting Rotary Switch as shown below.

Signal	Settings	Settings
Level		
RS-232C	1	Protocol mode format 1
RS-422	5	Protocol mode format 1

\* Use switch settings 1 and 5 for RS-232C and RS-422, respectively

Step 2. Configure the communication setting for the Dip Switch.

-(3)		.24						
(0)	DIP	Settings		0	N	0	FF	Examples of
(-)	Switch							setting *Note 1)
-(2)	SW11	Select communication c	hannel	RS-422 8		RS-232C 7		OFF
	SW12	Data bit configuration						ON
			2400	4800	9600	19200	Not	
		Transmission speed					used	
	SW13	configuration	ON	OFF	ON	OFF	ON	OFF
	SW14		ON	OFF	OFF	ON	ON	ON
	SW15		OFF	ON	ON	ON	ON	ON
	SW16	Parity bit configuration		Va	lid	N	ull	OFF
	SW17	Parity bit configuration	Parity bit configuration Stop bit configuration		Even		bb	OFF
	SW18	Stop bit configuration			2	1		OFF
	SW21	BCC configuration		Va	lid	N	ull	ON
	SW22	WRITE configuration du	ring RUN	Ye	es	N	lo	ON
	SW23	Transmission-side termina	l resistance	Va	lid	N	ull	OFF
	SW24	Reception-side terminal	resistance	Va	lid	N	ull	OFF

\*Note 1) Settings: Signal "RS-232C" / Speed "19200bps" / Data "8bit" / Stop "1bit" / Parity "None"

■ AJ71UC24

DIP	Settings		10	1	0	FF	Examples of
Switch							setting *Note 1)
SW11	Select communication c	hannel	RS-4	22	RS-232C		OFF
SW12	Data bit configuration		8		7	7	ON
		2400	4800	9600	19200	Not	
	Transmission speed					used	
SW13	configuration	ON	OFF	ON	OFF	ON	OFF
SW14		ON	OFF	OFF	ON	ON	ON
SW15		OFF	ON	ON	ON	ON	ON
SW16	Parity bit configuration		Valid		Null		OFF
SW17	Parity bit configuration		Eve	n	Odd		OFF
SW18	Stop bit configuration		2			l	OFF
SW21	BCC configuration		Val	d	Null		ON
SW22	WRITE configuration during RUN		Ye	S	No		ON
SW23	Calculator link		Computer Link		Multiple Drop		ON
					Lir	nk	
SW24	Not used						

\*Note 1) Settings: Signal "RS-232C" / Speed "19200bps" / Data "8bit" / Stop "1bit" / Parity "None"



Step 3. Configure the communication card prefix by configuring the Station Setting Rotary

Switch as shown below.

Station Setting	Rotary Switch	Settings
X10	0	Configure serial communication card
X1	0	prefix as "0"

**Step 4.** Restart the power after configuring the Dip Switch.

#### 4.2 External device setting 2 (A1SJ71C24, A1SJ71UC24)

Configure the communication settings using the DIP Switch of the serial communication unit. For a more detailed setting method than that described in this example, refer to the PLC user manual.

Serial communication unit's RUN LED must be ON for communication to be possible.

					_				
	Signa	l Se	ettings	Settings					
NO O	Level								
	RS-232	C.	1		Pro	otocol mo	de format	1	
∰┫(1	) RS-42	2	5		Pro	otocol mo	de format	1	
(2	) * Use sw	itch settings 1 and 5 fo	or RS-2320	C and RS-	422, respec	tively			
MODE 1.FORM1 2.FORM2 3.FORM3	Step 2	2. Configure the com	nmunica	tion setti	ng for the	Dip Swite	ch as shov	vn below.	
4.FORM4 5.MOFORM	DIP	Settings			0	N	O	FF	Examples of
	Switch								setting *Note
									1)
	SW01	Not used							
	SW02	Calculator link			Compu	ter Link	Multipl	e Drop	ON
R2						Link			
	SW03	Not used							
	SW04	WRITE configuration	ion durin	ig RUN	Ye	es	N	0	ON
		Transmission s	speed	2400	4800	9600	19200	Not	
		configuration						used	
	SW05			ON	OFF	ON	OFF	ON	OFF
	SW06			ON	OFF	OFF	ON	ON	ON
	SW07			OFF	ON	ON	ON	ON	ON
	SW08	Data bit configura	ation		8	3	7	7	ON
	SW09	Parity bit configura	ation		Va	lid	N	ull	OFF
	SW10	Parity bit configura	ation		Ev	en	Oc	bb	OFF
	SW11	Stop bit configura	ation		2	2	1		OFF
	SW12	BCC configuration	ı		Va	lid	N	ull	ON

Step 3. Configure the communication card prefix by configuring the Station Setting Rotary

Switch as shown below.

Station Setting F	Rotary Switch	Settings
X10	0	Configure serial communication card prefix as "0"
X1	0	

Step 4. Restart the power after configuring the Dip Switch.



## 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")

#### 5.1 Cable table 1 (AJ71C24, AJ71UC24)

#### ■ RS-232C (1:1 connection)

CC	M				PI	LC
Pin	Signal	Pin	Cable connection	Pin	Signal	Pin
arrangement*Note 1)	name	number		number	name	arrangement*Note 1)
1 5	CD	1		1	FG	
(° °)	RD	2		2	SD	
	SD	3		3	RD	Based on
Based on	DTR	4	•	4	RTS	communication
communication	SG	5		5	CTS	cable connector
cable connector	DSR	6	<del> </del>	6	DSR	front,
front.	RTS	7	• •	7	SG	D-SUB 25 Pin male
D-SUB 9 Pin male	CTS	8	•	8	CD	(male, convex)
(male, convex)		9	•	20	DTR	

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

#### ■ **RS-422** (1:1 connection)

CC	M				PLC
Pin	Signal	Pin	Cable connection	Signal	Din arrangement
arrangement*Note 1)	name	number		name	Pin arrangement
1 5	RDA	1		SDA	
(° °)		2	•	SDB	
		3	•	RDA	SDA 🚫
Based on	RDB	4	•   •	RDB	
communication	SG	5		SG	FG FG
cable connector	SDA	6	•		
front,		7			
D-SUB 9 Pin male		8			
(male, convex)	SDB	9			

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

<b>RS-422</b> (1:N connection) – Refer to 1:1 connection to connect in the following way.	■ RS-422 (1:N connection) – Refer to 1:1 connec	ction to connect in the following way.
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TOP	Cable connection and signal direction	PLC	Cable connection and signal	PLC
Signal name		Signal name	direction	Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG	·	SG



PLC

Pin

arrangement\*Note 1)

Based on

communication

cable connector

front,

D-SUB 9 Pin male

(male, convex)

5

0

9

1

0

6

6

Signal

name

CD

RD

SD

DTR

SG

DSR

RTS

CTS

5

6

7

8

9

SG

DSR

RTS

CTS

5

6

7

8

9

CC	M			
Pin	Signal	Pin	Cable connection	Pin
arrangement*Note 1)	name	number		number
1 5	CD	1	P	1
(° °)	SD	2		2
	RD	3		3
Based on	DTR	4	•	4
Dased Off				

#### ■ RS-232C (1:1 connection)

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

#### **RS-422** (1:1 connection)

communication

cable connector

front,

D-SUB 9 Pin male

(male, convex)

СОМ				PLC	
Pin	Signal	Pin	Cable connection	Signal	Din arrangement
arrangement*Note 1)	name	number		name	Fin analyement
1 5	RDA	1		SDA	
(° °)		2	•	SDB	
		3	•	RDA	
Based on	RDB	4	•   •	RDB	
communication	SG	5		SG	
cable connector	SDA	6	<b>.</b>		
front		7			
D-SUB 9 Pin male		8			
(male, convex)	SDB	9	•		

\*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.

TOP	Cable connection and signal direction	PLC	Cable connection and signal	PLC
Signal name		Signal name	direction	Signal name
RDA		SDA		SDA
RDB		SDB		SDB
SDA		RDA		RDA
SDB		RDB		RDB
SG		SG		SG



# 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
Input	Bit	X0000 – X1FFF	X0000 – X1FF0
Output	Bit	Y0000 – Y1FFF	Y0000 – Y1FF0
STEP relay	Bit	S0000 - S2047	
Special relay	Bit	F0000 – F2047	F0000 – F2032
LATCH relay	Bit	L0000 – L8191	
Internal relay	Bit	M0000 – M8191	M0000 – M8176
Special relay	Bit	M9000 - M9255	M9000 – M9240
Timer - Coil	Bit	TC000 - TC2047	
Timer - Contact	Bit	TS0000 – TS2047	
Timer-Current value	Word		TN000 – TN2047
Counter - Coil	Bit	CC000 – CC1023	
Counter - Contact	Bit	CS000 – CS1023	
Counter-Current value	Word		CN000 – CN1023
LINK relay	Bit	B0000 – B1FFF	B0000 – B1FFF
LINK register	Word	W0000.0 – W1FFF.F	W0000 – W1FFF
Data register	Word	D0000.0 – D8191.15	D0000 – D8191
Special register	Word	D9000.0 - D9255.15	D9000 - D9255