

# User Manual for Communication

HMI

**GP/LP Series**

**(Rockwell Automation, Allen-Bradley)**

Thank you for purchasing an Autonics product.

This user manual contains information about the product and its proper use,  
and should be kept in a place where it will be easy to access.



# Preface

Thank you for purchasing Autonics product.





Please familiarize yourself with the information contained in the Safety Considerations section before using this product.

This user manual contains information about the product and its proper use, and should be kept in a place where it will be easy to access.

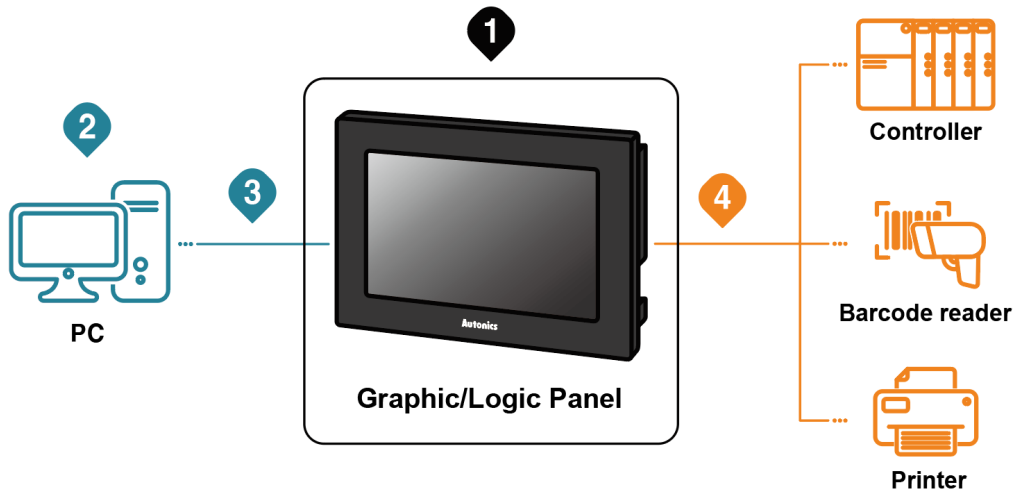
# User Manual Guide

- Please familiarize yourself with the information in this manual before using the product.
- This manual provides detailed information on the product's features. It does not offer any guarantee concerning matters beyond the scope of this manual.
- This manual may not be edited or reproduced in either part or whole without permission.
- A user manual is not provided as part of the product package. Please visit our website ([www.autonics.com](http://www.autonics.com)) to download a copy.
- The manual's content may vary depending on changes to the product's software and other unforeseen developments within Autonics, and is subject to change without prior notice. Upgrade notice is provided through our website.
- We contrived to describe this manual more easily and correctly. However, if there are any corrections or questions, please notify us these on our website.
- Inner device of this user manual for communication is based on GP.  
If you use LP, refer to "LP user manual" for inner device of LP.

# User Manual Symbols

Symbol	Description
 <b>Note</b>	Supplementary information for a particular feature.
 <b>Warning</b>	Failure to follow instructions can result in serious injury or death.
 <b>Caution</b>	Failure to follow instructions can lead to a minor injury or product damage.
 <b>Ex.</b>	An example of the concerned feature's use.
※1	Annotation mark.

# Reference Manual for Each Configuration



## 1 Graphic/Logic panel device specification, installation, maintenance, management, firmware update and system configuration

Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

## 2 Project drawing, programming

Software Manual	Drawing	atDesigner User Manual, GP Editor User Manual
	Programming	atLogic User Manual, atLogic Programming Manual

## 3 Project Upload/Download

Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

## 4 Connected device setting, communication setting

Software Manual	Drawing	atDesigner User Manual, GP Editor User Manual
	Programming	atLogic User Manual, atLogic Programming Manual
Hardware Manual	A Series	GP-A Series User Manual, LP-A Series User Manual
	S Series	GP-S070 User Manual, GP-S044/057 User Manual, LP-S070 User Manual, LP-S044 User Manual

## 4 Check connectable device, connection cable model name and protocol

Communication Manual	GP/LP Communication Manual
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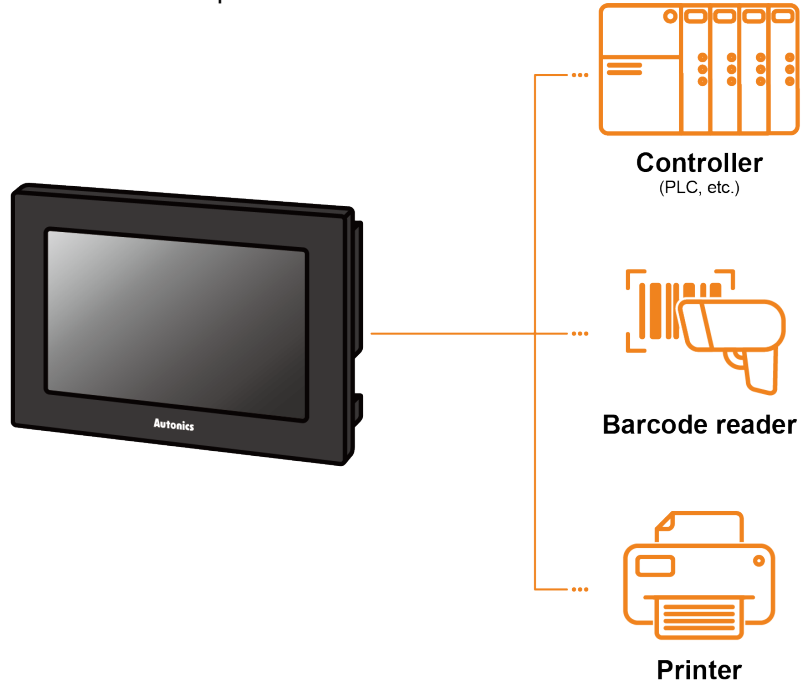
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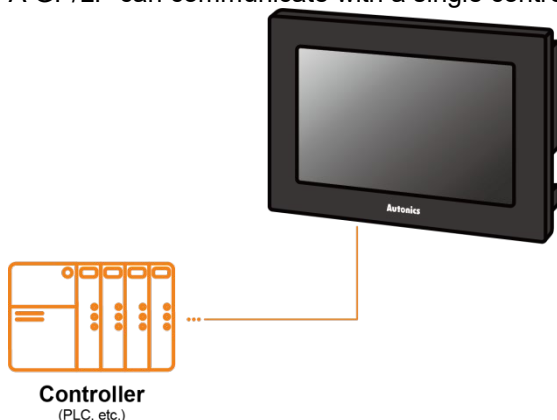
# 1 System Organization

GP/LP can be connected with various controller, barcode reader and printer via RS232C, RS422, Ethernet, CAN and USB HOST port.



## 1.1 1:1 Communication

A GP/LP can communicate with a single controller A.



### (1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.

For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C/RS422	Direct communication available
	CH2	RS422/RS485	Link device <sup>※1</sup> communication available
GP/LP-S070	CH1	RS232C/RS422	Direct communication available Link device <sup>※1</sup> communication available
	CH2	RS422/RS485	Direct communication available Link device <sup>※1</sup> communication available

- GP/LP-A Series

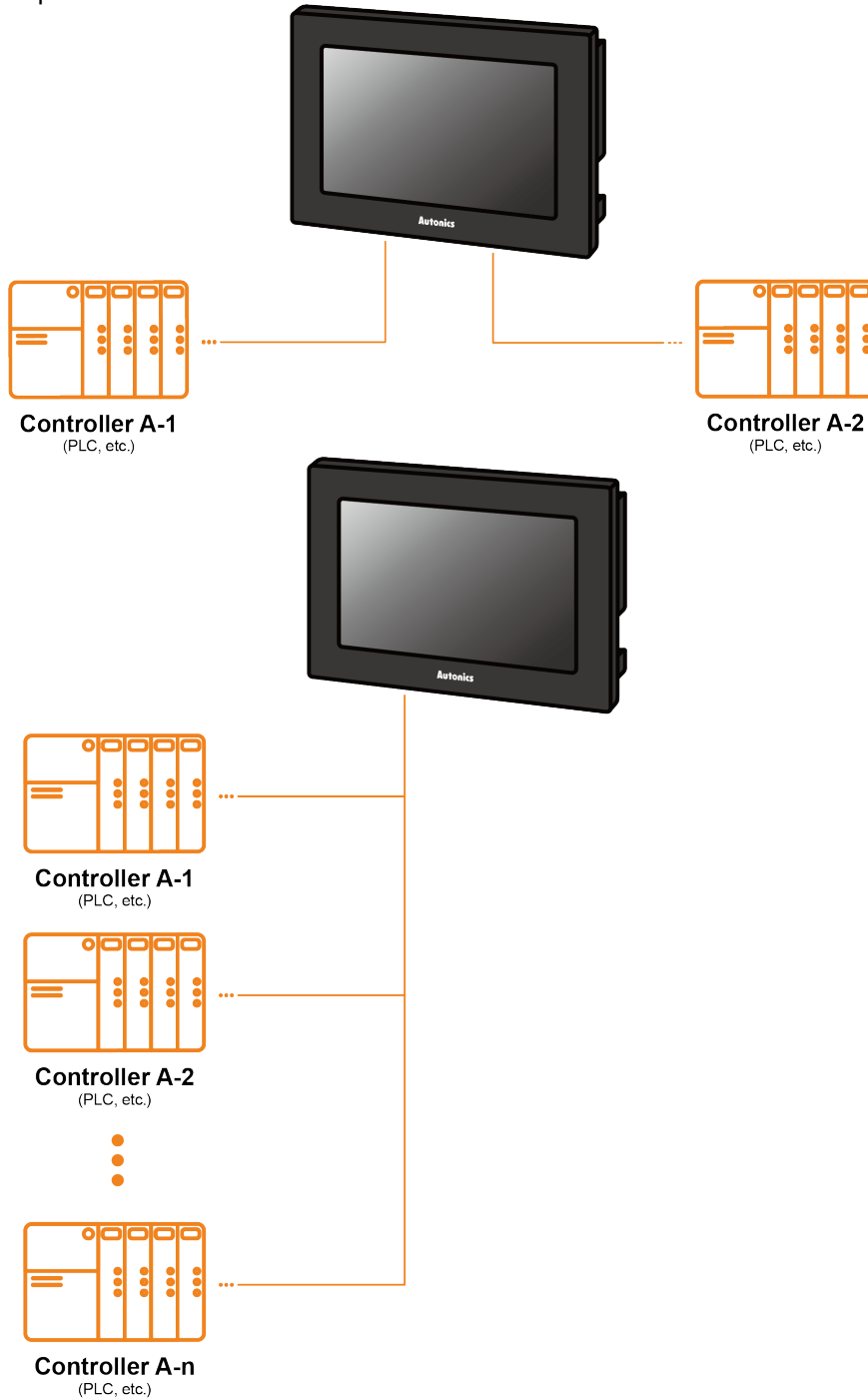
Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device <sup>※1</sup> communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN <sup>※2</sup> port	Direct communication available Link device <sup>※1</sup> communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

## 1.2 1:N Communication of Same Controllers

1:N communication stands for one LP communicating with multiple of controllers. The GP/LP observes the connected controllers or relays data between controllers. A GP/LP can communicate with the multiple of controller As. The controller has to be able to set address of each device, and the address should not be duplicated.



**(1) Communication configuration by GP/LP model**

The communication configuration by GP/LP model is listed below. For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	-	Multiple connection unavailable
	CH2	RS422	Link device <sup>※1</sup> communication available
GP/LP-S070	CH1 or CH2	RS422	Direct communication available Link device <sup>※1</sup> communication available

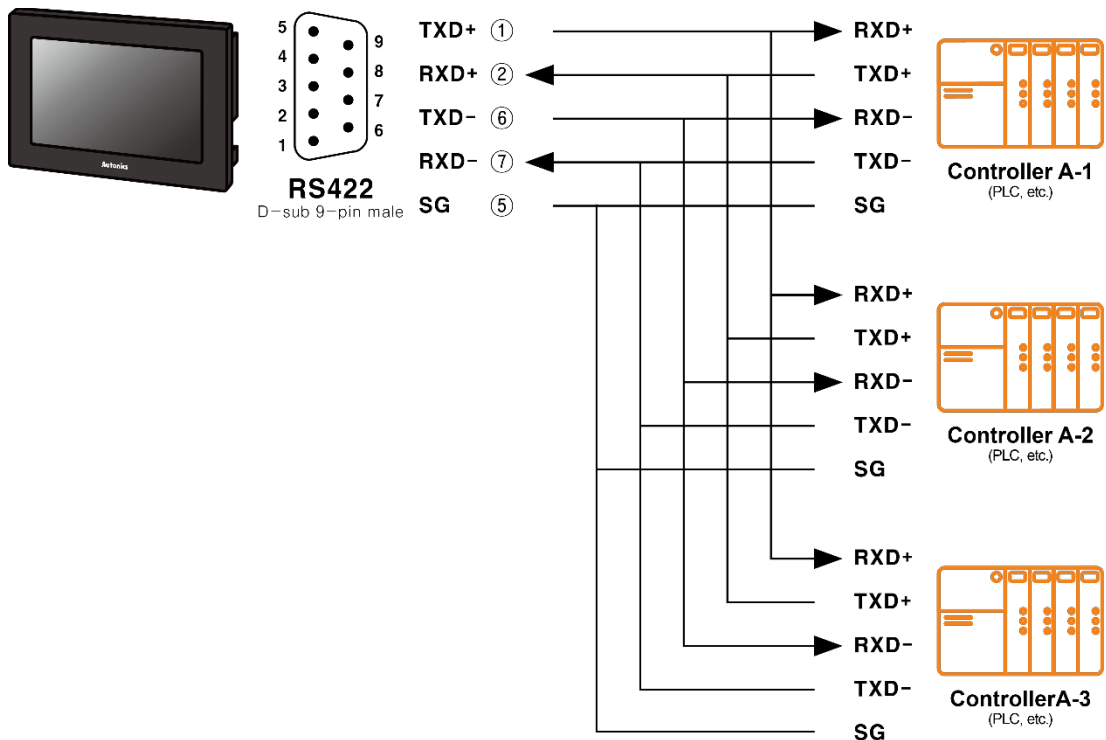
- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device <sup>※1</sup> communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN <sup>※2</sup> port	Direct communication available Link device <sup>※1</sup> communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

**(2) RS422 communication connection diagram**



## 1.3 1:N Communication of Different Controllers

1:N communication stands for one GP/LP communicating with multiple of controllers. The GP/LP observes the connected controllers or relays data between controllers. The GP/LP can communicate with the multiple of different controllers.

### 1.3.1 1:1:1 Communication

A GP/LP can communicate with a single controller A and a single controller B. The GP/LP relays communications between the controller A and B.



#### (1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.

For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C/RS422	Direct communication available
	CH2	RS422/RS485	Link device*1 communication available
GP/LP-S070	CH1 or CH2	RS422/RS485	Direct communication available Link device*1 communication available

- GP/LP-A Series

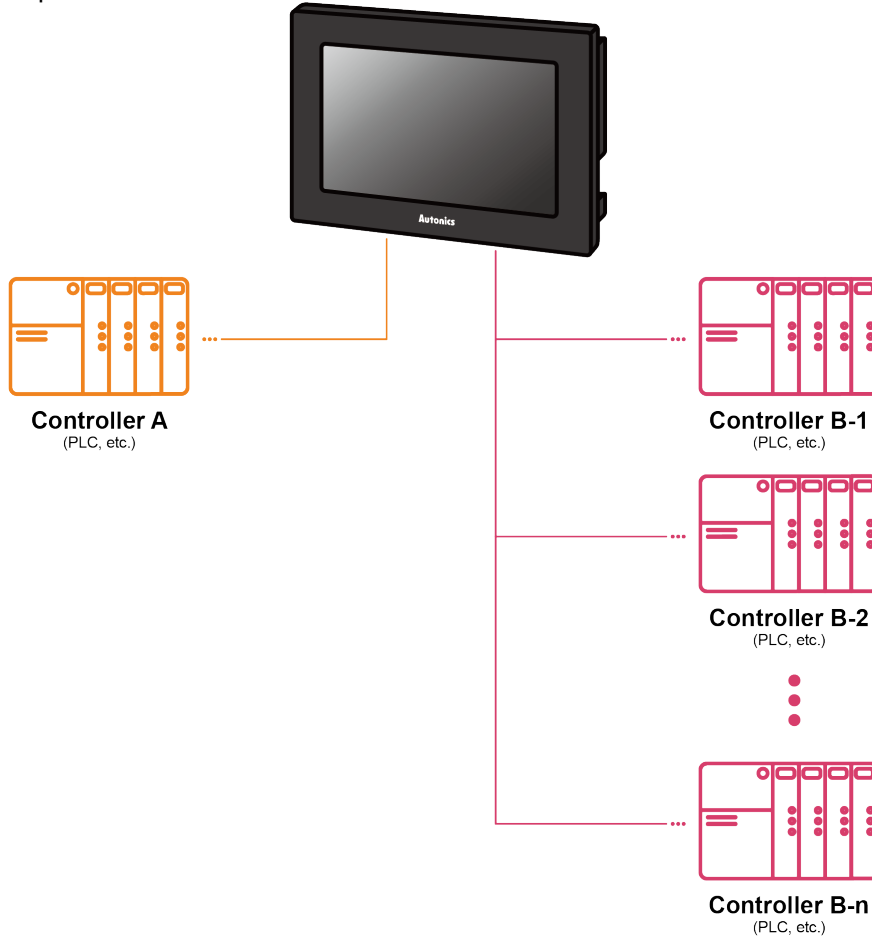
Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device*1 communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN*2 port	Direct communication available Link device*1 communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

※2: Only Autonics' ARD Series can be connected to CAN port.

### 1.3.2 1:1:N Communication

A GP/LP can communicate with a single controller A and the multiple of controller Bs..  
 The GP/LP relays communication between the controller A and B.  
 The controller has to be able to set address of each device, and the address should not be duplicated.



#### (1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.  
 For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S044, GP-S057	CH1	RS232C	Single direct communication available
	CH2	RS422/RS485	Link device <sup>※1</sup> multiple communication available
GP/LP-S070	CH1 or CH2	RS232C	Single direct communication available Link device <sup>※1</sup> single communication available
		RS422/RS485	Multiple direct communication available Link device <sup>※1</sup> multiple communication available

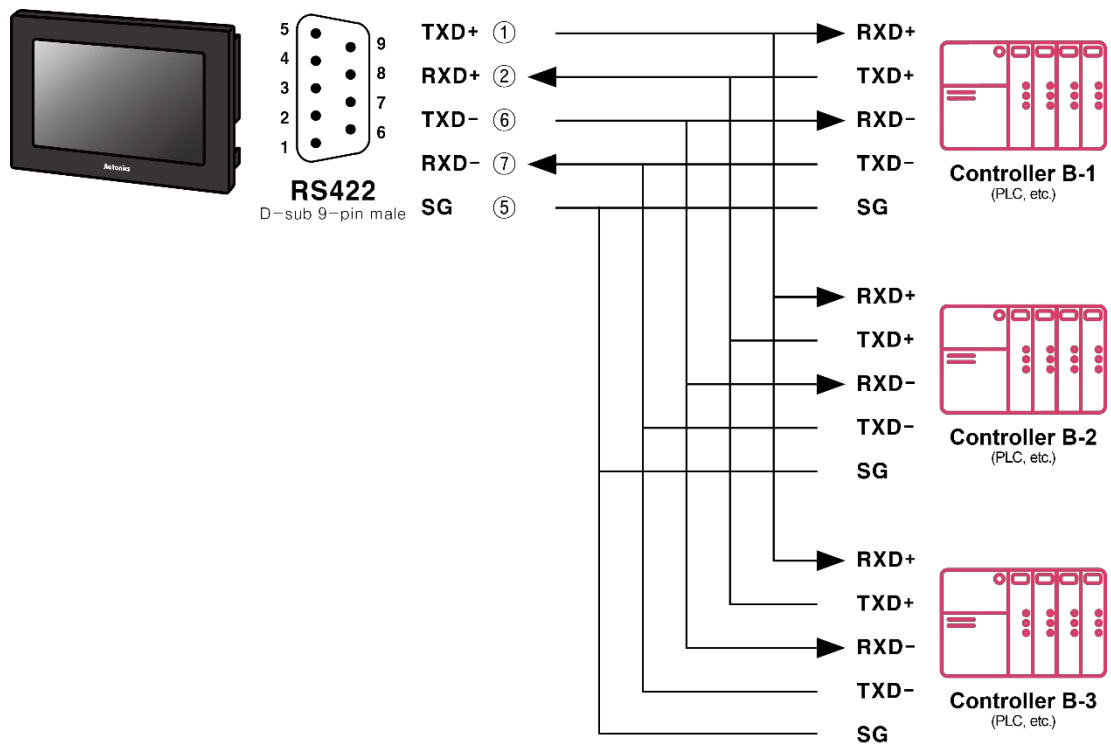
- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device*1 communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN*2 port	Direct communication available Link device*1 communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

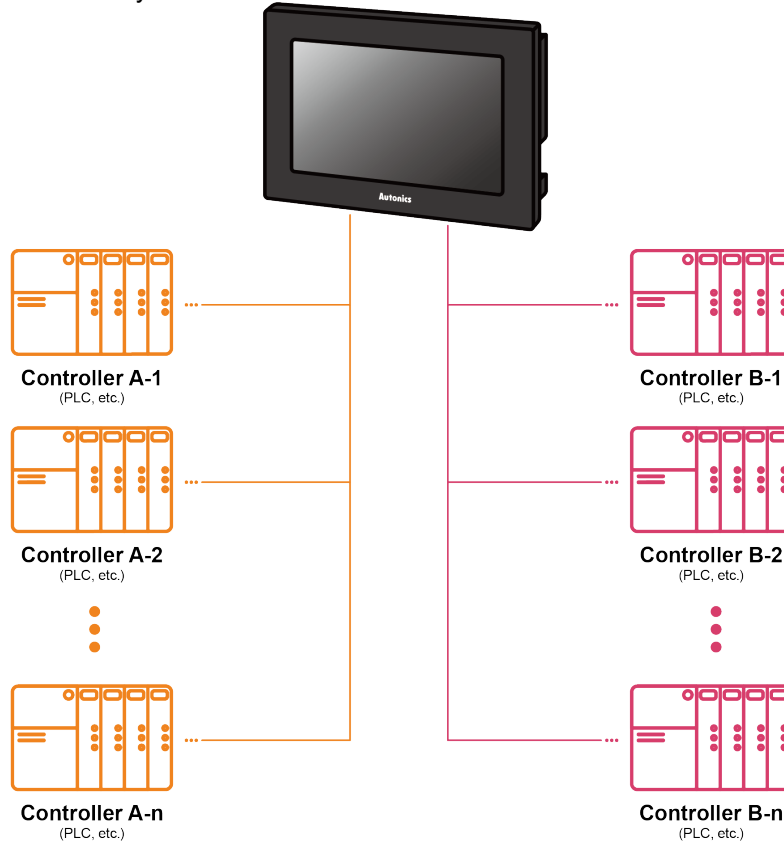
※2: Only Autonics' ARD Series can be connected to CAN port.

**(2) RS422 communication connection diagram**



### 1.3.3 N:1:N Communication

A GP/LP can communicate with the multiple of controller As and Bs.  
The LP relays communication between the controller A and B.



#### (1) Communication configuration by GP/LP model

The communication configuration by GP/LP model is listed below.  
For detailed information about the communication configuration, please refer to 'GP/LP User Manual'.

- GP/LP-S Series

Series	Chanel	Connecting port	Description
GP/LP-S070	CH1 or CH2	RS232C/RS422	Multiple direct communication available Link device <sup>※1</sup> multiple communication available

- GP/LP-A Series

Series	Connecting port	Description
GP/LP-A070	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port	Direct communication available Link device <sup>※1</sup> communication available
GP/LP-A104	RS422 or RS232C-A port, RS232C or RS232C-B port, Ethernet port, CAN <sup>※2</sup> port	Direct communication available Link device <sup>※1</sup> communication available

※1: Please refer to 'GP Editor User Manual' for Link device instruction.

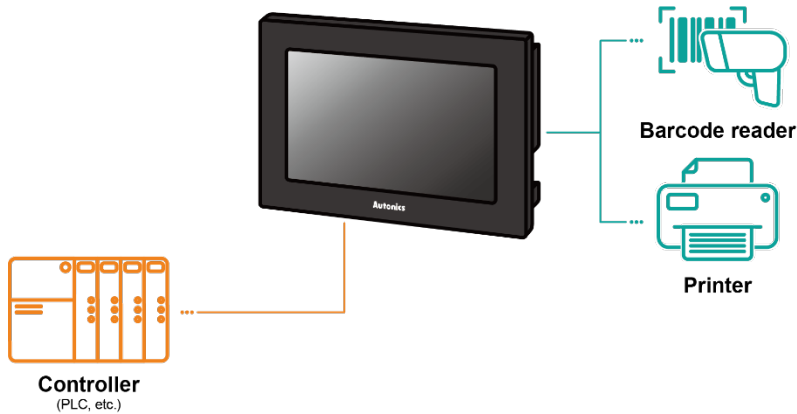
※2: Only Autonics' ARD Series can be connected to CAN port.



## 1.4 Barcode Reader, Printer Communication

A GP/LP can communicate with the barcode reader and printer.  
 Connect the barcode reader to utilize the barcode data.  
 Connect the printer to print the alarm log or the screen.

- GP/LP-S Series: printing alarm log
- GP/LP-A Series: print alarm log and screen



### 1.4.1 Communication Configuration

#### 1.4.1.1 Barcode Reader

##### (1) Connected communication port

- GP/LP-S Series

Series	Connected device	Communication port		
		RS232C*	RS422*	USB Host
GP/LP-S044, GP-S057	Controller	○	○	-
	Barcode reader	○	○	-
GP/LP-S070	Controller	○	○	-
	Barcode reader	○	○	-

- GP/LP-A Series

Series	Connected device	Communication port		
		RS232C*	RS422*	USB Host
GP/LP-A070 GP/LP-A104	Controller	○	○	-
	Barcode reader	○	○	○

※RS232C/422 converter allows to opposite communication.

**(2) Configuration method**

1st Set the items related to the use of bar codes in the project in the drawing program, GP Editor/atDesigner.

Series	Description	Drawing program menu
GP/LP-S	Device setting for data storage	Common > Barcode
	System device setting for action control	Common > System Information > System Signal 1
GP/LP-A	Device setting for connection port/data storage	Project > Project Property > Special Device Setting

※For detailed information about system device setting, please refer to 'GP Editor/atDesigner User Manual'.

2nd Download the set project in the drawing program , GP Editor/atDesigner, to GP/LP device.

3rd Make communication settings for each port in the GP/LP system menu.

※For detailed information about communication setting, please refer to 'GP/LP User Manual'.

**(3) Communication specification**

Item	Specification
Baud rate	300, 600, 1200, 3200, 4800, 9600, 19200, 38400, 57600, 115200bps
Data length	7, 8 bit
Parity	None, Odd, Even
Stop bit	1, 2 bit
Flow control	DSR/DTR, XON/XOFF

**1.4.1.2 Printer****(1) Connected communication port**

- GP/LP-S Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-S044, GP-S057	Controller	○	○	-
	Printer	○	○	-
GP/LP-S070	Controller	○	○	-
	Printer	○	○	-

- GP/LP-A Series

Series	Connected device	Communication port		
		RS232C※	RS422※	USB Host
GP/LP-A070, GP/LP-A104	Controller	○	○	-
	Printer	-	-	○

**(2) Configuration method**

1st Set screen printing/alarm log printing device and touch key/switch in drawing program, GP Editor/atDesigner.

Series	Description	Drawing program menu
GP/LP-S	System device setting for action control	Common > System Information > System Signal
GP/LP-A	Device setting for screen print control	Project window > Right-click menu of the screen to print > Screen Printer Setting
	Device setting for alarm log print	Project window > Alarm History > Use Print

2nd Download the set project in the drawing program , GP Editor/atDesigner, to GP/LP device.

3rd Make communication settings for each port in the GP/LP system menu.

※ For detailed information about communication setting, please refer to 'GP/LP User Manual'.

**(3) Communication specification**

Item	Specification
Baud rate	300, 600, 1200, 3200, 4800, 9600, 19200, 38400, 57600 bps
Data length	7, 8 bit
Parity	None, Odd, Even
Stop bit	1, 2 bit
Flow control	DSR/DTR, XON/XOFF



## 2 Communication Configuration by Devices

### 2.1 Rockwell Automation Allen-Bradley MicroLogix Series Connection

GP/LP is able to communicate with Rockwell Automation Allen-Bradley MicroLogix Series.

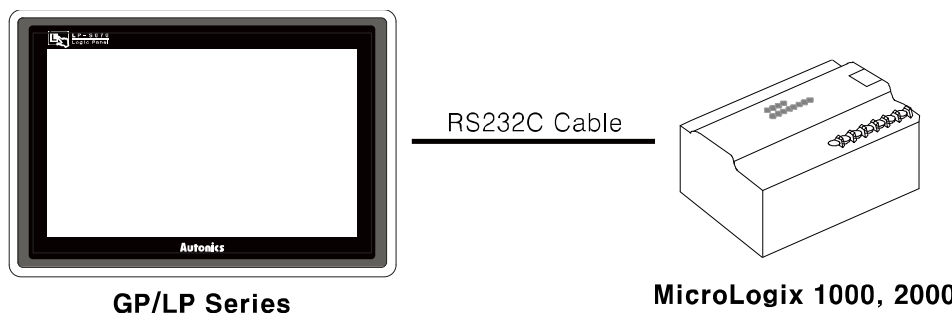
#### 2.1.1 Connection Support PLC Model

PLC type		Communication method	Communication type	Baud rate (bps)
MicroLogix	1000	RS232C	CPU direct Loader	9600
	1200	RS232C	CPU direct Loader	19200
	1500	RS232C	CPU direct Loader	19200

#### 2.1.2 Connectable GP/LP Model

Connected devices	Connection method	GP/LP Model								
		GP-2480 (under V2.70)	GP-2480 (over V3.00)	GP-S057	GP/LP-S044	GP/LP-S070	GP-S057 (V2)	GP/LP-S044 (V2)	GP/LP-S070 (V2)	GP/LP-A Series
MicroLogix 1000	CPU direct Loader	x	○	○	○	○	○	○	○	○
MicroLogix 1200	CPU direct Loader	x	○	○	○	○	○	○	○	○
MicroLogix 1500	CPU direct Loader	x	○	○	○	○	○	○	○	○

#### 2.1.3 System Organization



Rockwell Automation Allen-Bradley MicroLogix Series executes RS232C communication. If PLC has imbedded RS422 loader port or you use RS232/422 converter, RS422 communication is also available.

#### 2.1.4 Communication Cable

Use dedicated cable sold by Rockwell Automation.

## 2.1.5 Available Device

The device range differs depending on the PLC model and the number of I/O contacts.

The available PLC model in GP/LP are as follows.

For detailed information about each device, please refer to the manuals provided by each manufacturer and

For detailed information about GP/LP internal device, please refer to 'atLogic Programing Manual'.

### 2.1.5.1 Device Structure

I	00	0
---	----	---

① Device name    ② Word address    ③ Bit address

Type	①	②	③	Format	File No	Note
Bit	I	Hexadecimal	Hexadecimal	EESSd	1	Input
	O	Hexadecimal	Hexadecimal	EESSd	0	Output
	S2	Decimal	Hexadecimal	EEEd	2	Status
	B3	Decimal	Hexadecimal	EEEd	3	Binary
	TD	Decimal		EEEd	4	Timer.DN
	CD	Decimal		EEEd	5	Counter.DN
Word	I	Hexadecimal		EESS	1	Input
	O	Hexadecimal		EESS	0	Output
	S2	Decimal		EEE	2	Status
	B3	Decimal		EEE	3	Binary
	TS	Decimal		EEE	4	Timer.PRE
	CS	Decimal		EEE	5	Counter.PRE
	TP	Decimal		EEE	4	Timer.ACC
	CP	Decimal		EEE	5	Counter.ACC
N7	Decimal		EEE	7	INTEGER	

Format

E: Element, S : Sub Element, d : Bit Position



Ex.

Word I1 = bit I10 to I1F , Word UW10 = UB100 to UB10F

## 2.1.5.2 Device Range

## (1) MicroLogix 1000

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	I	I 0	I 1F
	Output relay	O	O 0	O F
	Status relay	S2	S2 0	S2 32F
	Internal relay	B3	B3 0	B3 31F
	Timer contact	TD	TD 0	TD 39
	Counter contact	CD	CD 0	CD 31
Word	Input register	I	I 0	I 1
	Output register	O	O 0	O 0
	Status register	S2	S2 0	S2 32
	Internal register	B3	B3 0	B3 31
	Timer setting value	TS	TS 0	TS 39
	Counter setting value	CS	CS 0	CS 31
	Timer current value	TP	TP 0	TP 39
	Counter current value	CP	CP 0	CP 31
Data register	N7	N7 0	N7 104	

## (2) MicroLogix 1200

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	I	I 0	I 3F
	Output relay	O	O 0	O 3F
	Status relay	S2	S2 0	S2 65F
	Internal relay	B3	B3 0	B3 F
	Timer contact	TD	TD 0	TD 0
	Counter contact	CD	CD 0	CD 0
Word	Input register	I	I 0	I 3
	Output register	O	O 0	O 3
	Status register	S2	S2 0	S2 65
	Internal register	B3	B3 0	B3 0
	Timer setting value	TS	TS 0	TS 0
	Counter setting value	CS	CS 0	CS 0
	Timer current value	TP	TP 0	TP 0
	Counter current value	CP	CP 0	CP 0
Data register	N7	N7 0	N7 0	

## (3) MicroLogix 1500

Type	Device	Mark	Range	
			Start	End
Bit	Input relay	I	I 00000	I FFFFF
	Output relay	O	O 00000	O FFFFF
	Status relay	S2	S2 0	S2 65F
	Internal relay	B3	B3 0	B3 255F

Type	Device	Mark	Range	
			Start	End
	Timer contact	T	T 0	T 255
	Counter contact	C	C 0	C 255
Word	Input register	I	I 0000	I FFFF
	Output register	O	O 0000	O FFFF
	Status register	S2	S2 0	S2 65
	Internal register	B3	B3 0	B3 255
	Timer setting value	TS	TS 0	TS 255
	Counter setting value	CS	CS 0	CS 255
	Timer current value	TP	TP 0	TP 255
	Counter current value	CP	CP 0	CP 255
	Data register	N7	N7 0	N7 255

### 2.1.6 Monitorable Device in GP/LP

GP/LP is able to monitor PLC device and change the status.

The following is available device list of this menu, please refer to 'Available device' for available device range.

Type	Mark	Device
Bit	I	Input relay
	O	Output relay
	S2	Status relay
	B3	Internal relay
	TD	Timer contact
	CD	Counter contact
Word	I	Input register
	O	Output register
	S2	Status register
	B3	Internal register
	TS	Timer setting value
	CS	Counter setting value
	TP	Timer current value
	CP	Counter current value
	N7	Data register





**Make Life Easy: Autonics**

\* Dimensions or specifications on this manual are subject to change and some models may be discontinued without notice.

**MTA-GPLPC\_RockwellAllenBradley-V1.0-1907US**