Chap. 14 MITSUBISHI: MELSEC-A PLC

MELSEC-A Series PLC Driver of Mitsubishi is available since V1.02 so if you use the previous version, please apply XP-Builder and XGT Panel software that are beyond V1.02 from our web-site.

14.1 PLC List

XGT Panel can be connected to MELSEC-A PLC as below.

PLC Type	CPU Module	Connection	Communication	Connection module	Remarks
MELSEC-AnA	A2ACPU A2ACPU-S1 A3ACPU A2UCPU A2UCPU-S1 A3UCPU A4UCPU	Link type	RS-232C	AJ71C24-S6 AJ71C24-S8 AJ71UC24	Cnet
		Link type	RS-422/485	AJ71C24-S6 AJ71C24-S8 AJ71UC24	Cnet
	A2USCPU A2USHCPU-S1	Link type	RS-232C	A1SJ71C24-R2 A1SJ71UC24-R2	Cnet
		Link type	RS-422/485	A1SJ71C24-R4 A1SJ71UC24-R4	Cnet
MELSEC-AnN	A1NCPU A2NCPU A2NCPU-S1 A3NCPU	Link type	RS-232C	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71U24	Cnet
		Link type	RS-422/485	AJ71C24 AJ71C24-S3 AJ71C24-S6 AJ71C24-S8 AJ71U24	Cnet
	A1SCPU A1SJCPU A1SJHCPU A1SHCPU A2SHCPU	Link type	RS-232C	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4 A1SJ71UC24-R4	Cnet
		Link type	RS-422/485	A1SJ71C24-R2 A1SJ71UC24-R2 A1SJ71C24-R4 A1SJ71UC24-R4	Cnet
	A0J2CPU A0J2HCPU	Link type	RS-422/485	A0J2-C214-S1	Cnet

Notice

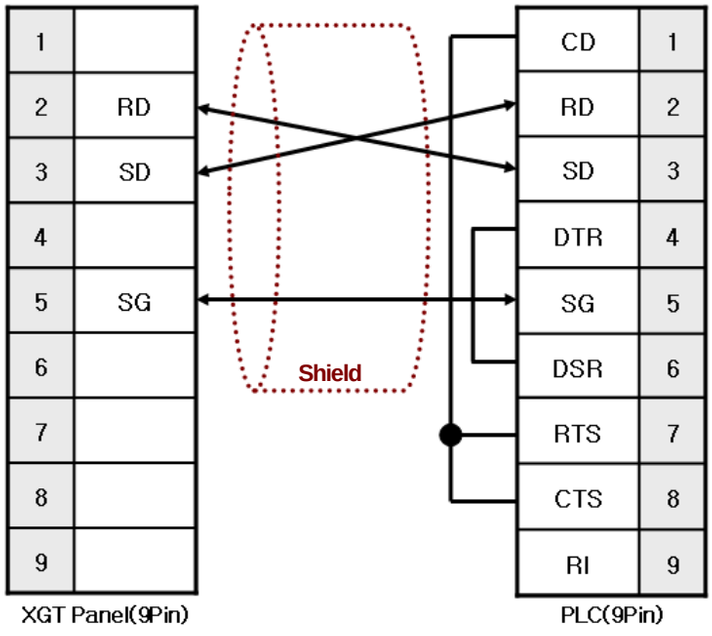
(1) Non-available PLC
► CPU module direct connection(loader) is not available.
(2) Term description
► Link: Indicates the communication with PLC module.

14.2 Wiring Diagram

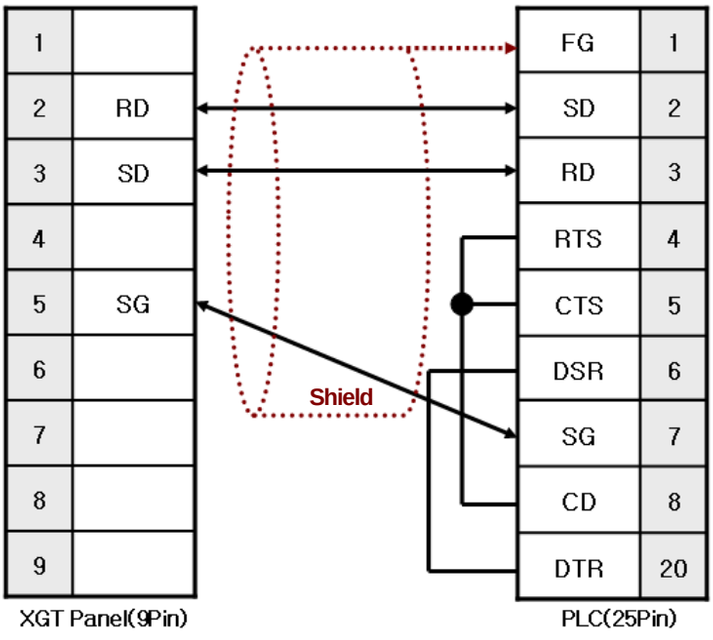
14.2.1 Link type: Cnet

Cnet can be divided into for RS-232C and RS-422/485.

The Cnet module of Mitsubishi MELSEC-A series that provides RS-232C has two types of connectors.
First, the wiring method for 9 pins connector is as below.



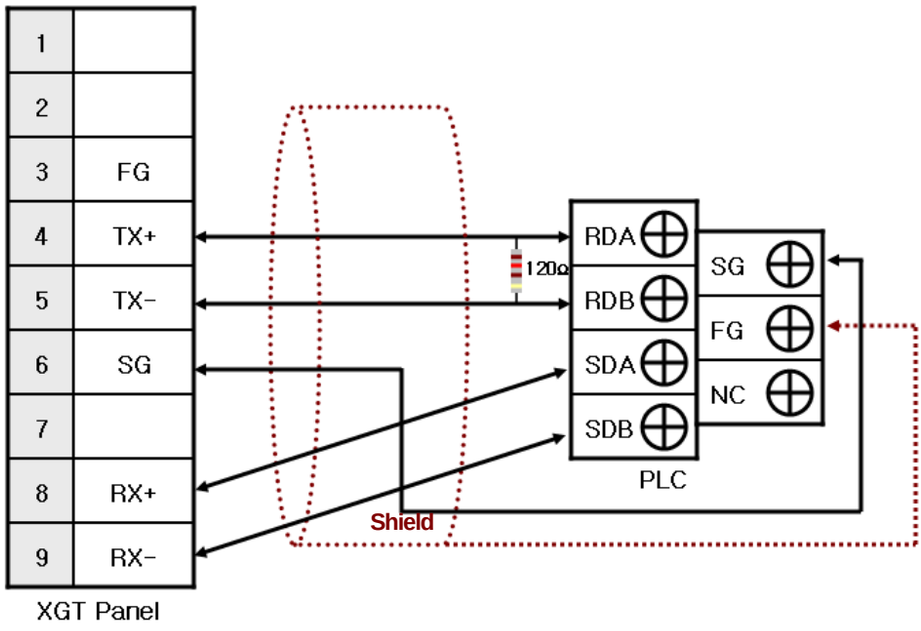
Second, the wiring method for 20 Pins connector is as below.



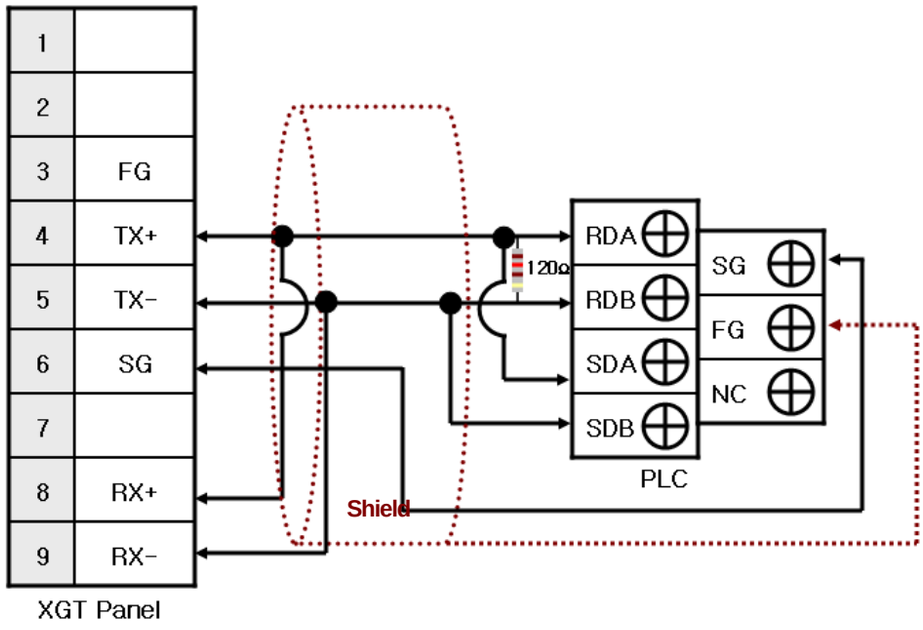
Notice

(1) Suggestions
- ► MELSEC-A Cnet(RS-232C) adopts flow control so if the above wiring is not done, communication is not available.
- ► **A shielded wire is recommended for stable communication.** For shield wiring, refer to the Chap.2.

The wiring method for RS-422/485 is as below.
The following is wiring for RS-422 and Mitsubishi MELSEC-A is composed of 7 pins terminal blocks.



The wiring for RS-485 is as below.



Notice

(1) Suggestions

- ► The array of connector and pin may be different depending on the PLC type.
- ► Check the end switch of XGT Panel. It is basically set as terminator type.
- ► XGT Panel has two SG pins so you can use either one.
- ► **A shielded wire is recommended for stable communication.** For shield wiring, refer to the Chap.2.

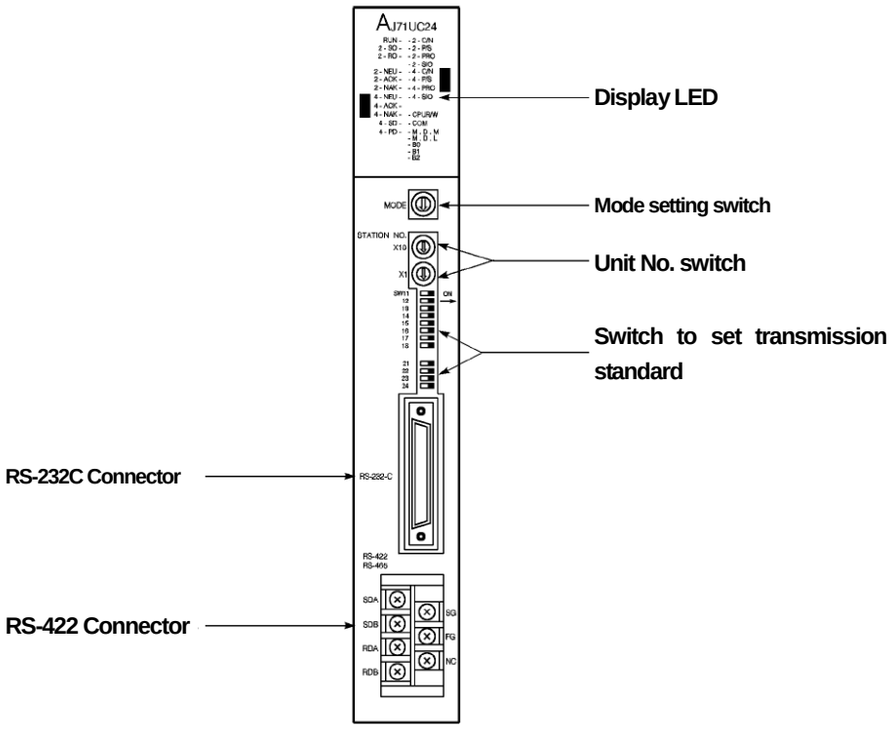
14.3 Communication Setting

14.3.1 Link type: Cnet

Cnet communication parameter of PLC is set with the switch of Cnet module. Setting methods are different depending on the type of device, for more details, refer to MITSUBISHI's communication manual.
The description on setting for typical kinds of devices(Cnet module) is provided hereupon.

(1) AJ71UC24

The outline of module is as below.

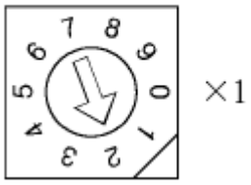


First of all, arrange mode setting switch.

RS-232C	RS-422/485
Setting as Exclusive communication mode 4 **with No. 4 switch**	Setting as Exclusive communication mode 4 **with No. 4 switch**

Set communication No. with a unit number switch.

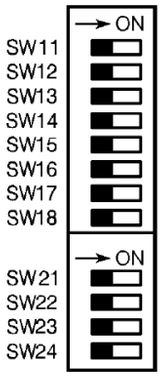
Switch to set tens(10) digit number
(Ex.) As shown at the picture, the arrow points to 2, tens(10) digit of a unit number is 20



Switch to set ones(1) digit number
(Ex.) As shown at the picture, the arrow points to 2, ones(1) digit of a unit number is 2.

Then, the unit number set by the two switches is 22.

There is communication setting switch to fix transmission standard such as communication type, communication speed.



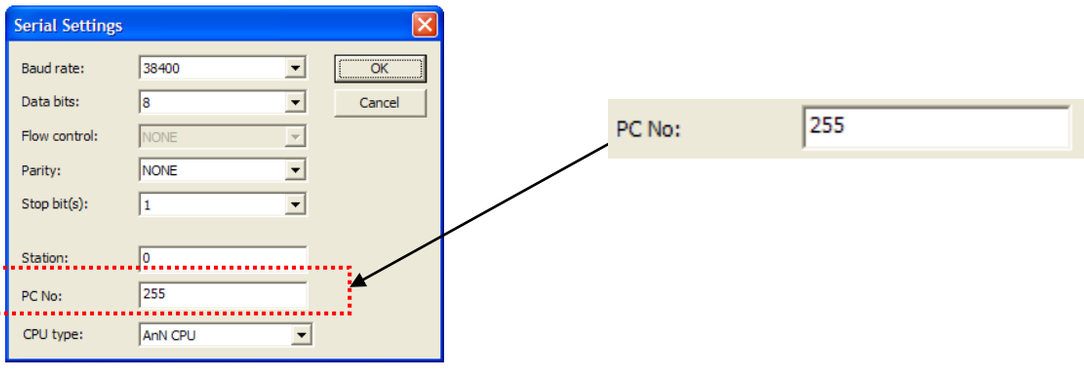
Switch No.	Setting items	Setting descriptions	
		On	Off
SW11	Communication type	RS-422/485	RS-232C
SW12	Data bit	8bit	7bit
SW13~SW15	Communication speed(bps)	*Procedure: SW13, SW14, SW15 19200: Off, On, On 9600: On, Off, On (XGT Panel does not allow the communication speed of less than 9600bps.)	
SW16	Whether using parity bit or not	Used	Not used
SW17	Parity bit	Even Number	Odd Number
SW18	Stop bit	2bit	1bit
SW21	Setting checksum	Used	Not used
SW22	Revision during run	Available	N/A
SW23	Selecting Computer link/Multi drop link	Computer link	Multi-drop
SW24	Setting Master/local	Master	Local

To communication with XGT Panel normally, you need to set the below switches among the above.

Switch No.	Setting items	Setting descriptions	Setting descriptions
SW21	Setting checksum	Used	On
SW23	Selecting Computer link/Multi drop link	Computer link	On
SW24	Setting Master/local	Local	Off

If you do not set the above, communication does not work properly so time out or error code may be shown at the upper place of XGT Panel. Error code is transmitted from MITSUBISHI PLC and may be different depending on communication muddle type.

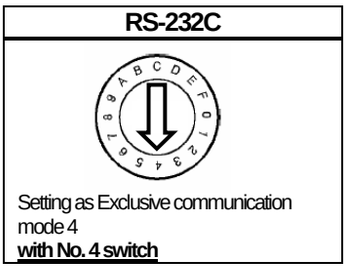
In the meanwhile, when you set RS-422 or RS-485 communication, establish the PC No. as 255 at XP-Builder.
(XP-Builder menu->Common->Project Property->Device Setting)



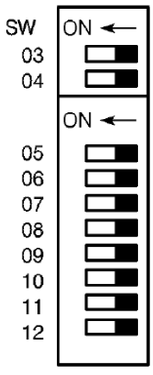
If you have wrong PC No., error code(0x0010) will be shown at the upper place of a screen. Error code is transmitted from MITSUBISHI PLC and may be different depending on communication muddle type.

(2) A1SJ71UC24-R2, A1SJ71C24-R2

The module provides RS-232C only and it has no switch to set a unit number.
You can set the mode switch as below.



There is communication setting switch to fix transmission standard such as communication type, communication speed.



Switch No.	Setting items	Setting descriptions	
		On	Off
SW03	Not used	-	
SW04	Revision during run	Available	N/A
SW05~SW07	Communication speed(bps)	*Procedure: SW05, SW06, SW07 19200: Off, On, On 9600: On, Off, On (XGT Panel does not allow the communication speed of less than 9600bps.)	
SW08	Data bit	8 Bit	7 Bit
SW09	Whether using parity bit or not	Used	Not used
SW10	Parity bit	Even Number	Odd Number
SW11	Stop bit	2 Bit	1 Bit
SW12	Setting checksum	Used	Not used

To communication with XGT Panel normally, you need to set the below switches among the above.

Switch No.	Setting items	Setting descriptions	Setting descriptions
SW12	Setting checksum	Used	On

If you do not set the above, communication does not work properly so time out or error code may be shown at the upper place of XGT Panel. Error code is transmitted from MITSUBISHI PLC and may be different depending on communication muddle type.

(3) A1SJ71UC24-R4, A1SJ71C24-R4

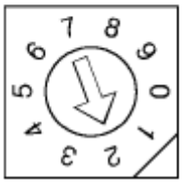
The module provides RS-422/485 only and it has no switch to set a unit number.
You can set the mode switch as below.

RS-422/485
Setting as Exclusive communication mode 4 **with No. 8 switch**

Set communication No. with a unit number switch.

×10

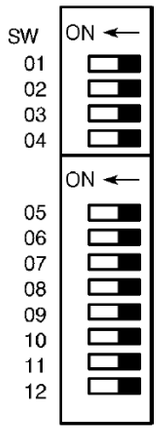
Switch to set tens(10) digit number
(Ex.) As shown at the picture, the arrow points to 2, tens(10) digit of a unit number is 20



×1

Switch to set ones(1) digit number
(Ex.) As shown at the picture, the arrow points to 2, ones(1) digit of a unit number is 2.
Then, the unit number set by the two switches is 22.

There is communication setting switch to fix transmission standard such as communication type, communication speed.



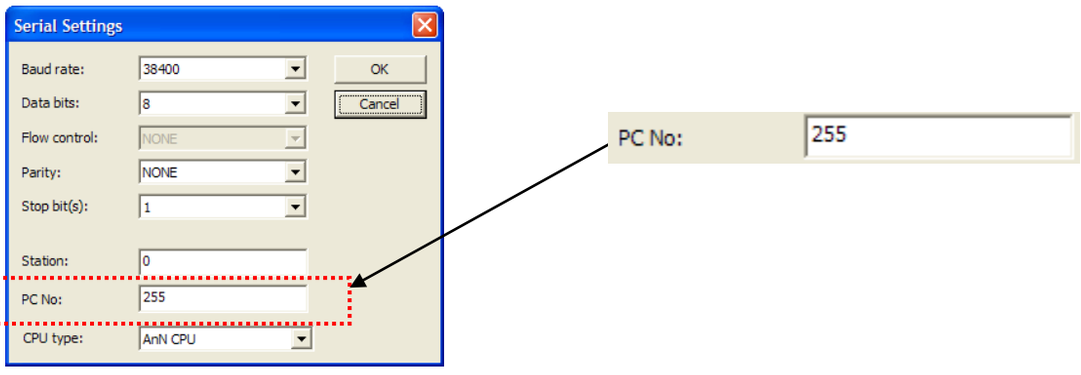
Switch No.	Setting items	Setting descriptions	
		On	Off
SW01	Setting Master/Local	Master	Local
SW02	Selecting computer link/multi-drop link	Computer link	Multi-drop link
SW03	Not used	-	
SW04	Revision during run	Available	N/A
SW05~SW07	Communication speed(bps)	*Procedure: SW05, SW06, SW07 19200: Off, On, On 9600: On, Off, On (XGT Panel does not allow the communication speed of less than 9600bps.)	
SW08	Data bit	8 Bit	7 Bit
SW09	Whether using parity bit or not	Used	Not used
SW10	Parity bit	Even Number	Odd Number
SW11	Stop bit	2 Bit	1 Bit
SW12	Setting checksum	Used	Not used

To communication with XGT Panel normally, you need to set the below switches among the above.

Switch No.	Setting items	Setting descriptions	Setting descriptions
SW01	Setting Master/local	Local	Off
SW02	Selecting Computer link/Multi drop link	Computer link	On
SW12	Setting checksum	Used	On

If you do not set the above, communication does not work properly so time out or error code may be shown at the upper place of XGT Panel. Error code is transmitted from MITSUBISHI PLC and may be different depending on communication muddle type.

In the meanwhile, when you set RS-422 or RS-485 communication, establish the PC No. as 255 at XP-Builder.
(XP-Builder menu->Common->Project Property->Device Setting)



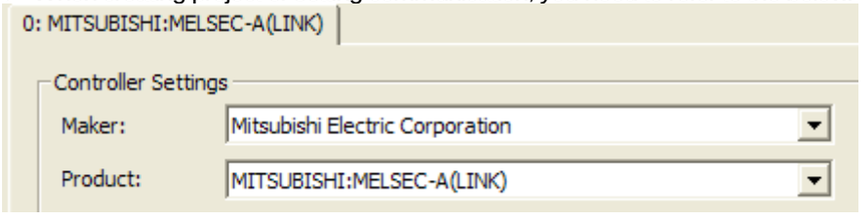
If you have wrong PC No., error code(0x0010) will be shown at the upper place of a screen. Error code is transmitted from MITSUBISHI PLC and may be different depending on communication muddle type.

Notice

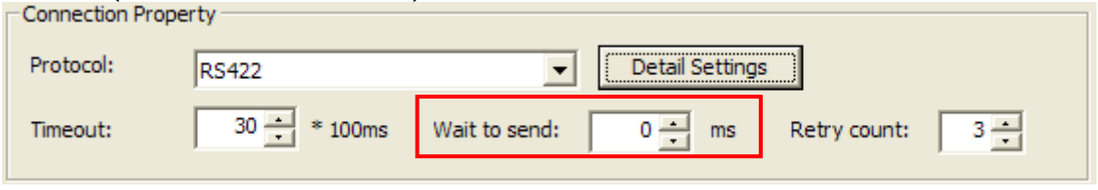
(1) Checking communication status
► There are SD, RD LED for Cnet module. If you have a normal communication, you can see that LED flashes fast.

(2) Suggestions to set PLC
► For installation, make sure to refer to MITSUBISHI manual.
► Especially, be noted that setting methods are different depending on the device type.

(3) Suggestions to set XP-Builder
► When creating project or setting communication, you need to refer to the below.



► When using RS-422/485 as 1:N, set transmission waiting time flexibly depending on communication structure(Recommended : 50~100ms)



14.4 Available Device

The available devices for XGT Panel are as below.

(1) MELSEC-AnA Series

Area	Size	Bit Contacts	Word data	Remarks
X	8192contacts	X0000 ~ X1FFF	X0000 ~ X1FF0	Hexadecimal Number
Y	8192contacts	Y0000 ~ Y1FFF	Y0000 ~ Y1FF0	Hexadecimal Number
M	8192contacts	M0000 ~ M8191	M0000 ~ M8176	Decimal Number
	256contacts	M9000 ~ M9255	M9000 ~ M9240	Decimal Number
L	8192contacts	L0000 ~ L8191	L0000 ~ L8196	Decimal Number
F	2048contacts	F0000 ~ F2047	F0000 ~ F2032	Decimal Number
B	8192contacts	B0000 ~ B1FFF	B0000 ~ B1FF0	Hexadecimal Number
TC	2048contacts	TC00000 ~ TC2047	Word is not available	Decimal Number
TS	2048contacts	TC00000 ~ TC2047	Word is not available	Decimal Number
CS	1024contacts	CS0000 ~ CS1023	Word is not available	Decimal Number
CC	1024contacts	CC0000 ~ CC1023	Word is not available	Decimal Number
S	8192contacts	S0000 ~ S8191	S0000 ~ S8176	Decimal Number
D	8192words	-	D0000 ~ D8191	Decimal Number
	256words	-	D9000 ~ D9255	Decimal Number
W	8192words	-	W0000 ~ W1FFF	Hexadecimal Number
TN	2048words	-	TN0000 ~ TN2047	Decimal Number
CN	1024words	-	CN0000 ~ CN1023	Decimal Number
R	8192words	-	R0000 ~ R8191	Decimal Number

(2) MELSEC-AnN Series

Area	Size	Bit Contacts	Word data	Remarks
X	2048contacts	X000 ~ X7FF	X0000 ~ X7F0	Hexadecimal Number
Y	2048contacts	Y000 ~ Y7FF	Y0000 ~ Y7F0	Hexadecimal Number
M	2048contacts	M0000 ~ M2047	M0000 ~ M2032	Decimal Number
	256contacts	M9000 ~ M9255	M9000 ~ M9240	Decimal Number
L	2048contacts	L0000 ~ L2047	L0000 ~ L2032	Decimal Number
F	255contacts	F000 ~ F255	F000 ~ F240	Decimal Number
B	1024contacts	B000 ~ B3FF	B000 ~ B3F0	Hexadecimal Number
TC	256contacts	TC000 ~ TC255	Word is not available	Decimal Number
TS	256contacts	TC000 ~ TC255	Word is not available	Decimal Number
CS	256contacts	CS000 ~ CS255	Word is not available	Decimal Number
CC	256contacts	CC000 ~ CC255	Word is not available	Decimal Number
S	2048contacts	S0000 ~ S2047	S0000 ~ S2032	Decimal Number
D	1024words	-	D0000 ~ D1023	Decimal Number
	256words	-	D9000 ~ D9255	Decimal Number
W	1024words	-	W000 ~ W3FF	Hexadecimal Number
TN	256words	-	TN000 ~ TN256	Decimal Number
CN	256words	-	CN000 ~ CN256	Decimal Number
R	8192words	-	R0000 ~ R8191	Decimal Number

Notice

(1) Suggestions

► For the details on device, refer to XP-Builder manual.
► Use it within device area.
► The range of device may be different depending on CPU module so refer to each CPU module manual.
► When a wrong blank area set at between M and D device address, PLC sends NAK signal so be attentive to use M and D device areas.
► Among M and D devices, more than 9000 belongs to system area so be attentive to writing mode.
For example, when M9002 bit is written as 1, link communication may stop.
► Using input/output device can affect communication module.
For example, when using Y32 word after installing module at No.0 link slot, link communication may stop.