# KV-700/1000/3000/5000 CPU Direct

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#### Introduction

This manual describes how to connect the Display and the External Device (target PLC).

In this manual, the connection procedure is described in the sections indentified below.



# 1 System Configuration

The following table lists system configurations for connecting KEYENCE Corporation External Devices and the Display.

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
		CPU Direct <sup>*1</sup>	RS-232C	Setting Example 1 (page 9)	Cable Diagram 1 (page 48)
Series KV-700 Series			RS-232C (Port 1 connection)	Setting Example 2 (page 11)	Cable Diagram 2 (page 50)
		KV-L20	RS-232C (Port 2 connection)	Setting Example 4 (page 15)	Cable Diagram 3 (page 52)
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 6 (page 19)	Cable Diagram 4 (page 54)
KV-700	KV-700	KV-L20R	RS-232C (Port 1 connection)	Setting Example 3 (page 13)	Cable Diagram 2 (page 50)
Series			RS-232C (Port 2 connection)	Setting Example 5 (page 17)	Cable Diagram 3 (page 52)
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 7 (page 21)	Cable Diagram 4 (page 54)
			RS-232C (Port 1 connection)	Setting Example 8 (page 23)	Cable Diagram 2 (page 50)
		KV-L20V*2	RS-232C (Port 2 connection)	Setting Example 9 (page 25)	Cable Diagram 3 (page 52)
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 10 (page 27)	Cable Diagram 4 (page 54)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
	SeriesCPULink I/FSIO TypeSeriesCPU Direct*1RS-232CKV-1000RS-422/485 (4win (Port 2 connection)KV-1000RS-422/485 (4win (Port 2 connection)KV-1000RS-422/485 (4win (Port 2 connection)KV-1000RS-232C (Port 1 connection)RS-232C (Port 2 connection)RS-232C (Port 2 connection)RS-232C 	CPU Direct <sup>*1</sup>	RS-232C	Setting Example 1 (page 9)	Cable Diagram 1 (page 48)
		RS-232C (Port 1 connection)	Setting Example 3 (page 13)	Cable Diagram 2 (page 50)	
		KV-L20R	RS-232C (Port 2 connection)	Setting Example 5 (page 17)	Cable Diagram 3 (page 52)
KV-1000 Series	KV-1000		RS-422/485 (4wire) (Port 2 connection)	Setting Example 7 (page 21)	Cable Diagram 4 (page 54)
			RS-232C (Port 1 connection)	Setting Example 8 (page 23)	Cable Diagram 2 (page 50)
	KV-L20	KV-L20V*2	RS-232C (Port 2 connection)	Setting Example 9 (page 25)	Cable Diagram 3 (page 52)
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 10 (page 27)	Cable Diagram 4 (page 54)
		RS-422/485 (4wire) (Port 2 connection)     So E (p       CPU Direct*1     RS-232C     So E (p	Setting Example 11 (page 29)	Cable Diagram 1 (page 48)	
KV-3000	KV-1000         KV-L20R         RS-232C (Port 1 connection)         Solution (p) (p) (p) (p) (p) (p) (p) (p) (p) (p)	Setting Example 12 (page 30)	Cable Diagram 2 (page 50)		
Series	KV-5000	KV-L20V*2	RS-232C (Port 2 connection)	Setting Example 13 (page 32)	Cable Diagram 3 (page 52)
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 14 (page 34)	Cable Diagram 4 (page 54)
		$WV-L20V^{*2} = \begin{bmatrix} RS-232C \\ (Port 1 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 1 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 2 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 2 connection) \end{bmatrix} \begin{bmatrix} RS-422/485 (4wire) \\ (Port 2 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 1 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 2 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 1 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ (Port 2 connection) \end{bmatrix} \begin{bmatrix} RS-232C \\ $	Setting Example 12 (page 30)	Cable Diagram 2 (page 50)	
KV-5000 Series	KV-5000		Setting Example 13 (page 32)	Cable Diagram 3 (page 52)	
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 14 (page 34)	Cable Diagram 4 (page 54)

Series	CPU	Link I/F	SIO Type	Setting Example	Cable Diagram
			RS-232C (Port 1 connection)	Setting Example 15 (page 36)	Cable Diagram 2 (page 50)
KV-5500 Series	KV-5500	KV-L20V <sup>*3</sup> RS-232C (Port 2 connection)	Setting Example 16 (page 38)	Cable Diagram 3 (page 52)	
			RS-422/485 (4wire) (Port 2 connection)	Setting Example 17 (page 40)	Cable Diagram 4 (page 54)
KV-Nano Series	KV-N14 KV-N24 KV-N40 KV-N60	Serial port on CPU Unit	RS-232C	Setting Example 18 (page 42)	Cable Diagram 1 (page 48)

\*1 Using modular connector on CPU.

\*2 For communication settings, KV STUDIO Ver. 4 or later ladder software is required.

\*3 For communication settings, KV STUDIO Ver. 6 or later ladder software is required.

## IPC COM Port

When connecting IPC with an External Device, the COM port used depends on the series and SIO type. Please refer to the IPC manual for details.

#### Usable port

Series		Usable Port	
Genes	RS-232C	RS-422/485(4 wire)	RS-422/485(2 wire)
PS-2000B	COM1 <sup>*1</sup> , COM2, COM3 <sup>*1</sup> , COM4	-	-
PS-3450A, PS-3451A, PS3000-BA, PS3001-BD	COM1, COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>	COM2 <sup>*1*2</sup>
PS-3650A (T41 model), PS-3651A (T41 model)	COM1 <sup>*1</sup>	-	-
PS-3650A (T42 model), PS-3651A (T42 model)	COM1 <sup>*1*2</sup> , COM2	COM1*1*2	COM1*1*2
PS-3700A (Pentium®4-M) PS-3710A	COM1 <sup>*1</sup> , COM2 <sup>*1</sup> , COM3 <sup>*2</sup> , COM4	COM3 <sup>*2</sup>	COM3 <sup>*2</sup>
PS-3711A	COM1 <sup>*1</sup> , COM2 <sup>*2</sup>	COM2 <sup>*2</sup>	COM2 <sup>*2</sup>
PS4000 <sup>*3</sup>	COM1, COM2	-	-
PL3000	COM1 <sup>*1*2</sup> , COM2 <sup>*1</sup> , COM3, COM4	COM1*1*2	COM1*1*2

\*1 The RI/5V can be switched. Use the IPC's switch to change if necessary.

\*2 Set up the SIO type with the DIP Switch. Please set up as follows according to SIO type to be used.

\*3 When making communication between an External Device and COM port on the Expansion slot, only RS-232C is supported. However, ER (DTR/CTS) control cannot be executed because of the specification of COM port.
For connection with External Device, use user-created cables and disable Pin Nos. 1, 4, 6 and 9.

For connection with External Device, use user-created cables and disable Pin Nos. 1, 4, 6 and 9. Please refer to the IPC manual for details of pin layout.

DIP Switch setting: RS-232C

DIP Switch	Setting	Description	
1	OFF <sup>*1</sup>	Reserved (always OFF)	
2	OFF	SIO type: PS 232C	
3	OFF	510 type. R5-252e	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 $\Omega$ ) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 $\Omega$ ) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available	
9	OFF	- RS (RTS) Auto control mode: Disabled	
10	OFF		

\*1 When using PS-3450A, PS-3451A, PS3000-BA and PS3001-BD, turn ON the set value.

DIP Switch setting: RS-422/485 (4 wire)
---

DIP Switch	Setting	Description	
1	OFF	Reserved (always OFF)	
2	ON	SIO type: RS-422/485	
3	ON	510 type. K5-422/405	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 $\Omega$ ) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 $\Omega$ ) insertion to RD (RXD): None	
7	OFF	Short-circuit of SDA (TXA) and RDA (RXA): Not available	
8	OFF	Short-circuit of SDB (TXB) and RDB (RXB): Not available	
9	OFF	RS (RTS) Auto control mode: Disabled	
10	OFF	NS (N15) Auto control mode. Disabled	

## DIP Switch setting: RS-422/485 (2 wire)

DIP Switch	Setting	Description	
1	OFF	Reserved (always OFF)	
2	ON	SIO type: PS 422/485	
3	ON	510 type. K5-422/465	
4	OFF	Output mode of SD (TXD) data: Always output	
5	OFF	Terminal resistance (220 $\Omega$ ) insertion to SD (TXD): None	
6	OFF	Terminal resistance (220 $\Omega$ ) insertion to RD (RXD): None	
7	ON	Short-circuit of SDA (TXA) and RDA (RXA): Available	
8	ON	Short-circuit of SDB (TXB) and RDB (RXB): Available	
9	ON	RS (RTS) Auto control mode: Enabled	
10	ON	NS (NIS) Auto control mode. Endoled	

# 2 External Device Selection

Select the External Device to connect to the Display.

💰 Welcome to GP-Pro EX		×	
GP-Pro 🛃	Device/PLC	ices/PLCs	
Welcome to GP-Pro EX         Device/PLC         Number of Devices/PLCs         Device/PLC 1         Manufacturer         KEYENCE Corporation         Series         KV-700/1000/3000/5000 CPU Direct         Port         COM1         Refer to the manual of this Device/PLC         Recent Device/PLC         Image: Use System Area			
Welcome to GP-Pro EX  Device/PLC  Number of Devices/PLCs  Device/PLC 1  Manufacturer KEYENCE Corporation  Series KV-700/1000/3000/5000 CPU Direct  Port COM1  Refer to the manual of this Device/PLC  Recent Device/PLC  Use System Area  Device Information			
Device/PLC 1       Manufacturer       KEYENCE Corporation       Series       KV-700/1000/3000/5000 CPU Direct       Port       COM1       Refer to the manual of this Device/PLC       Recent Device/PLC       I       Use System Area			
	Port	COM1	
		Refer to the manual of this Device/PLC	
		Recent Device/PLC	
	4		
	Use System	Area Device Information	
		Back (B) Communication Settings New Screen Cancel	

Setup Items	Setup Description		
Number of Devices/ PLCs	Enter an integer from 1 to 4 to define the number of Devices/PLCs to connect to the display.		
Manufacturer	Select the manufacturer of the External Device to connect. Select "KEYENCE Corporation".		
Series	Select the External Device model (series) and the connection method. Select "KV-700/1000/ 3000/5000 CPU Direct". In System configuration, make sure the External Device you are connecting is supported by "KV-700/1000/3000/5000 CPU Direct".		
Port	Select the Display port to connect to the External Device.		
Use System Area	Check this option to synchronize the system data area of the Display and the device (memory) of the External Device. When synchronized, you can use the External Device's ladder program to switch the display or display the window on the Display. Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)" This feature can also be set in GP-Pro EX or in the Display's offline mode. Cf. GP-Pro EX Reference Manual "System Settings [Display Unit] - [System Area] Settings Guide" Cf. Maintenance/Troubleshooting Guide "Main Unit - System Area Settings"		

# 3 Communication Settings

This section provides examples of communication settings recommended by Pro-face for the Display and the External Device.

## 3.1 Setting Example 1

- GP-Pro EX Settings
- Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC1				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series K	X-700/1000/3000/5000 CPU Di	rect Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2wi	re) O RS422/485(4wire)	
Speed	19200	-		
Data Length	0.7	<b>©</b> 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	💿 NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 +	(sec)		
Retry	2 +			
Wait To Send	0 ÷	(ms)		
RI / VCC	• RI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	i232C, you can sel er Supply), If you u ase select it to VC(	ect the 9th pin to RI (Inj se the Digital's RS2320 2	Default	1
Device-Specific Setting	;			
Allowable Number of Devices/PLCs	Ade	Device		
No. Device Name	Setting	s		Add Indirect Device
👗 1 PLC1	Serie:	=KV-700/1000		<b></b>

NOTE

 You can set the speed to 9600-57600bps for KV-700 Series, and 9600-115200 bps for KV-1000 Series.

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💰 Individual	Device Settin	gs 👂	ĸ
PLC1			
Series Please reconfi you are using i	KV-700/1000 rm all of address f you have char	▼ settings that ged the series.	]
		Default	
	)K (O)	Cancel	

## External Device Settings

There are no settings on the External Device. The speed automatically switches according to the Display settings.

## 3.2 Setting Example 2

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1					
Summary					Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000	) CPU Direct F	Port COM1
Text Data Mode	2 <u>Change</u>				
Communication Settings					
SIO Type	• RS232C	C R\$422/485(2)	wire) C RS422/485	(4wire)	
Speed	19200	•			
Data Length	O 7	© 8			
Parity	C NONE	C EVEN	C ODD		
Stop Bit	© 1	<b>C</b> 2			
Flow Control	NONE	C ER(DTR/CTS	) C XON/XOFF		
Timeout	3 📫	(sec)			
Retry	2 🔅				
Wait To Send	0 📫	(ms)			
RI / VCC	• RI	C VCC			
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI (I se the Digital's RS23; 	nput) 2C	Default	
Device-Specific Settings	:				
Allowable Number	Ada	Device			
No. Device Name	Settina	s			Add Indirect
👗 1 PLC1	Series	=KV-700/1000		1	<b>*</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individua	l Device Setti	ngs 🛛 🗙
PLC1		
Series Please recon you are using	KV-700/1000 firm all of addres if you have cha	s settings that nged the series.
		Default
	OK (0)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20" in the unit placement area.

(7) C	Configure	the following	communication	settings on	the [Setup	unit] tab.
-------	-----------	---------------	---------------	-------------	------------	------------

Setup Items		Setup Description
	Operation Mode	KV BUILDER mode
	Interface	RS-232C
	Baud Rate	Auto
	Data Bit Length	8 bits
Port 1	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
	RS/CS Flow Control	Disabled

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.3 Setting Example 3

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series H	<	Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2wi	re) O RS422/485(4wire)	
Speed	19200	-		
Data Length	O 7	<b>©</b> 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>O</b> 2		
Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 ÷	(ms)		
RI / VCC		C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, plea	232C, you can sele r Supply), If you us ase select it to VCC	et the 9th pin to RI (In te the Digital's RS2320	put) Default	
Device-Specific Settings				
Allowable Number	Add	Device		
No Device Name	Setting	8		Add Indirect
1 PLC1	Series	- =KV-700/1000		<b>•</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💰 Individual	Device Settir	igs 🛛 🗙
PLC1		
Series Please reconfi you are using	KV-700/1000 irm all of addres if you have char	s settings that nged the series.
		Default
	DK (O)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20R" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20R" in the unit placement area.

( <b>7</b> )	0 0	4 6 11 .	• ,•		4 10 4	· · · · · ·
()	Configure	the following	communication	settings of	n the [Setup	unitj tab.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-232C
	Baud Rate	Auto
	Data Bit Length	8 bits
Port 1	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
	RS/CS Flow Control	Disabled
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

(10)Click [Yes].

(11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.4 Setting Example 4

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Dire	ct Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2	wire) O RS422/485(4wire)	
Speed	19200	▼		
Data Length	O 7	© 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>O</b> 2		
Flow Control	NONE	C ER(DTR/CTS	6) C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 🗧	(ms)		
RI / VCC	• BI	O VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	i232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI ( se the Digital's RS23 ).	Input) 2C Default	1
Device-Specific Settings	3			-
Allowable Number of Devices/PLCs	Ada 1	l Device		
No. Device Name	Setting	s		Add Indirect Device
👗 1 PLC1	Series	=KV-700/1000		<b>4</b>

## Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settir	igs 🔀
PLC1		
Series Please reconfii you are using i	KV-700/1000 rm all of addres: fyou have char	▼ s settings that nged the series.
		Default
	IK (0)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20" in the unit placement area.

	(7)	Configure	the following	communication	settings on	the [Setup	unit] tab.
--	-----	-----------	---------------	---------------	-------------	------------	------------

Setup Items		Setup Description
	Operation Mode	KV BUILDER mode
	Interface	RS-232C
	Station No.	0
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.5 Setting Example 5

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYEN	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Direct	Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2w	ire) O RS422/485(4wire)	
Speed	19200	•		
Data Length	O 7	<b>©</b> 8		
Parity	C NONE	C EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 🔹	(sec)		
Retry	2 +			
Wait To Send	0 ÷	(ms)		
RI / VCC	RI	C VCC		
In the case of RS2 or VCC (5V Power Isolation Unit, plea	232C, you can sele Supply), If you us ise select it to VCC	ect the 9th pin to RI (In te the Digital's RS2320	put) C Default	
Device-Specific Settings				
Allowable Number of Devices/PLCs	Add	Device		
No. Device Name	, Setting:	s		Add Indirect Device
👗 1 PLC1	Series	=KV-700/1000		•

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

<i>ő</i> Individua	l Device Settin	igs 🗙
PLC1		
Series Please reconf you are using	KV-700/1000 irm all of addres: if you have char	▼ s settings that nged the series.
		Default
	OK (O)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20R" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20R" in the unit placement area.

(7)	Configura	the following	acommunication	sottings on	the Setur	unit1 toh
$(\prime)$	Configure	the following	communication	settings on	i me tsetup	unitj tab.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-232C
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
1 011 2	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.6 Setting Example 6

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Dir	ect Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	C RS232C	C RS422/485(	2wire) • RS422/485(4wire)	
Speed	19200	•		
Data Length	0.7	© 8		
Parity	C NONE	💿 EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	© NONE	C ER(DTR/CT	s) C XON/XOFF	
Timeout	3 ÷	(sec)		
Retry	2 +			
Wait To Send	0 🕂	(ms)		
RI / VCC	© BI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI se the Digital's RS2: 	(Input) 32C Default	]
Device-Specific Settings				_
Allowable Number	Add	Device		
No. Device Name	' Settina	s		Add Indirect Device
👗 1 PLC1	Series	=KV-700/1000		•

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💰 Individual	Device Settir	igs	×
PLC1			
Series   Please reconfir you are using if	KV-700/1000 m all of addres you have char	s settings tha nged the serie	▼ t es.
		Default	
0	K (0)	Cancel	

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20" in the unit placement area.

(7) C	Configure	the following	communication	settings on	the [Setup	unit] tab.
-------	-----------	---------------	---------------	-------------	------------	------------

Setup Items		Setup Description
	Operation Mode	KV BUILDER mode
	Interface	RS-422A
	Station No.	0
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.7 Setting Example 7

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Dire	ct Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	O RS232C	C R\$422/485(2	wire)  • RS422/485(4wire)	
Speed	19200	•		
Data Length	O 7			
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	💿 NONE	C ER(DTR/CTS	6) C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 +			
Wait To Send	0 🕂	(ms)		
RI / VCC	© BI	O VCC		
In the case of RS or VCC (5V Pow Isolation Unit, ple	i232C, you can sele er Supply). If you u: ase select it to VCC	ect the 9th pin to RI se the Digital's RS23 ).	[input] i2C Default	1
Device-Specific Setting:	;			-
Allowable Number of Devices/PLCs	Add	l Device		
No. Device Name	, Setting	s		Add Indirect Device
👗 1 PLC1	Series	=KV-700/1000		<b>*</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💰 Individual Device Settir	gs 🗙
PLC1	
Series KV-700/1000 Please reconfirm all of address you are using if you have char	▼ settings that nged the series.
	Default
OK (0)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20R" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20R" in the unit placement area.

(7)	Configura	the fellowing	acmanniaction	anttingan of	n the Cotum	unit1 tab
()	Configure	the following	communication	settings of	n the [Setup	unitj tab.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-422A/485 (4wire)
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
1 011 2	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.8 Setting Example 8

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series K	V-700/1000/3000/5000 CPU Direct	Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	RS232C	C RS422/485(2wi	re) O RS422/485(4wire)	
Speed	19200	•		
Data Length	C 7	<b>©</b> 8		
Parity	C NONE	C EVEN	O ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	🖲 NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 🕂	(ms)		
RI / VCC	• RI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI (Inp se the Digital's RS2320 2	Default	
Device-Specific Settings				
Allowable Number of Devices/PLCs	Ada 1	d Device		فالط المعاقب وال
No. Device Name	Setting	IS		Device
👗 1 PLC1	Series	=KV-700/1000		<b>*</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settin	gs 🛛 🗙
PLC1		
Series Please reconfi you are using i	KV-700/1000 m all of address fyou have char	settings that aged the series.
		Default
	IK (0)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.

(7)	Configure	the following	communication	settings on	the [Setup	unit] tab
$(\prime)$	Configure	the following	communication	settings on	the [Setup	unitj tao.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-232C
	Baud Rate	Auto
	Data Bit Length	8 bits
Port 1	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
	RS/CS Flow Control	Disabled
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

(10)Click [Yes].

(11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.9 Setting Example 9

## SGP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Direc	t Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	RS232C	C RS422/485(2w	ire) O RS422/485(4wire)	
Speed	19200	•		
Data Length	C 7	© 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	© NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 🕂	(ms)		
RI / VCC	• RI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, plea	232C, you can sele r Supply). If you us ase select it to VCC	ect the 9th pin to RI (In se the Digital's RS232I ).	nput) C Default	
Device-Specific Settings				
Allowable Number of Devices/PLCs	Ada 1	Device		Add to See a
No. Device Name	Setting	s		Device
👗 1 PLC1	Series	=KV-700/1000		<b>+</b>

## Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💰 Individual	Device Settir	igs	×
PLC1			
Series   Please reconfir you are using if	KV-700/1000 m all of addres you have char	s settings tha nged the serie	▼ t es.
		Default	
0	K (0)	Cancel	

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.

(7)	Configura	the following	acommunication	sottings on	the Setur	unit1 toh
$(\prime)$	Configure	the following	communication	settings on	i me tsetup	unitj tab.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-232C
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
1 011 2	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.10 Setting Example 10

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Dire	ect Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	C RS232C	C R\$422/485(2	wire)  • RS422/485(4wire)	
Speed	19200	-		
Data Length	O 7	© 8		
Parity	C NONE	C EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	O NONE	C ER(DTR/CTS	) C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 ÷			
Wait To Send	0 🗧	(ms)		
RI / VCC	© BI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, plea	232C, you can sele r Supply), If you us ase select it to VCC	ect the 9th pin to RI ( se the Digital's RS23 )	Input) 2C Default	1
Device-Specific Settings				
Allowable Number of Devices/PLCs	Add	Device		
No. Device Name	Setting	\$		Add Indirect Device
👗 1 🛛 PLC1	Series	=KV-700/1000		<b>+</b>

## Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settin	gs	×
PLC1			
Series Please reconfi you are using i	KV-700/1000 rm all of address f you have char	settings that ged the serie	▼ t s.
		Default	
	)K (O)	Cancel	

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.

(7)	Configura	the following	communication	sottings on	the Setur	n unit] toh
(n)	Configure	the following	communication	settings on	ine lociul	j unitj tab.

Setup Items		Setup Description
	Operation Mode	KV BUILDER/KV STUDIO mode
	Interface	RS-422A/485 (4wire)
	Baud Rate	Auto
Port 2	Data Bit Length	8 bits
1 011 2	Start Bit	1 bit
	Stop Bit	1 bit
	Parity	Even
	Check Sum	None
Station No.	Station No.	0
Detail Settings	Transfer Timeout (sec.)	3

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.11 Setting Example 11

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU	Direct Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C R\$422/485(2w	ire) 🔿 RS422/485(4wire	)
Speed	19200	•		
Data Length	<b>O</b> 7	© 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	C 2		
Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 🔹	(sec)		
Retry	2 +	[		
Wait To Send	0 +	(ms)		
RI / VCC	⊙ BI	O VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	3232C, you can sel er Supply). If you u ase select it to VC(	ect the 9th pin to RI (Ir se the Digital's RS232 C	put) C Defau	dt
Device-Specific Setting:	\$			
Allowable Number of Devices/PLCs	Ade 1	d Device		A did Indianat
No. Device Name	Setting	1s		Device
👗 1 PLC1	Serie:	s=KV-3000/5000		<b>4</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💣 Individual	Device Setti	ngs 🛛 🗙		
PLC1				
Series KV-3000/5000  Please reconfirm all of address settings that you are using if you have changed the series.				
		Default		
	DK (0)	Cancel		

## External Device Settings

There are no settings on the External Device. The speed automatically switches according to the Display setting.

## 3.12 Setting Example 12

## ■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Din	ect Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2w	ire) 🔿 RS422/485(4wire)	
Speed	19200	•		
Data Length	O 7	© 8		
Parity	C NONE	© EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 🔹	(sec)		
Retry	2 +	[		
Wait To Send	0 +	(ms)		
RI / VCC	• BI	C VCC		
In the case of RS or VCC (5V Pow Isolation Unit, ple	6232C, you can sel er Supply). If you u ease select it to VC(	ect the 9th pin to RI (Ir ise the Digital's RS232 D.	nput) C Default	]
Device-Specific Setting	s			
Allowable Number of Devices/PLCs	Ade 1	d Device		A did Indianat
No. Device Name	Setting	js		Device
👗 1 PLC1	Serie:	s=KV-3000/5000		<b>+</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settin	igs 🗙
PLC1		
Series Please reconfi you are using i	KV-3000/5000 rm all of address f you have char	s settings that nged the series.
		Default
	)K (O)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.
- (7) Configure the following communication settings on the [Setup unit] tab.

Setup Items		Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-232C	
	Baud Rate	Auto	
	Data Bit Length	8 bits	
Port 1	Start Bit	1 bit	
	Stop Bit	1 bit	
	Parity	Even	
	Check Sum	None	
	RS/CS Flow Control	Disabled	
Station No.	Station No.	0	
Detail Settings	Transfer Timeout (sec.)	3	

(8) From the [Convert] menu, select [Auto-assign relay/DM].

(9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.

(10)Click [Yes].

(11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.13 Setting Example 13

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series K	V-700/1000/3000/5000 CPU Direct	Port COM1
Text Data Mode	2 <u>Change</u>			
Communication Settings				
SIO Type	RS232C	C R\$422/485(2wir	e) O RS422/485(4wire)	
Speed	19200	•		
Data Length	O 7			
Parity	C NONE	C EVEN	C ODD	
Stop Bit	© 1	<b>O</b> 2		
Flow Control	O NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 🕂	(ms)		
RI / VCC	• BI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI (Inp se the Digital's RS232C 2.	ut) Default	
Device-Specific Settings				
Allowable Number of Devices/PLCs	Ada 1	d Device		فاطعا المكتممة
No. Device Name	Setting	15		Add Indirect Device
👗 1 🛛 PLC1	Series	=KV-3000/5000		<b>+</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settin	igs 🗙
PLC1		
Series Please reconfi you are using i	KV-3000/5000 rm all of address f you have char	s settings that nged the series.
		Default
	)K (O)	Cancel

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.

(7)	Configura	the following	acommunication	sottings on	the Setur	unit1 toh
$(\prime)$	Configure	the following	communication	settings on	i me tsetup	unitj tab.

Setup Items		Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-232C	
	Baud Rate	Auto	
Port 2	Data Bit Length	8 bits	
1 011 2	Start Bit	1 bit	
	Stop Bit	1 bit	
	Parity	Even	
	Check Sum	None	
Station No.	Station No.	0	
Detail Settings	Transfer Timeout (sec.)	3	

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.

(12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.14 Setting Example 14

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1					
Summary					Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000	CPU Direct	Port COM1
Text Data Mode	2 <u>Change</u>				
Communication Settings					
SIO Type	O RS232C	C RS422/485(2	2wire) 📀 RS422/485(	4wire)	
Speed	19200	•			
Data Length	O 7	€ 8			
Parity	C NONE	C EVEN	C ODD		
Stop Bit	© 1	C 2			
Flow Control	💿 NONE	C ER(DTR/CT	6) C XON/XOFF		
Timeout	3 +	(sec)			
Retry	2 +				
Wait To Send	0 🗧	(ms)			
RI / VCC	© BI	C VCC			
In the case of RS or VCC (5V Powe Isolation Unit, ple	i232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI se the Digital's RS23	(Input) 32C	Default	
Device-Specific Settings	;				
Allowable Number	Add	Device			
No Device Name	Setting	\$			Add Indirect
1 PLC1	Series	=KV-3000/5000			4

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💣 Individua	Device Setti	ngs 🛛 🗙			
PLC1					
Series KV-3000/5000  Please reconfirm all of address settings that you are using if you have changed the series.					
		Default			
	OK (0)	Cancel			

Use the KEYENCE Corporation ladder software (KV STUDIO Ver. 4 or later) to configure communication settings for the External Device.

Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New Project] and display the [New Project] dialog box.
- (3) Type a project name in [Project Name], select the External Device to use under [PLC model], and click [OK].
- (4) Click [Yes] in the [Confirm unit setting information] dialog box and display the [Unit Editor] window.
- (5) Select "KV-L20V" from the displayed unit list on the [Select unit] tab, and drag & drop it to the unit placement area.
- (6) Double-click "KV-L20V" in the unit placement area.

(7)	Configura	the fellowing	acmanniaction	anttingan of	n the Cotum	unit1 tab
()	Configure	the following	communication	settings of	n the [Setup	unitj tab.

S	Setup Items	Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-422A/485 (4wire)	
	Baud Rate	Auto	
Port 2	Data Bit Length	8 bits	
1 011 2	Start Bit	1 bit	
	Stop Bit	1 bit	
	Parity	Even	
	Check Sum	None	
Station No.	Station No.	0	
Detail Settings	Transfer Timeout (sec.)	3	

(8) From the [Convert] menu, select [Auto-assign relay/DM].

- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Check [Unit setting info] and [Program], and then click [Execute]. The setting information is transferred.

## 3.15 Setting Example 15

## ■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series H	<v-700 1000="" 3000="" 5000="" cpu="" direct<="" p=""></v-700>	Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2wi	re) O RS422/485(4wire)	
Speed	19200	•		
Data Length	O 7	© 8		
Parity	C NONE	C EVEN	C ODD	
Stop Bit	© 1	<b>O</b> 2		
Flow Control	© NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 +	(sec)		
Retry	2 🔹			
Wait To Send	0 🗧	(ms)		
RI / VCC	• BI	O VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you u: ase select it to VCC	ect the 9th pin to RI (In se the Digital's RS2320 C.	put) Default	
Device-Specific Settings	:			
Allowable Number of Devices/PLCs	Ada 1	d Device		A dd lo dio ol
No. Device Name	Setting	ls		Device
👗 1 PLC1	Series	s=KV-3000/5000		<b>+</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

鯵 Individual	Device Settin	igs	×		
PLC1					
Series KV-3000/5000  Please reconfirm all of address settings that you are using if you have changed the series.					
		Default			
0	IK (0)	Cancel			

#### Note

• If you are using a KV-5500 series device, select [KV-3000/5000] from the [Series] list.

Use ladder software KV STUDIO Ver. 6 or later to define the External Device communication settings. Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New project] to display the [New project] dialog box.
- (3) In the [Project name] field enter the project name, in the [PLC model] property select the External Device, and click [OK].
- (4) In the [Confirm unit setting information] dialog box click [Yes], and the [Unit Editor] window will display.
- (5) On the [Select unit (1)] tab, from the displayed list of units select "KV-L20V", then drag & drop to the unit placement area.
- (6) In the unit placement area click "KV-L20V" and then select the [Setup unit (2)] tab.
- (7) Configure the setup items as follows.

Setup Items		Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-232C (Fixed)	
	Baud Rate	Auto (Fixed)	
	Data Bit Length	8 bits (Fixed)	
Port 1	Start Bit	1 bits (Fixed)	
	Stop Bit	1 bits (Fixed)	
	Parity	Even (Fixed)	
	Check Sum	none (Fixed)	
	RS/CS Flow Control	Disabled	
Base	Node No.	0	
Detail Settings	Transfer timeout time (secs)	3 (Fixed)	

- (8) From the [Convert] menu, select [Auto-assign relay/DM].
- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Select the [Unit setting info] and [Program] check boxes, and then click [Execute]. The settings are transferred.

## 3.16 Setting Example 16

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1					
Summary					Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000	CPU Direct	Port COM1
Text Data Mode	2 Change				
Communication Settings					
SIO Type	RS232C	C R\$422/485(	2wire) O RS422/485	(4wire)	
Speed	19200	•			
Data Length	O 7				
Parity	C NONE	🖲 EVEN	C ODD		
Stop Bit	© 1	<b>C</b> 2			
Flow Control	© NONE	C ER(DTR/CT	s) 🔿 XON/XOFF		
Timeout	3 +	(sec)			
Retry	2 🚦				
Wait To Send	0 🗧	(ms)			
RI / VCC	● BI	C VCC			
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you u: ase select it to VCC	ect the 9th pin to RI se the Digital's RS2 2.	(Input) 32C	Default	
Device-Specific Settings	:				
Allowable Number of Devices/PLCs	Ada 1	d Device			المعالية المعالية
No. Device Name	Setting	IS			Device
👗 1 PLC1	Series	=KV-3000/5000			<b>+</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settin	ngs	×		
PLC1					
Series KV-3000/5000  Please reconfirm all of address settings that you are using if you have changed the series.					
		Default			
	)K (O)	Cancel			

#### Note

• If you are using a KV-5500 series device, select [KV-3000/5000] from the [Series] list.

Use ladder software KV STUDIO Ver. 6 or later to define the External Device communication settings. Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New project] to display the [New project] dialog box.
- (3) In the [Project name] field enter the project name, in the [PLC model] property select the External Device, and click [OK].
- (4) In the [Confirm unit setting information] dialog box click [Yes], and the [Unit Editor] window will display.
- (5) On the [Select unit (1)] tab, from the displayed list of units select "KV-L20V", then drag & drop to the unit placement area.
- (6) In the unit placement area click "KV-L20V" and then select the [Setup unit (2)] tab.
- (7) Configure the setup items as follows.

Setup Items		Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-232C	
	Baud Rate	Auto (Fixed)	
Port 2	Data Bit Length	8 bits (Fixed)	
1 011 2	Start Bit	1 bits (Fixed)	
	Stop Bit	1 bits (Fixed)	
	Parity	Even (Fixed)	
	Check Sum	none (Fixed)	
Base	Node No.	0	
Detail Settings	Transfer timeout time (secs)	3 (Fixed)	

- (8) From the [Convert] menu, select [Auto-assign relay/DM].
- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Select the [Unit setting info] and [Program] check boxes, and then click [Execute]. The settings are transferred.

## 3.17 Setting Example 17

## GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 CPU Dire	ct Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	C RS232C	C RS422/485(2	wire) • RS422/485(4wire)	
Speed	19200	•		
Data Length	<b>O</b> 7	© 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	<b>O</b> 2		
Flow Control	NONE	C ER(DTR/CTS	6) C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 📫			
Wait To Send	0 🕂	(ms)		
RI / VCC	© BI	C VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	232C, you can sele er Supply). If you us ase select it to VCC	ect the 9th pin to RI   se the Digital's RS23 ).	(Input) 32C Default	1
Device-Specific Setting	s			-
Allowable Number of Devices/PLCs	Ada 1	I Device		
No. Device Name	Setting	s		Add Indirect Device
👗 1 🛛 PLC1	Series	=KV-3000/5000		<b>4</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

💕 Individual	Device Settir	ngs	×		
PLC1					
Series KV-3000/5000  Please reconfirm all of address settings that you are using if you have changed the series.					
		Default			
	)K (O)	Cancel			

#### Note

• If you are using a KV-5500 series device, select [KV-3000/5000] from the [Series] list.

Use ladder software KV STUDIO Ver. 6 or later to define the External Device communication settings. Refer to your External Device manual for details.

- (1) Start up the ladder software.
- (2) From the [File] menu, select [New project] to display the [New project] dialog box.
- (3) In the [Project name] field enter the project name, in the [PLC model] property select the External Device, and click [OK].
- (4) In the [Confirm unit setting information] dialog box click [Yes], and the [Unit Editor] window will display.
- (5) On the [Select unit (1)] tab, from the displayed list of units select "KV-L20V", then drag & drop to the unit placement area.
- (6) In the unit placement area click "KV-L20V" and then select the [Setup unit (2)] tab.
- (7) Configure the setup items as follows.

Setup Items		Setup Description	
	Operation Mode	KV BUILDER/KV STUDIO mode	
	Interface	RS-422A/485 (4wire)	
	Baud Rate	Auto (Fixed)	
Port 2	Data Bit Length	8 bits (Fixed)	
1 011 2	Start Bit	1 bits (Fixed)	
	Stop Bit	1 bits (Fixed)	
	Parity	Even (Fixed)	
	Check Sum	none (Fixed)	
Base	Node No.	0	
Detail Settings	Transfer timeout time (secs)	3 (Fixed)	

- (8) From the [Convert] menu, select [Auto-assign relay/DM].
- (9) From the [File] menu, select [Close] and display the [Unit Editor] dialog box.
- (10)Click [Yes].
- (11)From the [Monitor/Simulator] menu, select [Transfer to PLC] to display the [Transfer Program] dialog box.
- (12)Select the [Unit setting info] and [Program] check boxes, and then click [Execute]. The settings are transferred.

## 3.18 Setting Example 18

## ■ GP-Pro EX Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series	KV-700/1000/3000/5000 C	PU Direct Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	• RS232C	C R\$422/485(	2wire) C RS422/485(44	vire)
Speed	19200	•		
Data Length	O 7	€ 8		
Parity	C NONE	🖲 EVEN	C ODD	
Stop Bit	© 1	C 2		
Flow Control	💿 NONE	C ER(DTR/CT	s) 🔿 XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 🔹			
Wait To Send	0 🗧	(ms)		
RI / VCC	BI     B	O VCC		
In the case of RS or VCC (5V Powe Isolation Unit, ple	i232C, you can sele er Supply). If you u: ase select it to VCC	ect the 9th pin to RI se the Digital's RS2 2	(Input) 32C De	fault
Device-Specific Settings	;			
Allowable Number of Devices/PLCs	Ada 1	I Device		Add Indirect
No. Device Name	Setting	s		Device
👗 1 PLC1	Series	=KV-3000/5000		<b>*</b>

#### Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

が Individual	Device Settir	ngs 🛛 🗙
PLC1		
Series Please reconfi you are using i	KV-3000/5000 rm all of addres if you have char	s settings that nged the series.
		Default
0	)K (O)	Cancel

#### Note

If you are using a KV-Nano series device, select [KV-3000/5000] from the [Series] list.

## External Device Settings

There are no settings on the External Device. The speed automatically switches according to the Display setting.

# 4 Setup Items

Set up the Display's communication settings in GP-Pro EX or in the Display's offline mode.

The setting of each parameter must match that of the External Device.

"3 Communication Settings" (page 9)

## 4.1 Setup Items in GP-Pro EX

## Communication Settings

To display the setup screen, from the [Project] menu, point to [System Settings] and select [Device/PLC].

Device/PLC 1				
Summary				Change Device/PLC
Manufacturer KEYE	NCE Corporation	Series 🖡	V-700/1000/3000/5000 CPU Direct	Port COM1
Text Data Mode	2 Change			
Communication Settings				
SIO Type	RS232C	C RS422/485(2wi	re) O RS422/485(4wire)	
Speed	19200	-		
Data Length	0.7	<b>©</b> 8		
Parity	C NONE	C EVEN	C ODD	
Stop Bit	© 1	<b>C</b> 2		
Flow Control	NONE	C ER(DTR/CTS)	C XON/XOFF	
Timeout	3 📫	(sec)		
Retry	2 🔹			
Wait To Send	0 🕂	(ms)		
RI / VCC	RI	O VCC		
In the case of RS or VCC (5V Pow Isolation Unit, ple	6232C, you can sele er Supply). If you u: ease select it to VCC	ect the 9th pin to RI (Inj se the Digital's RS2320 2	Default	
Device-Specific Setting	s			
Allowable Number of Devices/PLCs	Ada 1	Device		And Indiana
No. Device Name	Setting	IS		Device
👗 1 PLC1	Series	≔KV-700/1000		<b></b>

Setup Items	Setup Description
SIO Type	Select the SIO type for communicating with the External Device.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Select a data length.
Parity	Select how to check parity.
Stop Bit	Select a stop bit length.
Flow Control	Select the communication control method to prevent overflow of transmission and reception data.
Timeout	Enter the time (s) for which the Display waits for the response from the External Device, from "1 to 127".
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".

Setup Items	Setup Description
RI/VCC	You can switch between RI/VCC for the 9th pin when you select RS-232C for SIO type. To connect to the IPC, switch between RI/5V using the IPC selector switch. Refer to your IPC manual for details.

NOTE	Refer to the GP-Pro EX Reference Manual for Indirect Device.
	Cf. GP-Pro EX Reference Manual "Changing the Device/PLC at Runtime (Indirect Device)"

## Device Setting

To display the [Individual Device Settings] dialog box, from [Device-Specific Settings] in the [Device/PLC] window, select the external device and click [Settings]

Individual Device Settin	igs 🔀
PLC1	
Series KV-700/1000 Please reconfirm all of address you are using if you have char	s settings that nged the series.
	Default
OK (0)	Cancel

Setup Items	Setup Description
Series	Select the series of the External Device.

## 4.2 Setup Items in Offline Mode

#### NOTE

- Refer to the Maintenance/Troubleshooting guide for information on how to enter offline mode or about the operation.
  - Cf. Maintenance/Troubleshooting Guide "Offline Mode"
- The number of the setup items to be displayed for 1 page in the offline mode depends on the Display in use. Please refer to the Reference manual for details.

## Communication Settings

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings] in offline mode. Touch the External Device you want to set from the displayed list.

Comm,	Device	Option		
KV-700/1000/3000/50	000 CPU Direct		[COM1]	Page 1/1
	SID Type Speed Data Length Parity Stop Bit Flow Control	RS232C 19200 8 EVEN 1 NONE		
	Timeout(s) Retry Wait to Send(ms)	,		
	Exit		Back	2008/01/08 19:19:14

Setup Items	Setup Description
SIO Type	Select the SIO type for communicating with the External Device.  MPORTANT In the communication settings, set [SIO Type] correctly according to the serial interface specifications of the Display. If you select an SIO type that the serial interface does not support, proper operation cannot be guaranteed. Refer to your Display manual for details on the serial interface specifications.
Speed	Select the communication speed between the External Device and the Display.
Data Length	Data length is displayed.

Setup Items	Setup Description	
Parity	The parity check method is displayed.	
Stop Bit	Stop bit length is displayed.	
Flow Control	The communication control method to prevent overflow of transmission and reception data.	
Timeout	Enter the time (s) for which the Display waits for the response from the External Device, from "1 to 127".	
Retry	In case of no response from the External Device, enter how many times the Display retransmits the command, from "0 to 255".	
Wait To Send	Enter the standby time (ms) from when the Display receives packets until it transmits the next command, from "0 to 255".	

## Device Setting

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings]. Touch the External Device you want to set from the list that appears, and touch [Device].

Comm,	Device	Option		
KV-700/1000/3000/50	100 CPU Direct		[COM1]	Page 1/1
Device	/PLC Name PLC	31		<b>V</b>
	Series	KV-700/1000		
	Exit		Back	2008/01/08 19:19:23

Setup Items	Setup Description
Device/PLC Name	Select the External Device to set. Device/PLC Name is the title of the External Device set with GP-Pro EX. (Initial value [PLC1])
Series	Displays the series of the External Device.

## Option

To display the setting screen, touch [Device/PLC Settings] from [Peripheral Settings]. Touch the External Device you want to set from the list that appears, and touch [Option].

Comm,	Device	Option		
KV-700/1000/3000/50	000 CPU Direct		[COM1]	Page 1/1
	RI / VCC In the case of the 9th pin to Power Supply). RS232C Isolati it to VCC.	<ul> <li>RI</li> <li>f RS232C, you can sel</li> <li>o RI(Input) or VCC(5)</li> <li>If you use the Digition Unit, please sele</li> </ul>	VCC lect / tal's ect	
	Exit		Back	2008/01/08 19:19:33

Setup Items	Setup Items Setup Description		
RI/VCC	You can switch between RI/VCC for the 9th pin when you select RS-232C for SIO type. To connect to the IPC, you need to switch between RI/5V using the IPC selector switch. Refer to your IPC manual for details.		
NOTE • C	P-4100 series, GP-4*01TM, LT-4*01TM and LT-Rear Module do not have the [Option] etting in the offline mode.		

# 5 Cable Diagrams

The cable diagrams shown below may be different from the cable diagrams recommended by KEYENCE Corporation. Please be assured there is no operational problem in applying the cable diagrams shown in this manual.

- The FG pin on the External Device must be D-class grounded. Refer to your External Device manual for details.
- The SG and FG are connected inside the Display. If you connect the External Device to the SG, do not form any short-circuit loop in the system design.
- If the communication is not stable because of noise or other factors, connect an isolation unit.

#### Cable Diagram 1

Display (Connection Port)		Cable	Remarks
GP3000 (COM1) GP4000 <sup>*1</sup> (COM1) SP5000 (COM1/2) ST (COM1) LT3000 (COM1) IPC <sup>*2</sup> PC/AT	1A	D-sub 9Pin by KEYENCE Corporation OP-26486 + Modular cable by KEYENCE Corporation OP-26487 (2.5m)	
GP-4105 (COM1)	1B	User-created cable + D-sub 9Pin by KEYENCE Corporation OP-26486 + Modular cable by KEYENCE Corporation OP-26487 (2.5m)	

\*1 All GP4000 models except GP-4100 Series and GP-4203T

1A)



1B)



## Cable Diagram 2

Display (Connection Port)	Cable		Remarks
GP3000 (COM1) GP4000 <sup>*1</sup> (COM1) SP5000 (COM1/2) ST (COM1) LT3000 (COM1) IPC <sup>*2</sup> PC/AT	2A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1)	2B	User-created cable	The cable length must be 15m or less.
LT-4*01TM (COM1) LT-Rear Module (COM1)	2C	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJR21	The cable length must be 5m or less.

\*1 All GP4000 models except GP-4100 Series and GP-4203T

\*2 Available only with COM ports that support RS-232C. ☞ ■ IPC COM Port (page 6)

2A)



Display side External Device side Shield Terminal block Dsub 9 pin (socket) Signal name Pin Signal name 2 RD(RXD) RD(RXD) Display SD(TXD) 3 SD(TXD) ER(DTR) 5 SG 7 RS(RTS) SG 8 CS(CTS) CS(CTS)

2C)

2B)



Legend	Name	Note
(1)	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJR21	

## Cable Diagram 3

Display (Connection Port)	Cable		Remarks
GP3000 (COM1) GP4000 <sup>*1</sup> (COM1) SP5000 (COM1/2) ST (COM1) LT3000 (COM1) IPC <sup>*2</sup> PC/AT	3A	User-created cable	The cable length must be 15m or less.
GP-4105 (COM1)	3B	User-created cable	The cable length must be 15m or less.
LT-4*01TM (COM1) LT-Rear Module (COM1)	3C	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJR21	The cable length must be 5m or less.

\*1 All GP4000 models except GP-4100 Series and GP-4203T

#### 

NOTE

• Set the PORT2 toggle switch on the External Device to "232C".

## 3A)



3B)



3C)

		Externa Termi	I Device side	е
Diaplay		Pin	Signal name	
		1	SG	
		3	SD(TXD)	
	(1) (1)	5	RD(RXD)	

Legend	Name	Note
(1)	RJ45 RS-232C Cable (5m) by Pro-face PFXZLMCBRJR21	

#### Cable Diagram 4

Display (Connection Port)		Cable	Remarks
GP3000 <sup>*1</sup> (COM1) AGP-3302B (COM2) GP-4*01TM (COM1) ST <sup>*2</sup> (COM2) LT3000 (COM1) IPC <sup>*3</sup>	4A	COM port conversion adapter by Pro-face CA3-ADPCOM-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable	The cable length must be 500m or less.
	4B	User-created cable	
GP3000 <sup>*1</sup> (COM2)	4C 4D	Online adapter by Pro-face CA4-ADPONL-01 + Connector terminal block conversion adapter by Pro-face CA3-ADPTRM-01 + User-created cable Online adapter by Pro-face CA4-ADPONL-01 + User-created cable	The cable length must be 500m or less.
GP-4106 (COM1)	4E	User-created cable	The cable length must be 500m or less.
GP4000 <sup>*4</sup> (COM2) GP-4201T (COM1) SP5000 (COM1/2)	4F	RS-422 Terminal Block Conversion Adapter by Pro-face PFXZCBADTM1 <sup>*5</sup> + User-created cable	The cable length must be 500m or less.
	4B	User-created cable	

\*1 All GP3000 models except AGP-3302B

\*2 All ST models except AST-3211A and AST-3302B

- \*4 All GP4000 models except GP-4100 Series, GP-4\*01TM, GP-4201T and GP-4\*03T
- \*5 When using a Terminal Block Conversion Adapter (CA3-ADPTRM-01) instead of the RS-422 Terminal Block Conversion Adapter, refer to Cable Diagram 4A.

NOTE

• Set the PORT2 toggle switch on the External Device to "422A 485(4)". Also, turn ON the switch of the terminator.

• Pay attention that pole A and pole B are reversely named for the Display and the External Device.





4B)







4D)







\*1 The resistance in the Display is used as the termination resistance. Set the value of the DIP Switch on the rear of the Display as shown in the table below.

DIP Switch No.	Set Value
1	OFF
2	ON
3	OFF
4	ON

4F)



# 6 Supported Device

The range of supported device addresses is shown in the table below. Please note that the actual supported range for devices varies depending on the external device that is used. Please check the actual range in the external device manual.

T

## 6.1 KV-700 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay				
Output Relay	00000 - 59915	000 - 599	rL/H)	
Internal Auxiliary Relay				
Control Relay	CR0000 - CR3915	CR00 - CR39		
Timer (Contact)	T000 - T511			
Counter (Contact)	C000 - C511		_	
High-speed Counter Comparator (Contact)	CTC0 - CTC3			*1
Timer (Setting Value)		TS000 - TS511		*2
Counter (Setting Value)		CS000 - CS511		*2
Timer (Current Value)		TC000 - TC511		*2
Counter (Current Value)		CC000 - CC511		*2
Data Memory		DM00000 - DM39999		<u>ві 1</u> 5
Temporary Data Memory		TM000 - TM511	[ <u>[[</u> ]]	<u>ві (</u> 15)
Control Memory		CM0000 - CM3999		<u>ві (</u> 15)
Digital Trimmer		TRM0 - TRM7		*2
High-speed Counter (Current Value)		CTH0 - CTH1		*2
High-speed Counter Comparator (Setting Value)		CTC0 - CTC3		*2

\*1 Write disable

\*2 32-bit device

MPORTANT • When connecting KV-700 Series, use settings within the device address ranges above.

If you try to access device addresses supported only by the KV-1000 Series devices, the following error messages display: "Error has been responded for device read command (Error Code(02)[(0x02)]" or "Error has been responded for device write command (Error Code(02)[(0x02)]".

**NOTE** • Refer to the GP-Pro EX Reference Manual for system data area.

Cf. GP-Pro EXReference Manual "LS Area (Direct Access Method Area)"

- Refer to the precautions on manual notation for icons in the table.
  - "Manual Symbols and Terminology"

#### 6.2 KV-1000 Series

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay				*1
Output Relay	00000 - 59915	000 - 599		*1
Internal Auxiliary Relay			rL/H)	*1
Internal Auxiliary Relay	MR00000 - MR99915	MR000 - MR999		
Latch Relay	LR00000 - LR99915	LR000 - LR999		
Control Relay	CR0000 - CR3915	CR00 - CR39		
Timer (Contact)	T0000 - T3999			
Counter (Contact)	C0000 - C3999		_	
High-speed Counter Comparator (Contact)	CTC0 - CTC3			*2
Timer (Setting Value)		TS0000 - TS3999		*3
Counter (Setting Value)		CS0000 - CS3999		*3
Timer (Current Value)		TC0000 - TC3999		*3
Counter (Current Value)		CC0000 - CC3999	]	*3
Data Memory		DM00000 - DM65534		<u>⊪⊤</u> 15]
Extension Data Memory EM		EM00000 - EM65534	ſ	<u>⊪⊤</u> 15]
Extension Data Memory FM		FM00000 - FM32766	   [L/H]	<u>ві (</u> 15)
Temporary Data Memory		TM000 - TM511		<u>вт</u> 15
Control Memory		CM00000 - CM11998		<u>вт</u> 15
Index Register		Z01 - Z12		<u>ві t</u> 15 <sup>*4</sup>
Digital Trimmer		TRM0 - TRM7		*3
High-speed Counter (Current Value)		CTH0 - CTH1		*3
High-speed Counter Comparator (Setting Value)		CTC0 - CTC3		*3

\*1 R000 to R599 (R00000 to R59915) are shown in KV-1000, but 000 to 599 (00000 to 59915) in GP-Pro EX.

Write disable \*2

32-bit device \*3

Do not write to the addresses Z11 and Z12. They are used in the system of the External Device. \*4

**NOTE** • Refer to the GP-Pro EX Reference Manual for system data area.

Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

- Refer to the precautions on manual notation for icons in the table.
  - "Manual Symbols and Terminology"

6.3 KV-3000/5000/5500 Series

: This address can be specified as system data area.

Device		Bit Address	Word Address	32 bits	Remarks
Input Relay					
Output Relay		R00000 - R99915	R000 - R999		
Internal Auxiliary Relay					
Link Relay		B0000 - B3FFF	B000 - B3FF		
Internal Aux	iliary Relay	MR00000 - MR99915	MR000 - MR999		
Latch Relay	,	LR00000 - LR99915	LR000 - LR999		
Control Rela	ау	CR0000 - CR3915	CR00 - CR39		
Work Relay		VB0000 - VB3FFF	VB000 - VB3FF		
Timer (Cont	act)	T0000 - T3999			
Counter (Co	ontact)	C0000 - C3999		-	
High-speed Comparator	Counter (Contact)	CTC0 - CTC3			*1
Timer (Setti	ng Value)		TS0000 - TS3999		*2
Counter (Se	etting Value)		CS0000 - CS3999		*2
Timer (Curre	ent Value)		TC0000 - TC3999		*2
Counter (Cu	urrent Value)		CC0000 - CC3999		*2
Data Memory			DM00000 - DM65534		<sub>ві t</sub> 15)
Extension D	ata Memory		EM00000 - EM65534		вт (15)
File	Current Bank		FM00000 - FM32767		<u>ві 1</u> 51
Register	Serial Number System		ZF000000 - ZF131071		<sub>ві 1</sub> 15
Temporary I	Data Memory		TM000 - TM511		ві (15)
Control Mer	nory		CM00000 - CM05999		ві (15)
Link Registe	er		W0000 - W3FFF		вit
Work Memory			VM00000 - VM59999		<sub>ві 1</sub> 15
Index Register			Z01 - Z12		*2 *3
Digital Trimmer			TRM0 - TRM7		*2
High-speed Counter (Current Value)			CTH0 - CTH1		*2
High-speed Comparator	Counter (Setting Value)		CTC0 - CTC3		*2

\*1 Write disable

#### \*2 32-bit device

\*3 Do not write to the addresses Z11 and Z12. They are used in the system of the External Device.

**NOTE** • Refer to the GP-Pro EX Reference Manual for system data area.

Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

• Refer to the precautions on manual notation for icons in the table.

"Manual Symbols and Terminology"

#### **KV-Nano Series** 6.4

: This address can be specified as system data area.

Device	Bit Address	Word Address	32 bits	Remarks
Input Relay				
Output Relay	R00000 - R59915	R000 - R599		
Internal Auxiliary Relay				
Link Relay	B0000 - B1FFF	B000 - B1FF	[L/H]	
Internal Auxiliary Relay	MR00000 - MR59915	MR000 - MR599		
Latch Relay	LR00000 - LR19915	LR000 - LR199		
Control Relay	CR0000 - CR3915	CR00 - CR39		
Work Relay	VB0000 - VB1FFF	VB000 - VB1FF		
Timer (Contact)	T0000 - T0511			
Counter (Contact)	C0000 - C0255		-	
High-speed Counter Comparator (Contact)	CTC0 - CTC3			*1
Timer (Setting Value)		TS0000 - TS0511		*2
Counter (Setting Value)		CS0000 - CS0255		*2
Timer (Current Value)		TC0000 - TC0511		*2
Counter (Current Value)		CC0000 - CC0255		*2
Data Memory		DM00000 - DM32767		<u>ві 1</u> 51
Temporary Data Memory		TM000 - TM511	ſ	<u>ві (</u> 15)
Control Memory		CM00000 - CM05999	[L/H]	<u>ві 1</u> 51
Link Register		W0000 - W3FFF		Bit
Work Memory		VM00000 - VM09999		<u>ві (</u> 15)
Index Register		Z01 - Z12		*2 *3
High-speed Counter (Current Value)		CTH0 - CTH1		*2
High-speed Counter Comparator (Setting Value)		CTC0 - CTC3		*2

\*1 Write disable

32-bit device \*2

\*3 Do not write to the addresses Z11 and Z12. They are used in the system of the External Device. **NOTE** • Refer to the GP-Pro EX Reference Manual for system data area.

Cf. GP-Pro EX Reference Manual "LS Area (Direct Access Method Area)"

- Refer to the precautions on manual notation for icons in the table.
  - "Manual Symbols and Terminology"

# 7 Device Code and Address Code

Use device code and address code if you select "Device Type & Address" for the address type in Data displays.

## 7.1 KV-700 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay			
Output Relay		0080	Word Address
Internal Auxiliary Relay			
Control Relay	CR	008A	Word Address
Timer (Setting Value)	TS	0062	Double Word Address
Counter (Setting Value)	CS	0063	Double Word Address
Timer (Current Value)	TC	0060	Double Word Address
Counter (Current Value)	CC	0061	Double Word Address
Data Memory	DM	0000	Word Address
Temporary Data Memory	TM	0001	Word Address
Control Memory	СМ	0002	Word Address
Digital Trimmer	TRM	0064	Double Word Address
High-speed Counter (Current Value)	СТН	0065	Double Word Address
High-speed Counter Comparator (Setting Value)	СТС	0066	Double Word Address

## 7.2 KV-1000 Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay			
Output Relay		0080	Word Address
Internal Auxiliary Relay			
Internal Auxiliary Relay	MR	0082	Word Address
Latch Relay	LR	0084	Word Address
Control Relay	CR	008A	Word Address
Timer (Setting Value)	TS	0062	Double Word Address
Counter (Setting Value)	CS	0063	Double Word Address
Timer (Current Value)	TC	0060	Double Word Address
Counter (Current Value)	CC	0061	Double Word Address
Data Memory	DM	0000	Word Address
Extension Data Memory	EM	0010	Word Address
Extension Data Memory	FM	0011	Word Address
Temporary Data Memory	ТМ	0001	Word Address
Control Memory	СМ	0002	Word Address
Index Register	Z	0003	Word Address
Digital Trimmer	TRM	0064	Double Word Address
High-speed Counter (Current Value)	СТН	0065	Double Word Address
High-speed Counter Comparator (Setting Value)	СТС	0066	Double Word Address

## 7.3 KV-3000/5000/5500 Series

Device		Device Name	Device Code (HEX)	Address Code
Input Relay				
Output Relay		R	0080	Word Address
Internal Auxilia	ary Relay			
Link Relay		В	008B	Word Address
Internal Auxilia	ary Relay	MR	0082	Word Address
Latch Relay		LR	0084	Word Address
Control Relay		CR	008A	Word Address
Work Relay		VB	008C	Word Address
Timer (Setting	Value)	TS	0062	Double Word Address
Counter (Settin	Counter (Setting Value)		0063	Double Word Address
Timer (Current	Timer (Current Value)		0060	Double Word Address
Counter (Curre	ent Value)	CC	0061	Double Word Address
Data Memory	Data Memory		0000	Word Address
Extension Data Memory		EM	0010	Word Address
	Current Bank	FM	0011	Word Address
File Register	Serial Number System	ZF	0012	Word Address
Temporary Da	ta Memory	ТМ	0001	Word Address
Control Memo	ry	СМ	0002	Word Address
Link Register		W	0013	Word Address
Work Memory		VM	0014	Word Address
Index Register		Z	0067	Double Word Address
Digital Trimmer		TRM	0064	Double Word Address
High-speed Counter (Current Value)		СТН	0065	Double Word Address
High-speed Counter Comparator (Setting Value)		CTC	0066	Double Word Address

## 7.4 KV-Nano Series

Device	Device Name	Device Code (HEX)	Address Code
Input Relay			
Output Relay	R	0080	Word Address
Internal Auxiliary Relay			
Link Relay	В	008B	Word Address
Internal Auxiliary Relay	MR	0082	Word Address
Latch Relay	LR	0084	Word Address
Control Relay	CR	008A	Word Address
Work Relay	VB	008C	Word Address
Timer (Setting Value)	TS	0062	Double Word Address
Counter (Setting Value)	CS	0063	Double Word Address
Timer (Current Value)	TC	0060	Double Word Address
Counter (Current Value)	CC	0061	Double Word Address
Data Memory	DM	0000	Word Address
Temporary Data Memory	ТМ	0001	Word Address
Control Memory	СМ	0002	Word Address
Link Register	W	0013	Word Address
Work Memory	VM	0014	Word Address
Index Register	Z	0067	Double Word Address
High-speed Counter (Current Value)	СТН	0065	Double Word Address
High-speed Counter Comparator (Setting Value)	CTC	0066	Double Word Address

## 8 Error Messages

Error messages are displayed on the Display screen as follows: "No.: Device Name: Error Message (Error Occurrence Area)". Each description is shown below.

Item	Description		
No.	Error No.		
Device Name	Name of the External Device where an error has occurred. Device name is a title of the External Device set with GP-Pro EX. (Initial value [PLC1])		
Error Message	Displays messages related to an error that has occurred.		
	Displays the IP address or device address of the External Device where an error has occurred, or error codes received from the External Device.		
Error Occurrence Area	<ul> <li>NOTE</li> <li>IP address is displayed as "IP address (Decimal): MAC address (Hex)".</li> <li>Device address is displayed as "Address: Device address".</li> <li>Received error codes are displayed as "Decimal [Hex]".</li> </ul>		

#### Display Examples of Error Messages

"RHAA035: PLC1: Error has been responded for device write command (Error Code: 1 [01H])"

• Refer to your External Device manual for details on received error codes.
• Refer to "Display-related errors" in "Maintenance/Troubleshooting Manual" for details on the error messages common to the driver.

#### ◆ Error Codes Specific to the External Device

Error Code (HEX)	Error Description
02	<ul><li>Executed illegal access.</li><li>Wrote in the write disable device.</li><li>Accessed the nonexistent device or address.</li></ul>
04	Tried to communicate in the communication baud rate not supported by the External Device.
31	Accessed the device not defined as device in the External Device. <sup>*1</sup>
0B	Performed monitor read with the monitor unregistered.

\*1 When you write to Timer (Contact/Current Value/Setting Value), Counter (Contact/Current Value/Setting Value), High-speed Counter, and High-speed Counter Comparator (Setting Value), the changed settings must be made in the in the ladder program in advance.