# User Manual for Communication

# HMI GP/LP Series (SIEMENS)

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.

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

# **Reference Manual for Each Configuration**



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

Hardwara	A Series	GP-A Series User Manual, LP-A Series User Manual	
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	Drawing	atDesigner User Manual, GP Editor User Manual
Manual	Programming	atLogic User Manual, atLogic Programming Manual

#### 3 Project Upload/Download

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

#### Connected device setting, communication setting

Software	Drawing	atDesigner User Manual, GP Editor User Manual
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

# **Table of Contents**

	Prelac	е		3		
	User M	lanual G	Guide	4		
	User Manual Symbols					
	Refere	nce Mai	nual for Each Configuration	6		
	Table o	of Conte	nts	7		
1	Syste	m Orga	anization	. 9		
	1.1	1:1 Co	mmunication	10		
	1.2	1:N Co	mmunication of Same Controllers	11		
	1.3	1:N Co	mmunication of Different Controllers	13		
		1.3.1	1:1:1 Communication	13		
		1.3.2	1:1:N Communication	14		
		1.3.3	N:1:N Communication	16		
	1.4	Barcoc	le Reader, Printer Communication	17		
		1.4.1	Communication Configuration	17		
2	•	_				
4	Comm	nunicat	tion Configuration by Devices	21		
4	2.1	nunicat SIEME	tion Configuration by Devices	<b>21</b> 21		
۷	2.1	SIEME 2.1.1	INS S7 Series Connection	<b>21</b> 21 21		
۷	2.1	SIEME 2.1.1 2.1.2	INS S7 Series Connection	<b>2 1</b> 2 1 2 1 2 1		
۷	2.1	SIEME 2.1.1 2.1.2 2.1.3	INS S7 Series Connection	2 1 2 1 2 1 2 1 2 2		
۷	2.1	SIEME 2.1.1 2.1.2 2.1.3 2.1.4	Tion Configuration by Devices	2 1 2 1 2 1 2 1 2 2 2 2		
2	2.1	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5	Tion Configuration by Devices	2 1 2 1 2 1 2 1 2 2 2 2 2 2		
۷	2.1	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable.       2         Available Device.       3         Monitorable Device in GP/LP       3	2 1 2 1 2 1 2 2 2 2 2 2 2 7		
۷	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME	Stion Configuration by Devices       2         SNS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable.       2         Available Device.       3         Monitorable Device in GP/LP.       3         SNS S7-1200 Series Communication Module Connection.       2	2 1 2 1 2 1 2 2 2 2 2 2 2 7 2 8		
2	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable       2         Available Device       3         Monitorable Device in GP/LP       3         SNS S7-1200 Series Communication Module Connection       3         Connection Support PLC Model       3	2 1 2 1 2 1 2 2 2 2 2 2 2 7 2 8 2 8 2 8		
L	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1 2.2.2	Ition Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable.       2         Available Device.       3         Monitorable Device in GP/LP       3         INS S7-1200 Series Communication Module Connection       3         Connection Support PLC Model       3         Connectable GP/LP Model       3	2 1 2 1 2 1 2 2 2 2 2 2 2 2 2 7 2 8 2 8 2 8		
2	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1 2.2.2 2.2.3	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization       2         Communication Cable       2         Available Device       2         Monitorable Device in GP/LP       2         INS S7-1200 Series Communication Module Connection       2         Connection Support PLC Model       2         Connectable GP/LP Model       2         System Organization       3	2 1 2 1 2 1 2 2 2 2 2 2 2 2 2 7 2 8 2 8 2 8 2 8 2 8 2 8		
2	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1 2.2.2 2.2.3 2.2.4	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable.       2         Available Device.       3         Monitorable Device in GP/LP.       3         SS S7-1200 Series Communication Module Connection.       3         Connection Support PLC Model       3         Connectable GP/LP Model.       3         System Organization.       3         Connectable GP/LP Model.       3         System Organization.       3         Communication Cable       3	2 1 2 1 2 2 2 2 2 2 2 2 2 7 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8		
2	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1 2.2.2 2.2.3 2.2.4 2.2.5	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization.       2         Communication Cable.       2         Available Device.       3         Monitorable Device in GP/LP.       3         INS S7-1200 Series Communication Module Connection       3         Connectable GP/LP Model.       3         System Organization.       3         Connectable GP/LP Model.       3         System Organization.       3         Communication Cable.       3         Communication Cable.       3         Communication Cable.       3         Communication Configuration.       3	2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 7 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 8 2 9		
2	2.1 2.2	SIEME 2.1.1 2.1.2 2.1.3 2.1.4 2.1.5 2.1.6 SIEME 2.2.1 2.2.2 2.2.3 2.2.4 2.2.5 2.2.6	tion Configuration by Devices       2         INS S7 Series Connection.       2         Connection Support PLC Model       2         Connectable GP/LP Model.       2         System Organization       2         Communication Cable       2         Available Device.       3         Monitorable Device in GP/LP       3         INS S7-1200 Series Communication Module Connection       3         Connectable GP/LP Model       3         Communication Cable       3         Communication Cable       3         Communication Configuration       3         Available Device       3	2 1 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 8 2 8 2 8 2 8		

## **1** System Organization

GP/LP can be connected with various controller, barcode reader and printer via RS232C, RS422, Ethernet, CAN amd 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 Serie	es
	<b>•</b> •	<b>A</b> 1

Series	Chanel	Connecting port	Description
GP/LP-S044.	CH1	RS232C/RS422	Direct communication available
GP-S057	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

SF/LF-A Selles				
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		

X1: 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/I P-S044	CH1	-	Multiple connection unavailable
GP-S057	CH2	RS422	Link device <sup>®1</sup> communication available
GP/LP-S070	CH1 or	D0 400	Direct communication available
	CH2	R5422	Link device <sup>≋1</sup> communication available

GP/LP-A Series

SF/EF-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	

X1: 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 signle controller A and a signle 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 <sup>×1</sup> communication available
GP/LP-S070	CH1 or CH2	RS422/RS485	Direct communication available Link device <sup>%1</sup> communication available

GP/LP-A Series

- 2					
	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※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

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'.

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

•	GP/L	P-S	Ser	ies
		0	OCI	100

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



## **1.3.3** 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'.

P/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
SP/LP-A Series	S		
Series	Connect	ting port	Description
GP/LP-A070	RS422 or RS232C Ethernet	r RS232C-A port, or RS232C-B port, port	Direct communication available Link device <sup>%1</sup> communication available
GP/LP-A104	RS422 or RS232C Ethernet	r RS232C-A port, or RS232C-B port, 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

	Connected device	Communication port		
Series		RS232C*	RS422 <sup>*</sup>	USB Host
GP/LP-S044,	Controller	0	0	-
GP-S057	Barcode reader	0	0	-
	Controller	0	0	-
GP/LP-3070	Barcode reader	0	0	-

GP/LP-A Series

	Connected	Communication port		
Series	device	RS232C*	RS422 <sup>**</sup>	USB Host
GP/LP-A070	Controller	0	0	-
GP/LP-A104	Barcode reader	0	0	0

%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
	Device setting for data storage	Common > Barcode
GP/LP-S	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 <sup>*</sup>	USB Host
GP/LP-S044, GP-S057	Controller	0	0	-
	Printer	0	0	-
GP/LP-S070	Controller	0	0	-
	Printer	0	0	-

## GP/LP-A Series

	Connected device	Communication port		
Series		RS232C*	RS422 <sup>*</sup>	USB Host
GP/LP-A070,	Controller	0	0	-
GP/LP-A104	Printer	-	-	0

## (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.
  - X For detailed information about communication setting, please refer to 'GP/LP User Manual'.

#### (3) Communication specification

ltem	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 SIEMENS S7 Series Connection

GP/LP is able to communicate with SIEMENS S7 Series.

## 2.1.1 Connection Support PLC Model

PLC type		Communication method	Communication type	Baud rate (bps)	
	200	PPI	CPU direct Loader	9600	
S7 Series	300	MPI	CPU direct Loader	38400	

## 2.1.2 Connectable GP/LP Model

Connect	Connecti	GP/LP Model								
ed devices	on method	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
CPU221	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU222	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU224	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU224XP	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU224XP si	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU226	CPU direct Loader	×	0	0	0	0	0	0	0	0
CPU312	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU312C	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU313C	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU313C-2	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU314	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU314C-2	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU315-2	CPU direct Loader	×	×	0	0	0	0	0	0	0
CPU317-2	CPU direct Loader	×	×	0	0	0	0	0	0	0

#### 2.1.3 **System Organization**



#### **GP/LP** Series

SIEMENS S7-200 uses PPI(Point to point interface) communication of SIEMENS and SIEMENS S7-300 uses MPI(Mutil point interface) communication of SIEMENS. It executes RS232C communication with dedicated cable of SIEMENS. It executes also RS-422 communication with RS-232/422 converter.

#### 2.1.4 **Communication Cable**

Use the dedicated cable sold by SIEMENS.

#### 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**

1		00		0		
1 Dev	1 Device name		address	3 Bi	t address	
Туре	1	2			3	Note
	1	Decimal			Octonal	S7-200 / S7-300
	Q	Decimal			Octonal	S7-200 / S7-300
	V	Decimal			Octonal	S7-200
Bit	М	Decimal			Octonal	S7-200 / S7-300
	SM	Decimal			Octonal	S7-200
	Т	Bit address (Decimal)				S7-200
	С	Bit address (	(Decimal)			S7-200
	IW	Word addres	s (Decima	al)	None	S7-200 / S7-300
	QW	Word addres	ss (Decima	al)	None	S7-200 / S7-300
	VW	Word addres	s (Decima	al)	None	S7-200
Word	MW	Word addres	ss (Decima	al)	None	S7-200 / S7-300
	SM	Word addres	s (Decima	al)		S7-200(Special register)
	Т	Word addres	s (Decima	al)		S7-200 (Counter setting value)
	С	Word addres	s (Decima	al)		S7-200 (Timer current value)

# Ex.

Word I0 = bit I0 to I17, Word UW10 = UB100 to UB10F

## 2.1.5.2 Device Range

## (1) \$7-200

• (	CPU	221	type
	• • •		

Type	Dovico	Mark	Range	Range		
туре	Device	IVIAIK	Start	End		
	Input relay	I	10	l157		
	Output relay	Q	Q0	Q157		
	Internal relay	V	V0	V20477		
Bit	Auxiliary relay	М	MO	M317		
	Special relay	SM	SM0	SM1857		
	Timer contact	Т	Т0	T255		
	Counter contact	С	C0	C255		
	Input register	IW	IW0	IW14		
	Output register	QW	QW0	QW14		
	Internal register	VW	VW0	VW2046		
Word	Auxiliary register	MW	MW0	MW30		
	Special register	SM	SM0	SM184		
	Timer current value	Т	Т0	T255		
	Counter current value	С	C0	C255		

## CPU 222 type

Turne	Device	Mark	Range	Range		
туре	Device	wark	Start	End		
	Input relay	I	10	l157		
	Output relay	Q	Q0	Q157		
	Internal relay	V	V0	V20477		
Bit	Auxiliary relay	М	MO	M317		
	Special relay	SM	SM0	SM2997		
	Timer contact	Т	Т0	T255		
	Counter contact	С	C0	C255		
	Input register	IW	IW0	IW14		
	Output register	QW	QW0	QW14		
	Internal register	VW	VW0	VW2046		
Word	Auxiliary register	MW	MW0	MW30		
	Special register	SM	SM0	SM298		
	Timer current value	Т	Т0	T255		
	Counter current value	С	C0	C255		

•

Tuno	Dovico	Mark	Range	Range		
туре	Device	Wark	Start	End		
	Input relay	I	10	l157		
	Output relay	Q	Q0	Q157		
	Internal relay	V	V0	V81917		
Bit	Auxiliary relay	М	M0	M317		
	Special relay	SM	SM0	SM5497		
	Timer contact	Т	Т0	T255		
	Counter contact	С	C0	C255		
	Input register	IW	IW0	IW14		
	Output register	QW	QW0	QW14		
	Internal register	VW	VW0	VW8190		
Word	Auxiliary register	MW	MW0	MW30		
	Special register	SM	SM0	SM548		
	Timer current value	Т	Т0	T255		
	Counter current value	С	C0	C255		
PU 2242	XP, 224XPsi, 226 type					
Туре	Device	Mark	Range	Range		
,			Start	End		
	Input relay		10	1157		
	Output relay	Q	Q0	Q157		
	Internal relay	V	V0	V102397		
Bit	Auxiliary relay	М	M0	M317		
	Special relay	SM	SM0	SM5497		
	Timer contact	Т	Т0	T255		
	Counter contact	С	C0	C255		
	Input register	IW	IW0	IW14		
	Output register	QW	QW0	QW14		
	Internal register	VW	VW0	VW10238		
Word	Auxiliary register	MW	MW0	MW30		
	Special register	SM	SM0	SM548		
	Timer current value	Т	Т0	T255		

С

Counter current value

C0

C255

• CPU 224 type

## (2) \$7-300

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• CPU 312 type

Tuno		Mor	le .	Range	Range		
Type	Device	Iviai	n in the second se	Start	End		
	Input relay	1		10	110237		
Bit	Output relay	Q		Q0	Q10237		
	Auxiliary relay	М		M0	M2557		
	Input register	IW		IW0	IW1022		
Word	Output register	QW		QW0	QW1022		
	Auxiliary register	MW		MW0	MW254		
CPU 312	C type						
gavT	Device	Mar	k	Range			
				Start	End		
	Input relay			10	110237		
Bit	Output relay	Q		Q0	Q10237		
	Auxiliary relay	М		M0	M2557		
	Input register	IW		IW0	IW1022		
Word	Output register	QW		QW0	QW1022		
	Auxiliary register	MW		MW0	MW254		
CPU 313	C type			_			
Туре	Device	Mar	k	Range Stort End			
	Input relay	1		10	110237		
<b>D</b> .1	1			-			
Bit	Output relay	Q		Q0	Q10237		
Bit	Output relay Auxiliary relay	Q M		Q0 M0	Q10237 M2557		
Bit	Output relay Auxiliary relay Input register	Q M IW		Q0 M0 IW0	Q10237 M2557 IW1022		
Bit	Output relay Auxiliary relay Input register Output register	Q M IW QW		Q0 M0 IW0 QW0	Q10237 M2557 IW1022 QW1022		
Bit Word	Output relay         Auxiliary relay         Input register         Output register         Auxiliary register	Q M IW QW MW		Q0 M0 IW0 QW0 MW0	Q10237 M2557 IW1022 QW1022 MW254		
Bit Word CPU 313	Output relay Auxiliary relay Input register Output register Auxiliary register C-2 type	Q M IW QW MW		Q0 M0 IW0 QW0 MW0	Q10237 M2557 IW1022 QW1022 MW254		
Bit Word CPU 313 Type	Output relay Auxiliary relay Input register Output register Auxiliary register C-2 type Device	Q M IW QW MW	ark	Q0 M0 IW0 QW0 MW0 <b>Range</b>	Q10237 M2557 IW1022 QW1022 MW254		
Bit Word CPU 313 Type	Output relay       Auxiliary relay       Input register       Output register       Auxiliary register       C-2 type       Device	Q M IW QW MW	ark	Q0 M0 IW0 QW0 MW0 Range Start	Q10237 M2557 IW1022 QW1022 MW254 End		
Bit Word CPU 313 Type	Output relay       Auxiliary relay       Input register       Output register       Auxiliary register       C-2 type       Device       Input relay	Q M IW QW MW MW	ark	Q0           M0           IW0           QW0           MW0           Fange           Start           I0	Q10237 M2557 IW1022 QW1022 MW254 End I20477		
Bit Word CPU 313 Type Bit	Output relay       Auxiliary relay       Input register       Output register       Auxiliary register       C-2 type       Device       Input relay       Output relay	Q M IW QW MW I I Q	ark	Q0           M0           IW0           QW0           MW0           Start           I0           Q0	Q10237 M2557 IW1022 QW1022 MW254 <b>End</b> I20477 Q20477		
Bit Word <u>CPU 313</u> <b>Type</b> Bit	Output relay         Auxiliary relay         Input register         Output register         Auxiliary register         C-2 type         Device         Input relay         Output relay         Auxiliary relay         Output relay         Auxiliary relay	Q M IW QW MW MW	ark	Q0           M0           IW0           QW0           MW0           Start           I0           Q0           M0	Q10237 M2557 IW1022 QW1022 MW254 <b>End</b> I20477 Q20477 M2557		
Bit Word CPU 313 Type Bit	Output relay         Auxiliary relay         Input register         Output register         Auxiliary register         C-2 type         Device         Input relay         Output relay         Auxiliary relay         Input relay         Input relay         Input relay         Input relay         Input relay	Q M IW QW MW MW I I I I I	ark	Q0           M0           IW0           QW0           MW0           Start           I0           Q0           M0           I0	Q10237 M2557 IW1022 QW1022 MW254 <b>End</b> I20477 Q20477 M2557 IW2046		
Bit Word CPU 313 Type Bit Word	Output relay         Auxiliary relay         Input register         Output register         Auxiliary register         C-2 type         Device         Input relay         Output relay         Auxiliary relay         Auxiliary relay         Input register         Output relay         Output relay         Output register         Output register         Output register	Q M IW QW MW MW I I Q I I Q I I Q	ark V W	Q0           M0           IW0           QW0           MW0           M0           M0           M0           I0           Q0           M0           Q0           Q00           Q00           Q00           Q00           Q00           Q00           Q00           Q00           Q00           Q00	Q10237 M2557 IW1022 QW1022 MW254 <b>End</b> I20477 Q20477 M2557 IW2046 QW2046		
Bit Word CPU 313 Type Bit Word	Output relayAuxiliary relayInput registerOutput registerAuxiliary registerC-2 typeDeviceInput relayOutput relayAuxiliary relayAuxiliary relayInput registerOutput registerAuxiliary registerAuxiliary registerAuxiliary register	Q M IW QW MW MW I I Q I I Q M IV Q M	V W W	Q0           M0           IW0           QW0           MW0           M0           M0           IN0           IN0           IN0           IN0           IN0           IN0           Q0           M0           IN0	Q10237 M2557 IW1022 QW1022 MW254 <b>End</b> I20477 Q20477 M2557 IW2046 QW2046 MW254		

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## • CPU 314 type

Type	Device		Mark		Range			
Type	Device		ain	St	art	En	End	
	Input relay	1		10		110	)237	
Bit	Output relay	Q	Q		)	Q1	0237	
	Auxiliary relay	М	l	M	D	M2	2557	
	Input register	IV	V	IV	/0	IW	1022	
Word	Output register	Q	W	Q	N0	QV	V1022	
	Auxiliary register	М	W	M	W0	M٧	V254	
CPU 3140	C-2 type							
Туре	Device	м	lark	Ra	ange art	En	d	
-	Input relay	1		10	art	120	)477	
Bit	Output relay	Q		Q	)	Q2	20477	
	Auxiliary relay	M	 	M	) )	M2	2557	
	Input register	IV	V	IV			11/20146	
Word	Output register	0	OW.		QW0		V2046	
Word	Auxiliary register MW			M	NO	MV	V254	
PU 315-	-2 type					1010	1201	
Type	Device		Mark		Range	9		
<i>.</i>	land and and an				Start		End	
D.1	Input relay				10		120477	
Bit			Q		QU		Q20477	
	Auxiliary relay		M		M0		M20477	
	Input register		IVV	IW0			1002046	
Word	Output register		QW		QW0		QW2046	
212	Auxiliary register		MW		MW0		MW2046	
-				R	ange			
Туре	Device	M	lark	St	art		End	
	Input relay	I		10			l81917	
Bit	Output relay	Q	Q		)		Q81917	
	Auxiliary relay	М	M MO		0		M40957	
	Input register	IV	V	IW	/0		IW8190	
Word	Output register	Q	W	Q	N0		QW8190	
	Auxiliary register	M	W	M	MW0		MW4094	

CPU 319-3 type

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Tuno	Device	Mark	Range		
туре			Start	End	
Bit	Input relay	1	10	181917	
	Output relay	Q	Q0	Q81917	
	Auxiliary relay	М	M0	M81917	
	Input register	IW	IW0	IW8190	
Word	Output register	QW	QW0	QW8190	
	Auxiliary register	MW	MW0	MW8190	

## 2.1.6 Monitorable Device in GP/LP

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

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

Туре	Mark	Device	Note
	I	Input relay	Read only
	Q	Output relay	Write only
	V	Internal relay	Variable memory
Bit	М	Auxiliary relay	Bit memory
	SM	Special relay	Special memory (Read only)
	Т	Timer contact	
	С	Counter contact	
	IW	Input register	Read only
	QW	Output register	Write only
	VW	Internal register	Variable memory
Word	MW	Auxiliary register	Bit memory
	SM	Special register	Special memory (Read only)
	Т	Timer current value	
	С	Counter current value	

## 2.2 SIEMENS S7-1200 Series Communication Module Connection

GP/LP is able to communicate with SIEMENS S7-1200 Series via communication module CM1241 RS422/485.

## 2.2.1 Connection Support PLC Model

PLC type		Connection method	Communication method	Communication module
	CPU1211C			
S7-1200 Series	CPU1212C	Communication module	RS-485	CM1241 RS422/485
	CPU1214C			
	CPU1215C			
	CPU1217C			

## 2.2.2 Connectable GP/LP Model

		GP/LP Model								
devices I	method	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
CPU1211C	Communica tion module	×	×	×	×	×	0	0	0	0
CPU1212C	Communica tion module	×	×	×	×	×	0	0	0	0
CPU1214C	Communica tion module	×	×	×	×	×	0	0	0	0
CPU1215C	Communicati on module	×	×	×	×	×	0	0	0	0
CPU1217C	Communicati on module	×	×	×	×	×	0	0	0	0

## 2.2.3 System Organization



## 2.2.4 Communication Cable

#### Applied cable: C3M5P03-D9M0-T4Y0





## 2.2.5 Communication Configuration

The communication condition is set as the default value of the PLC specification as follows and can be changed.

Item	Setting
Baud rate	9,600bps
Data Bit	8 bits
Stop Bit	1 bits
Parity	None

To connect SIEMENS S7-1200 Series and GP/LP, use communication module CM1241 RS422/485, set communication configuration of SIEMENS CPU as Modbus Slave. Use editing program by SIEMENS for communication configuration.

## (1) Adding Communication module

This process is for configure the PLC and communication module model.

- 1st Open saved project from 'Open existing project' or create new project on 'Create new project'.
- 2nd When 'First steps' window displays, Click 'Open the project view'.
- 3rd Click 'Add new device' on the left side 'Project tree'.
- 4th When 'Add new device' window displays, add the using PLC according to the item. (e.g. Select SIMATIC S7-1200 > CPU 1212C DC/DC/DC > 6ES7 212-1AE40-0XB0, then click OK butoon)



- Siemens C:\Users\system group\Des 💁 🔚 Save project 🔳 🐰 🏥 🗊 🗙 🍽 🛨 (# ± 🌆 🖪 🖪 🗶 Π. Project7 + PLC\_1 [CPU 1212C DC/DC/DC] \_ # = × Device view Devices 📲 Topology view A Network view # PLC\_1 [CPU 1212C] 💌 📰 🖌 🗄 🔲 🍳 ± Device overview 1 ... Module Slot 103 Project7

  Add new device

  Devices & networks

  C.1 [CPU 1212C DC/DC/DC] 102 101 RUC? PLC\_1 DI 8/DQ 6\_1 AI 2\_1 PLC: 1 (CPU 1212C DC/DC)
   Device configuration
   W Online & diagnostics
   Add new block
   Min (OB1)
   External source files
   External source files 1 1 1 1 2 1 3 1 16 1 17 1 18 1 19 1 20 1 21 1 32 103 102 101 2 3 HSC\_1 HSC\_2 HSC\_3 HSC\_4 HSC\_5 HSC\_6 Pulse\_1 Pulse\_2 Pulse\_3 Big External source files
   GPL Class
   GPL
   GPL Class
   GPL
   GPL Class
   GPL
   G 1 33 1 34 Pulse\_4 1 35 1 X1 PROFINET interface\_1 3 ✓ Details view
- 5th Check the corresponding PLC is added to 'Project view' in the center.

6th Find the communication module's model name to be conneced on the right side 'Hardware catalog' to add communication module.

(e.g. Select 'Communications modules > Point-to-Point > CM1241(RS422/485) > 6ES7 241-1CH32-0XB0, Drag and drop to 101 in the center 'Project view')



#### (2) Set as Modbus Slave

This process is for entering the parameter value after adding commands to set as Modbus Slave.

1st 'Project tree' Double click 'Program blocks > Main [OB1] in the left side of 'Project tree'.



2nd Select 'Basic instructions > Move operations > Move' on the right side 'Instructions', drag and drop to 'Project view'-'Network 1'.



3rd Select 'Communication > Communication processor > MODBUS (RTU) > Modbus\_Comm\_Load' on the right side 'Instruction', drag and drop to 'Project view'-'Network 2'.



4th Select 'Communication > Communication processor > MODBUS (RTU) > Modbus\_Slave' on the right side 'Instructions', drag and drop to 'Project view'-'Network 3'.



#### 5th Enter the following in to 'Network 1: MOVE' command parameter.

Parameter	Input value	Description
IN	4	Set communication mode input value
OUT	Modbus_Comm_Load_DB.MODE	Select communication mode parameter

#### • IN

Enter '4' in the input window that appears when click IN Parameter of MOVE command.

ENO -
UT1

#### OUT

.

Select 'Modbus\_Comm\_Load\_DB > MODE' in the menu that appears when click OUT Parameter of Move command.

	Comment							
	MO EN	VE						
	4 — IN 😛	OUT1 -	3			CHAR_GAP	Word	Inter-character
			"Local-Pulse_2"	Hw_Pwm	^	IINE PRE	USInt	Presetting of th
	1		*Local~Pulse_3*	Hw_Pwm			P2P MR BASE	Reference to th
•	Network 2:	ALER	Local-Pulse_4"	Hw_Pwm			121_00_0000	Duslavasasti
	Common		Modbus_Comm_Load_DB	Instance DB of DB1	2.선택	MODE	USIN	Duplex operati
	Comment		Modbus_Slave_DB*	Instance DB of DB2	»	PARITY	UInt	Parity
	1		CB_Main"	OB_PCYCLE		ORT PORT	PORT	Communicatio
		"Moi			~	port_w_record	P2P_MB_PortD	For internal us >>
		1	·,			RDREC	RDREC	Local instance >>

6th Enter the following in to 'Network 2: Modbus\_Comm\_Load' command parameter.

7th Maintain the the table below as default value for the parameter.

Parameter	Input value	Description		
REQ	#Initial_Call (Select in Input list)	Communication configuration comman execution condition		
PORT	Local to CM_1241_(RS422_485)	Set communication module		
МВ	Modbus_Slave_DB.MB_DB	Specify communication configuration target.		
STATUS	Set word area e.g. MW1000	Display communication command status		



8th Enter the following in to 'Network 3: Modbus\_Slave' command parameter.

Parameter	Input value	Description
MB_ADDR	1	Enter Communication Address
MB_HOLD_REG	P#M0.0 WORD 2050	Set MW area
STATUS	Set Word area e.g. MW200	Display communication command status



## 2.2.6 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'.

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#### 2.2.6.1 Device Structure

Word

IW

MW

I		0000	0		
1 Device name		② Word address	③ Bit address		
Туре	1	2		3	
		Decimal		Octonal	
	Q	Decimal		Octonal	

Word address (Decimal)

Word address (Decimal)

## 🖉 Note

Set the device address of word device IW, MW to even number .

## 2.2.6.2 Device Range

			Range				
Туре	Device	Mark	S Series		A Series		
			Start	End	Start	End	
Bit	Input relay	I	10	110237	10.0	11023.7	
	Output relay	Q	Q0	Q10237	Q0.0	11023.7	
Word	Input register	IW	IW0	IW1020	IW0	IW1020	
	Auxiliary register	MW	MW0	MW2046	MW0	MW2046	

## 2.2.7 Monitorable Device in GP/LP

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

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

Туре	Mark	Device		
I Inj		Input relay		
ы	Q	Output relay		
\A/ord	IW	Input register		
word	MW	Auxiliary register		



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