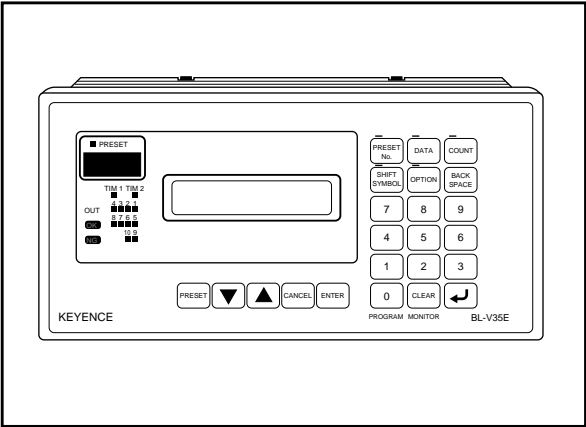


Instruction Manual

Bar Code Display Interface

BL-V35E



Safety Precautions

This instruction manual describes the operation and function of the BL-V35E. Read this manual carefully to ensure safe use and maximum performance from your BL-V35E.

Symbols

The following symbols alert you to important messages. Be sure to read these messages carefully.



Failure to follow instruction may lead to injury. (electric shock, burn, etc.)



Failure to follow instructions may lead to product damage.

Note:

Provides additional information on proper operation.

General Precautions

- At startup and during operation, be sure to monitor the functions and performance of the BL-V35E.
- We recommend that you take substantial safety measures to avoid any damage in the event a problem occurs.
- Do not open or modify the BL-V35E or use it in any way other than described in the specifications.
- When the BL-V35E is used in combination with other instruments, functions and performance may be degraded, depending on operating conditions and the surrounding environment.
- Do not use the BL-V35E for the purpose of protecting the human body.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate this equipment.

Note: In order for the installation of this product to maintain compliance with the limits for a Class A device, **shielded** cable must be used.

Warnings and cautions specific to the BL-V35E



- *The BL-V35E uses 100 to 120 VAC as the power supply. If any other power supply is used, the BL-V35E may be damaged.*
- The BL-V35E can receive bar code data with up to 32 digits. The BL-V35E cannot receive larger amounts of data.
- The BL-V35E has a power supply of 5 VDC to be supplied to connected bar code readers. The current capacity is 750 mA maximum. Ensure that the current consumption of all bar code readers connected to the BL-V35E does not exceed 750 mA.
- Ensure that power to the BL-V35E is turned off before connecting or disconnecting bar code readers.

Warranty

Our products are thoroughly inspected before shipment. However, in the event of a malfunction, contact your nearest KEYENCE office.

KEYENCE will replace or repair any defective parts free of charge for one year from the date of shipment from the factory. However, we shall not be responsible for any failure resulting from improper use, negligence, natural disaster or fire.

Notice

- No part of this manual may be reprinted or reproduced in any form or by any means without the prior written permission of KEYENCE.
- The content of this manual is subject to change without notice.
- KEYENCE has thoroughly checked and reviewed this manual. Please contact a sales representative if you have any questions or comments regarding this manual or if you find an error.
- KEYENCE assumes no responsibility for any errors or omissions in this manual. No liability is assumed for damages resulting from the use of the information in this manual, item 3 above notwithstanding.
- KEYENCE will replace any incomplete or incorrectly collated manual.

Note to User

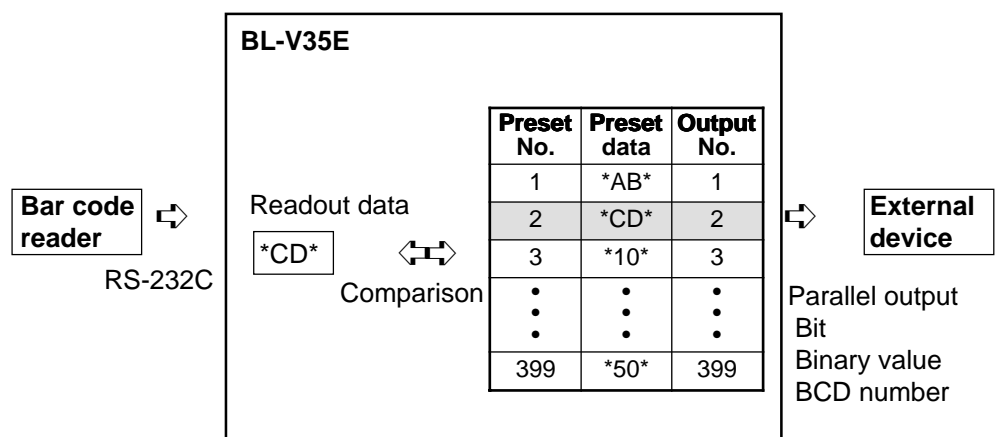
This manual describes handling procedures, operating procedures, warnings and precautions for the BL-V35E.

Be sure to read this manual carefully before using the BL-V35E. Store this manual in a convenient location for future reference.

■ BL-V35E

The BL-V35E bar code data verifier stores (presets) up to 399 types of bar code data, and compares them to the bar code data read by a bar code reader connected to the BL-V35E. When the readout data matches the preset data, the BL-V35E outputs the output No. assigned to the matching preset data using a bit, binary value or BCD number from the parallel port.

The figure below shows the operation of the BL-V35E.



The following bar code reader models can be connected.

■ Fixed-mount type bar code reader

- BL-600 series
- BL-700 series
- BL-500 series
- BL-180 series

Bar code readers manufactured by other companies can also be connected.

Terms

The following terms are used throughout this manual.

Term	Description
BL-V35E	BL-V35E Bar code display interface
PLC	Abbreviation for programmable logic controller
Personal computer (PC)	IBM PC or PC/AT compatible machine
BL Series bar code reader	Equipment that reads bar code data BL-180/500/700/600 series of fixed-mount type
Serial interface	RS-232C interface provided in the BL-V35E
Parallel interface	7 digital inputs and 12 digital outputs

How this manual is organized

Chapter 1

Overview

This chapter outlines the features and functions of the BL-V35E, the name of each part, the system configuration and connectable units.

Chapter 2

Setup Procedure

This chapter describes the setting procedure required before the BL-V35E is connected to a BL series bar code reader, the setting procedure for a BL series bar code reader connected via the BL-V35E, and the test procedure.

Chapter 3

Wiring and Installation

This chapter describes the specifications of the parallel interface and serial interface of the BL-V35E. This chapter also describes the wiring between the BL-V35E and various other units.

Chapter 4

Basic Functions

This chapter describes in detail the normal usage and operation of the BL-V35E such as the multi-preset function and step verification function.

Chapter 5

Extended Functions

This chapter describes useful functions of the BL-V35E such as the data reference function, digit designation function and parallel output setting function.

Chapter 6

Setting

This chapter describes in detail the setting procedure for each function of the BL-V35E, the setting contents and the meaning of the setting parameters.

Chapter 7

Serial Communication

This chapter describes the data send format used when a personal computer is connected to the serial interface of the BL-V35E. It also describes the command send/control method.

Chapter 8

PLC Link

This chapter describes the operating procedure and setting procedure used when the BL-V35E is used in the PLC link.

Chapter 9

Printout Function

This chapter describes how to connect a printer to the BL-V35E, print the readout bar code data and set the printing parameters.

Appendix

The appendix describes the outer dimensions, factory default settings and BL-V35E error screens.

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Chapter 1

Overview

This chapter outlines the features and functions of the BL-V35E, the name of each part, the system configuration and connectable units.

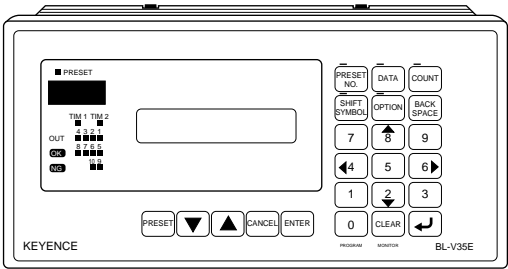
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1.1 Confirming the Package Contents

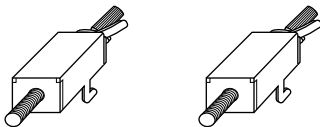
The package contains the following equipment and accessories.
Before using the BL-V35E, make sure that all components have been included.

1.1.1 BL-V35E package

- BL-V35E main unit



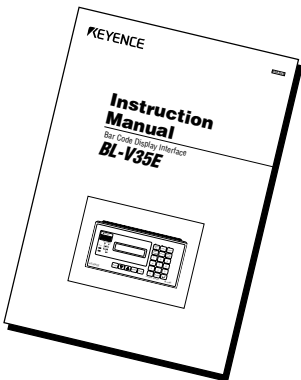
- Metal fixture: 2 pieces



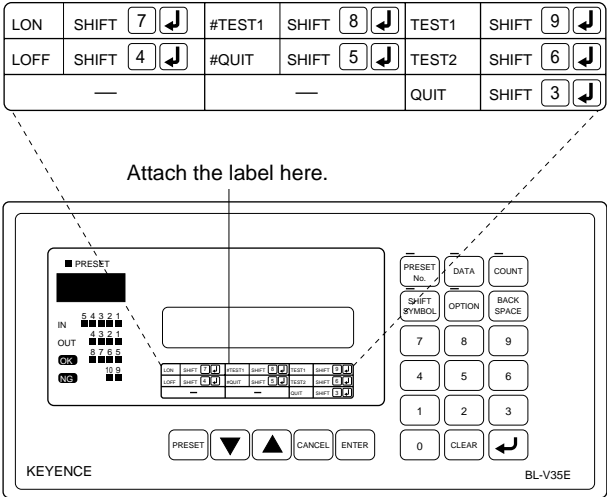
- D-sub 25-pin connector and connector case



- Instruction manual (this manual)



● Shift key function description label



It is recommended that you adhere the label to allow smooth operation of the shift key.

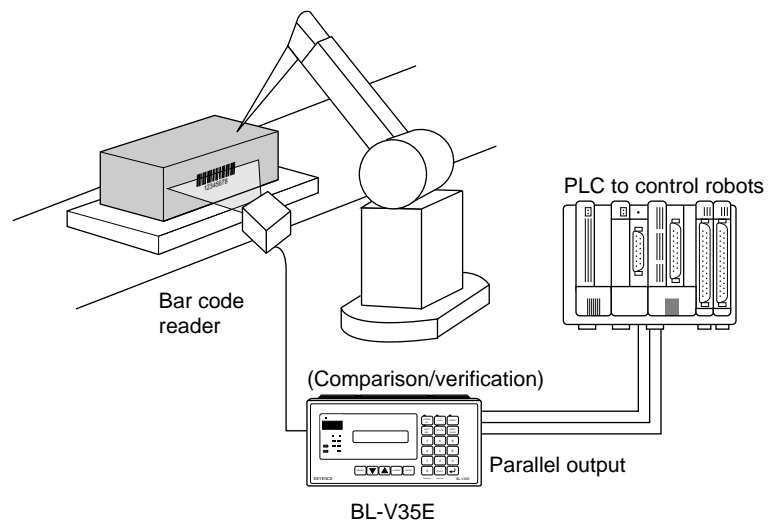
1.2 Overview

This section provides an overview of the functions of the BL-V35E.

■ Multi-preset function

The preset function compares the data registered in advance (preset data) to the readout bar code data. It then produces outputs to indicate whether or not the readout data matches one of the data presets.

The BL-V35E stores up to 399 data presets and compares them to the readout bar code data. When the readout data matches the preset data, the BL-V35E outputs the number assigned to the preset data using a bit, binary value, or BCD number from the parallel port. These outputs can be used to control robotic operation in automatic assembly lines or to sort products on conveyor lines.



The following 3 methods can be used to register preset data in the BL-V35E.

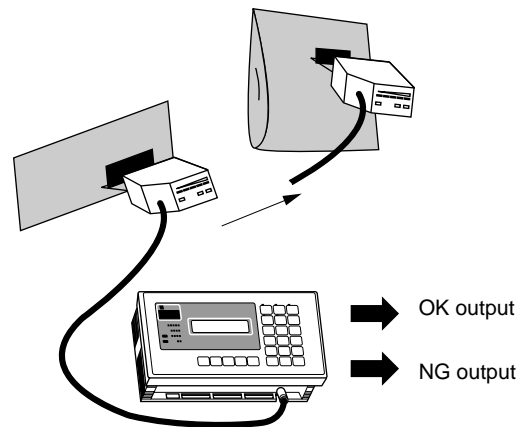
- By reading a bar code using a bar code reader
- Key entry
- Serial command

■ Preset-active function

The preset-active function compares a single data preset (up to 399 presets can be saved) to the readout bar code data. It then produces an OK or NG output to indicate whether or not the readout data matches the specified preset data. These outputs can be used to prevent different products from being intermixed during changeovers.

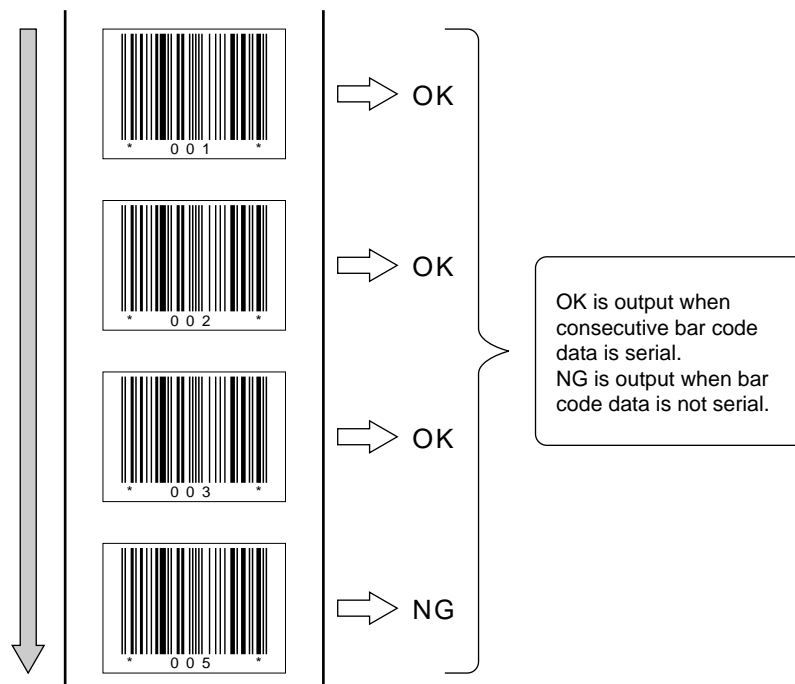
■ Step verification function

The step verification function compares the first data read (first readout data) to the next data read (second readout data). It then produces outputs to indicate whether or not the first readout data matches the second readout data. These outputs can be used to check whether a slip matches an actual product.



■ Serial No. check function

The serial No. check function checks whether bar code labels are printed using serial Nos. This function can be used to check whether or not the serial Nos. of products are printed correctly.



■ **Printout function**

When the serial printer DPU-414 manufactured by SEIKO Instruments Inc. is connected to the BL-V35E, data can be printed out. Automatic printout and manual printout are available as printout methods.

● **Automatic printout**

When a serial printer is connected, the bar code data can be automatically printed out as soon as the bar code data is read (or the **[ENTER]** key is pressed). This method is useful for recording historical data.

● **Manual printout**

Bar code data can be printed out at any time using the specified key operation. When this method is used together with the counter function, data on the number of shipped products can be printed out for each product model.

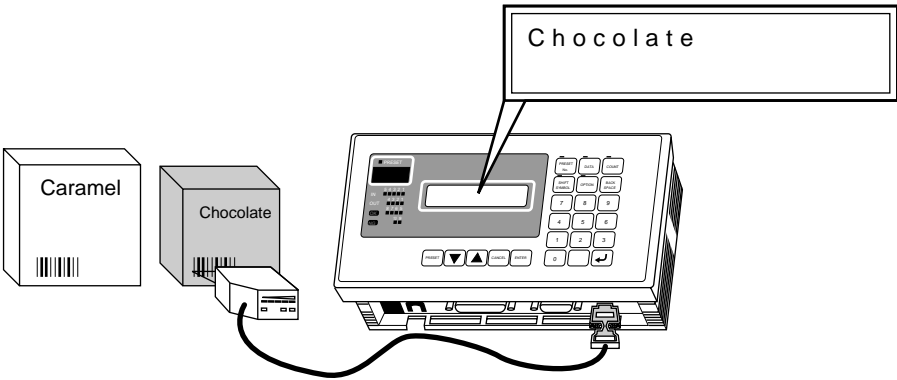
No.000 (NG)	Count=	4
(preset NG)		
No.001 (001)	Count=	1
KEYENCE001		
No.002 (001)	Count=	1
KEYENCE002		
No.003 (003)	Count=	21
KEYENCE003		
No.004 (004)	Count=	2
KEYENCE004		

■ **PLC link function**

By using the PLC link, the data read by a bar code reader connected to the BL-V35E can be written directly to the memory (D area or DM area) inside a program-mable logic controller (PLC). When this function is used, communication programs are not required and the program creation process can be reduced.

■ **Data reference function (Ref data)**

Normally, data that is read using the connected bar code reader is displayed as is on the LCD display. The data reference function replaces bar code data with more meaningful data that is entered in advance using letters, numbers, and symbols.



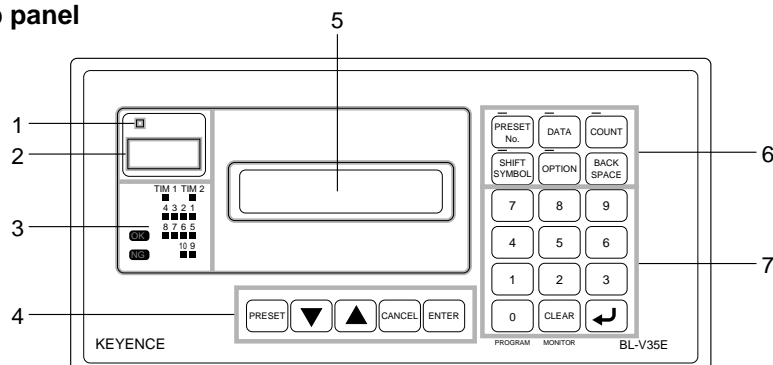
■ **Alternative reading/input available**

When the connected stationary bar code reader fails to read a bar code, the handheld bar code reader that is connected to the other serial interface can read the bar code instead. The bar code data can also be entered using the BL-V35E's panel keys.

1.3 Part Names and Functions

This section describes the name and function of each part of the BL-V35E.

■ Top panel



1. Preset LED

Illuminated in preset mode.

2. Preset No. indication LED

Indicates that a preset No. is being saved or a preset No. is matching by verification.

3. Parallel I/O LEDs

Indicate the ON/OFF status of each parallel input and output.

4. Main keys

Allow you to enter or change the settings of the preset data.

5. LCD display

Displays the readout bar code data and the parameter to be changed.

6. Data manipulation keys

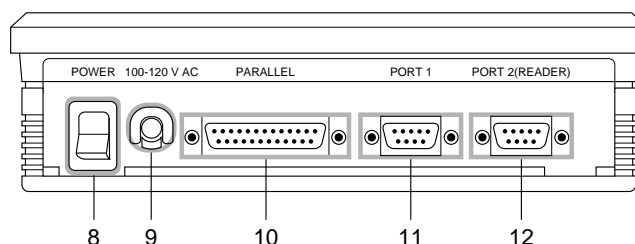
Allow you to manipulate the data.

The LED above each key is illuminated while the corresponding key is in effect.

7. Numeric keypad

Allows you to enter the data directly.

■ Rear panel



8. POWER switch

Turns on and off the main power supply.

9. 100-120 VAC cable

AC power cable.

10. PARALLEL interface

Provides parallel I/O terminals.

Connects trigger inputs for a connected BL series bar code reader.

11. Serial interface port 1 (PORT 1)

Connects a personal computer, PLC or printer.

12. Serial interface port 2 (PORT 2)

Connects a bar code reader.

1.4 System Configuration and Connectable Devices

The BL-V35E can be connected to the following devices.

1.4.1 Connectable devices

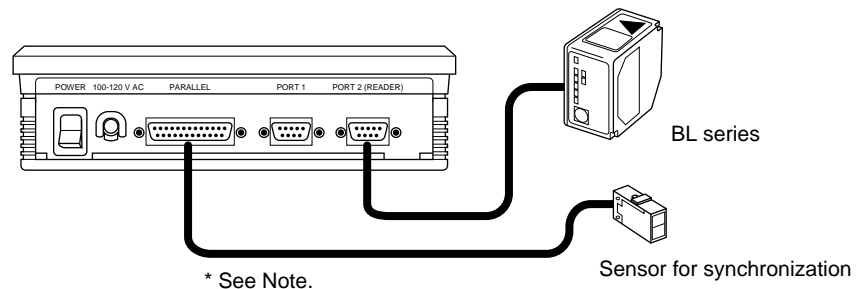
Bar code reader

Connect a bar code reader to serial port 2 (PORT 2).

If you change the settings of the BL-V35E, a bar code reader can be connected to serial port 1. However, serial port 2 should be used under normal conditions.

● BL series

Connect the BL series directly to serial port 2 (PORT 2). To use a trigger input, connect the sensor to the parallel (PARALLEL) port of the BL-V35E.

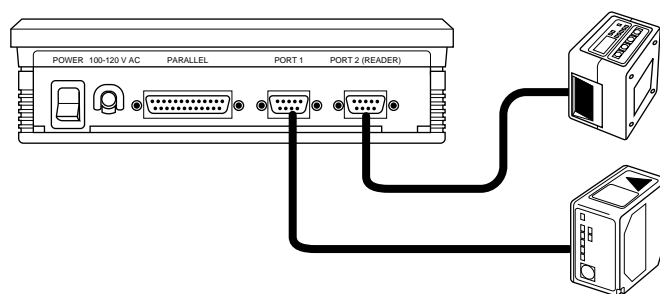


Note: For the synchronization sensor, be sure to use a power supply other than that of the BL-V35E.

● When using two bar code readers

When serial port 1 (PORT 1) is set to “connection of bar code reader”, two bar code readers can be connected to the BL-V35E. However, because both PORT 1 and PORT 2 are used in this case, you cannot connect a personal computer, PLC or printer to the BL-V35E.

When a handheld type bar code reader is connected to PORT 1, it can be used for alternate readout (↔ See p. 6).



Note: The capacity of the 5 VDC power supply supplied from the BL-V35E to the bar code readers is 750 mA maximum including PORT 1 and PORT 2. Ensure that the current consumption of all connected bar code readers does not exceed 750 mA. The current consumption of each bar code reader connected directly is as follows.

- BL-600 series: 330 mA or less
- BL-180 series: 300 mA or less
- BL-500 series: 320 mA or less
- BL-500H series: 340 mA or less
- BL-700 series: 510 mA or less
- BL-P1E: 120 mA or less

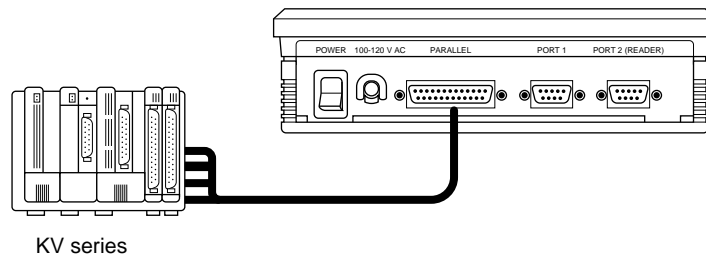
The BL-V35E cannot distinguish the data read by a bar code reader connected to PORT 1 from the data read by a bar code reader connected to PORT 2.

External devices

The BL-V35E features two output ports to connect external devices: a parallel output (PARALLEL) port and a serial output (PORT 1) port. The following devices can be connected to each port. The parallel and serial ports can be used simultaneously.

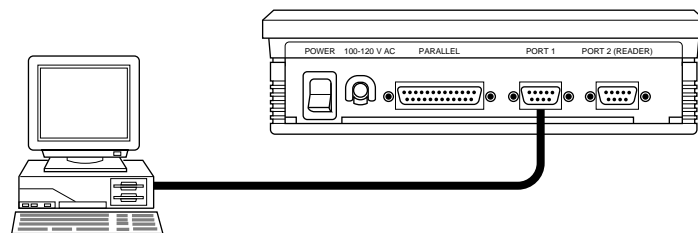
● Parallel output

The BL-V35E compares the preset data to the readout bar code data. When the readout data matches the preset data, the BL-V35E outputs the preset number assigned to the preset data from the parallel port. Connect a PLC or a lamp to the parallel port.



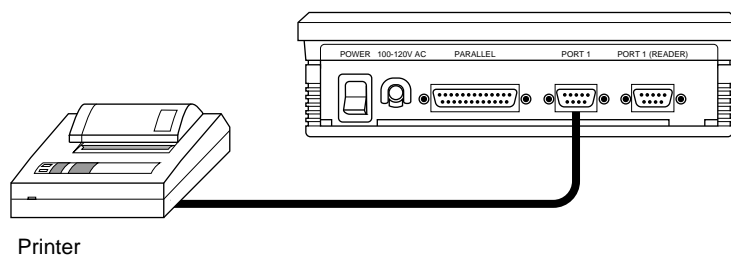
● Personal computer, PLC (Serial output)

Connect a personal computer or a PLC to serial port 1 (PORT 1), in order to send the data as is that is read using the bar code reader.



● Printer (serial output)

Connect a printer to serial port 1 (PORT 1). Using this connection, the readout historical data can be recorded (automatic printout) and the number of shipped products can be printed out for each product model (manual printout).



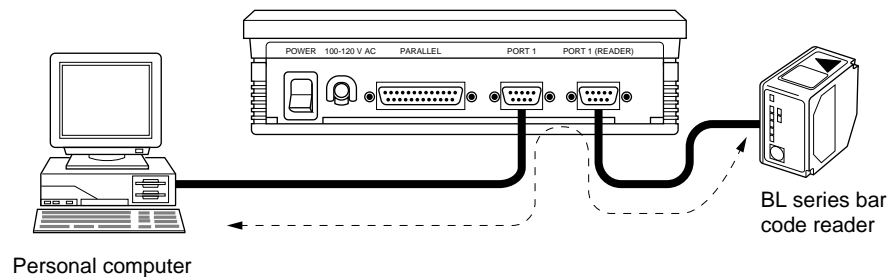
Note: A printer and personal computer (or PLC) cannot both be connected to the BL-V35E at the same time.

● Direct communication (serial output)

When direct communication is selected (☞ See p. 89), the BL-V35E performs the following operation.

- The readout data is not compared to the preset data. (A parallel output is not provided.)
- All commands sent from serial port 1 (PORT 1) are sent to a bar code reader connected to serial port 2 (PORT 2). Commands for the BL-V35E cannot be accepted.
- All data read by a bar code reader is sent to a personal computer connected to serial port 1 (PORT 1).
- The readout bar code data is displayed on the BL-V35E. Responses from a BL series bar code reader to sent commands are also displayed.
- A PLC link is not available.

As described above, when direct communication is selected, a personal computer connected to serial port 1 communicates with a BL series bar code reader connected to serial port 2 on a one-to-one basis. In this case, the BL-V35E can be used as a power supply unit equipped with an LCD display. Use direct communication only when commands are to be sent to a BL series bar code reader.



Note: In direct communication, the following constraint is imposed.

The format of a command sent to a BL series bar code reader is fixed as follows.

Command CR

The format of data read by a BL series bar code reader is fixed as follows.

Readout data CR

The "ACK/NAK protocol" and "RTS/CTS protocol" are not available with a BL series bar code reader. The "PASS/RTRY protocol" is available.

Chapter 2

Setup Procedure

This chapter describes the setting procedure required before the BL-V35E is connected to a BL series bar code reader, the setting procedure for a BL series bar code reader connected via the BL-V35E, and the test procedure.

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2.1 Connection and Settings

This section describes the preparations required before using the BL-V35E.

■ Preparations required before using the BL-V35E

Procedure

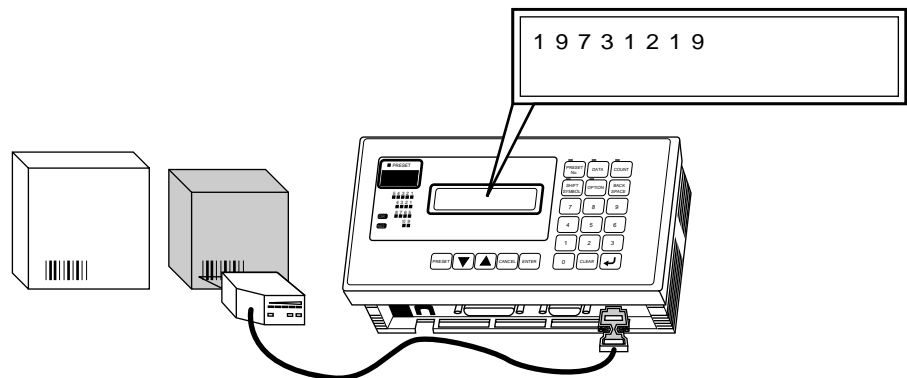
1. Change the communication parameters of the bar code reader as follows.

- Baud rate: 9600 bps
 - Data length: 7 bits
 - Parity: Even
 - Stop bit length: 1 bit
 - Data format: Data [CR] or Data [CR] + [LF]
 - Communication protocol: No handshaking
- When the BL series is used, the above changes are unnecessary.

Note: If you cannot change the parameters using the bar code reader, use the BL - V35E's "PORT2 MODE SETUP" (⇒ See p.90.) to change the parameters of the bar code reader.

2. Connect the bar code reader to serial port 2 (PORT 2) of the BL-V35E. (⇒ See p.25.)

3. Read a bar code using the connected bar code reader and see if the readout data is displayed on the BL-V35E's LCD display.



- With the BL-600/700 series, read a bar code by lightly pressing the test switch once.
- With the BL-180/500 series, press the following keys.
If the following operation does not turn on the laser, ensure that steps 1 and 2 in the procedure were performed properly.

SHIFT SYMBOL → 7 (LON) → Laser turns ON.
SHIFT SYMBOL → 4 (LOFF) → Laser turns ON.

- * The key operations above cause the BL-V35E to send laser ON/OFF commands to the BL-180/500.

4. Change the detailed settings for the bar code reader connected to the BL-V35E (type of bar code to be read, etc.).

- With the BL series, use the setup software supplied with each model or the BL-P1E handheld programmer.

To use the setup software: See p. 14.

To use the BL-P1E handheld programmer: See p. 15.

5. Adjust the detailed settings of the BL-V35E according to the application.

- Operation mode (Main setting mode: ⇨ See p.92.)
- External device to be used (⇨ See p. 84.)
- Registration of preset data (⇨ See p. 33.)

6. Connect the trigger input.

- When the BL series is used, connect the trigger input to the BL-V35E (⇨ See p. 23).

7. Connect the parallel output (⇨ See p. 23).

This connection is required only when the parallel output is used.

8. Connect an external unit (⇨ See p. 27).

Change the settings for a connected external unit. Changing the settings is not required when an external unit is not connected.

For the control procedure and the operating procedure of a connected external unit, refer to the following page.

- Personal computer (serial communication) ⇨ p. 99
- PLC (PLC link) ⇨ p. 111
- Printer ⇨ p. 123

9. Use the BL-V35E, and ensure that it is operating normally.

This completes preparations for using the BL-V35E.

2.2 Setting BL Series Bar Code Reader

To change the settings of the BL series, use the special setup software or the BL-P1E handheld programmer. This section describes the setup procedure.

2.2.1 Changing settings using the setup software

This method allows changes to the BL series settings using the setup software by sending commands via the BL-V35E.

Procedure

1. Follow procedures 1 through 3 in "2.1. Connection and Settings".
2. Connect a personal computer to serial port 1 (PORT 1) of the BL-V35E using an RS-232C cable. (⇒ See p. 27)
3. Start the BL setup software. Change the settings of the BL series as desired.
See the User's Manual for each model for instructions on how to use the BL setup software.

Note: Do not change the communication parameters such as baud rate, parity check, stop bit length, header, terminator, and communication protocol. These changes disable communication between the personal computer and the BL-V35E.

4. Set the BL-V35E to set mode.

Press and hold the BL-V35E's [0] key for 2 seconds to enter PROGRAM mode. The menu shown above appears on the LCD display. The communication parameters of the BL-V35E's serial port 1 (PORT 1) are temporarily set as follows.

1) Port 1	2) Port 2
3) Main	4) Option

- Baud rate: 9600 bps
- Data length: 7 bits
- Parity: Even
- Stop bit length: 1 bit
- Connected device: Personal computer
- Communication protocol: No handshaking

Note: Set mode is also used to change the settings of the BL-V35E itself (⇒ See p. 80).

5. Send the setting data.

When the BL-V35E shows the display described in step 4, send the settings of the BL setup software to the connected BL series.

6. Exit set mode.

When the setting data is sent, press the BL-V35E's [CANCEL] key to exit set mode.

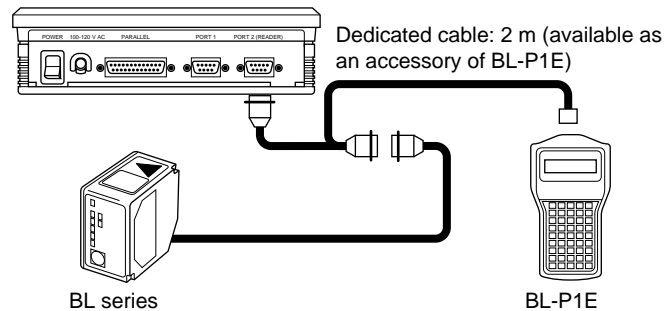
This completes setup of the BL series using the setup software and the BL-V35E.

2.2.2 Changing the settings using the BL-P1E (Not available with BL-600)

This procedure allows changes to the settings in the BL series using the BL-P1E via the BL-V35E. Two connection methods are available.

■ Connecting the BL-P1E using a dedicated cable available as an accessory of the BL-P1E

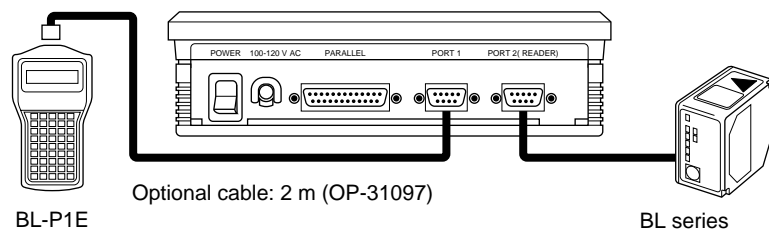
Connect the BL-P1E as follows using a dedicated cable available as an accessory of the BL-P1E.



* For the setting procedure in this case, refer to the BL-P1E User's Manual.

■ Connecting the BL-P1E using an optional cable

Connect the BL-P1E as follows using an optional cable OP-31097.



Procedure

1. Follow steps 1 through 3 in “2.1 Connection and Settings”.

2. Set the BL-V35E to set mode.

Press and hold the BL-V35E's [0] key for 2 seconds to enter set mode. The menu shown below appears on the LCD display.

1) Port 1	2) Port 2
3) Main	4) Option

3. Connect the BL-P1E to serial port 1 (PORT 1) of the BL-V35E as shown in the figure on the previous page.

4. Change the settings.

Set the slide switch of the BL-P1E to SETUP.

When the menu shown below appears on the LCD display of the BL-P1E, change the settings while referring to the BL-P1E User's Manual.

Menu
Code1, Code2, Code3

Note: If the message shown below appears on the LCD display of the BL-P1E when the BL-P1E is connected, check the connection between the BL-P1E, the BL-V35E and the BL series bar code reader. Ensure that the BL-V35E is set to set mode as described in step 2, and then press the BL-P1E's **[ESC]** key.

Non-connection
Push < ESC > Key

2

5. Exit set mode.

When the settings are completed, press the BL-V35E's **[CANCEL]** key to exit set mode. Return the connection to the initial status.

This completes setup of the BL-V35E using the BL-P1E.

Note: BL-P1E is not available with BL-600.

2.3 Using BL Series Bar Code Reader's Test Mode

This section describes how to use the BL-V35E to send test mode commands to the BL series.

2.3.1 Sending test mode command from the BL-V35E to the BL series

Procedure

1. Set the BL-V35E to monitor mode.

Before entering test mode, press and hold the BL-V35E's **[CLEAR]** key for 2 seconds to enter monitor mode.

< M o n i t o r m o d e >
S t a r t

Note: When test mode starts, a large quantity of data is sent from the BL series bar code reader to the BL-V35E. The BL-V35E normally compares all received data to the preset data, and then outputs the results from the parallel port. However, the operation above prevents the BL-V35E from comparing received data with the preset data as well as producing the parallel output. Therefore, the reading test does not affect the operation of the external devices connected to the BL-V35E. This mode is called monitor mode.

2. Send the test mode command to the BL series bar code reader.

Check the connection between the BL series and serial port 2 of the BL-V35E. Then, press the following keys.

● Reading rate check mode

SHIFT SYMBOL → 9 (TEST1) ↵

< S h i f t 9 >
T E S T 1

Reading rate check mode:

The bar code reader scans a bar code 100 times and analyzes how many times it can decode the scanned data. This mode is used to adjust the reading distance and angle of the bar code reader.

● Tact check mode

SHIFT SYMBOL → 6 (TEST2) ↵

< S h i f t 6 >
T E S T 2

Tact check mode:

The bar code reader counts how many scans can be decoded while reading one bar code. This mode is used for moving bar code labels, in order to determine the line speed that can be expected when the bar code reader is actually implemented in the line.

3. Read the bar code in the selected test mode.

The readout data and the reading rate (No. of successful readings) are shown on the LCD display. The monitor indicator on the lower right corner rotates to indicate that the BL-V35E is receiving data.

A B C 1 2 3 4 : 1 0 0 %

Monitor indicator

Note: If the total of the readout bar code data and the additional data (reading rate, etc.) exceeds 32 characters, the BL-V35E cannot receive the data. Limit the total data to be sent to less than 32 characters.

In monitor mode, both the serial and parallel outputs are disabled.

4. Exit test mode.

Press the following keys to exit test mode.

SHIFT SYMBOL → **3** (QUIT) ↵

```
< S h i f t   3 >
Q U I T
```

5. Exit monitor mode.

Once the BL-V35E exits test mode, press the **[CLEAR]** key to exit monitor mode.

```
< M o n i t o r   m o d e >
E n d
```

This completes test mode operation of the BL series bar code reader.

2.3.2 How to send other commands

In addition to commands for starting up test mode, the following commands can also be sent using the **[SHIFT SYMBOL]** key.

- **SHIFT SYMBOL** → **6** → ↵: #TEST1
Starts up on-line test mode (available in the BL-700 series only).
- **SHIFT SYMBOL** → **5** → ↵: #QUIT
Exits on-line test mode (available in the BL-700 series only).
- **SHIFT SYMBOL** → **7** → ↵: LON
Starts readout.
- **SHIFT SYMBOL** → **4** → ↵: LOFF
Finishes readout.

The commands above can be sent even while the BL-V35E is not set to monitor mode.

Chapter 3

Wiring and Installation

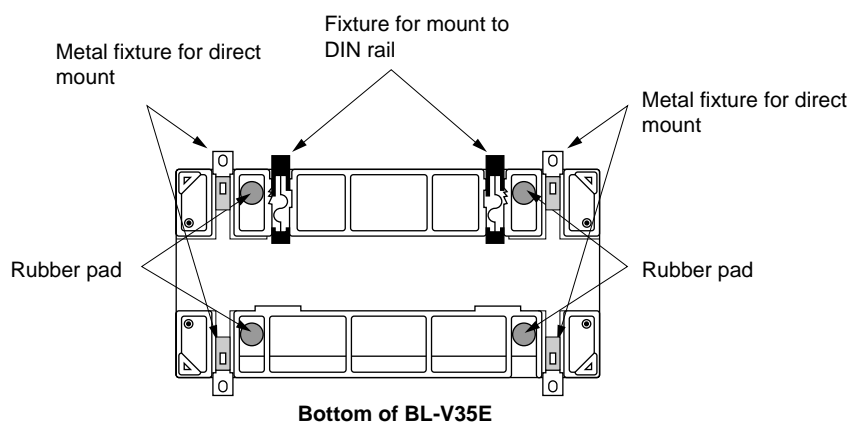
This chapter describes the specifications of the parallel interface and serial interface of the BL-V35E. This chapter also describes the wiring between the BL-V35E and various other units.

3.1	Mounting	20
3.2	Connecting the Power Supply	22
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3.3	Wiring the Parallel Interface	23
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3.4.3	Connecting an external unit	27

3.1 Mounting

This section describes how to mount the BL-V35E.

The BL-V35E can be mounted using either of the following methods.

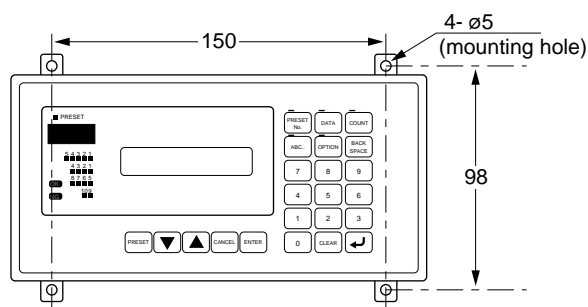


■ Placement

Place the BL-V35E on a desk, etc.

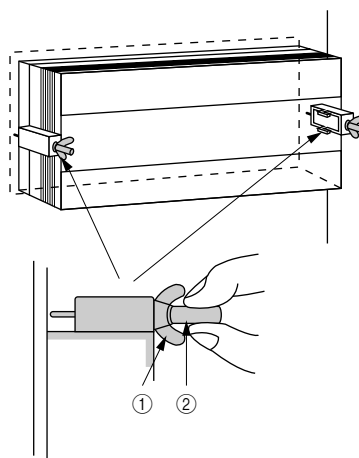
■ Direct mount

Pull out the metal fixtures for direct mount provided on the bottom of the BL-V35E, and tighten the fixtures using screws.



■ Mount to panel

For the panel cut dimensions, refer to the outline drawing (⇒ See p. 135).



Secure the BL-V35E temporarily with ①, and then secure it permanently with ②.



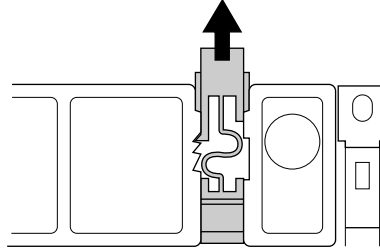
Be sure to tighten the screws by hand. If a tool is used, the case may be damaged.

■ Mount to DIN rail

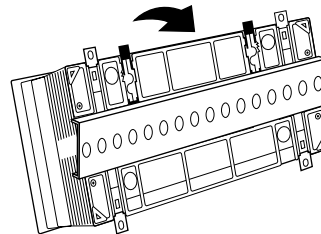
The BL-V35E can be mounted to a DIN rail using the following procedure.

Procedure

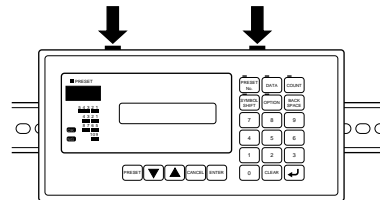
1. Metal fixtures for mount to a DIN rail are provided on the bottom of the BL-V35E. Pull out the metal fixtures to the position shown in the figure.



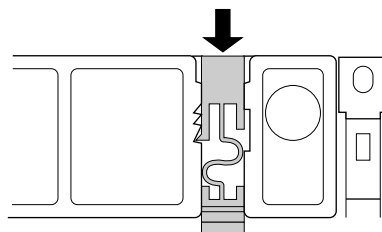
2. Hook the lower part of a DIN rail to the claws of the BL-V35E, and push into the BL-V35E.



3. Push into the metal fixtures completely until a clicking sound is heard. This indicates that the BL-V35E is secured.



4. When the BL-V35E is not mounted to a DIN rail, push into the metal fixtures completely so that the end of each fixture is flush with the BL-V35E main body.

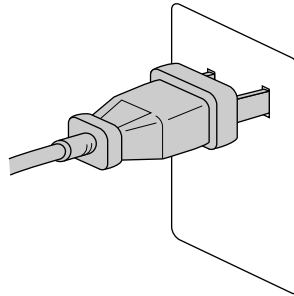


3.2 Connecting the Power Supply

This section describes how to connect the power supply to the BL-V35E.

3.2.1 Connecting the power supply

The BL-V35E uses 100 to 120 VAC (50/60 Hz) as the power supply. Confirm the rated voltage of the power supply, turn off the POWER switch of the BL-V35E, and then connect the power cable.



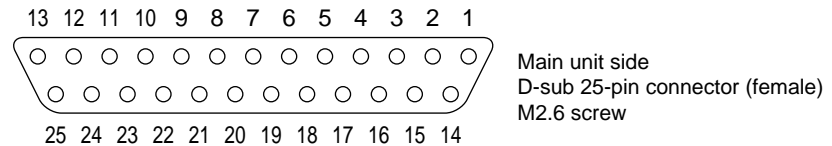
If a power supply's rated input voltage is different from the specified value, failures or accidents may occur. Be sure to use a power supply with 100 to 120 VAC (50/60 Hz).



3.3 Wiring the Parallel Interface

This section describes the parallel interface of the BL-V35E.

The parallel interface handles outputs representing the result of comparison to the preset data (OK/NG/OUT1 to OUT10), and sends trigger inputs to a bar code reader connected to the serial interface.

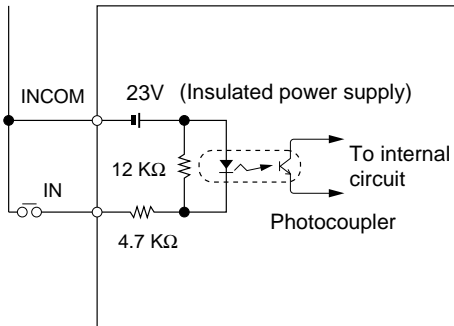
■ Pin assignment and names



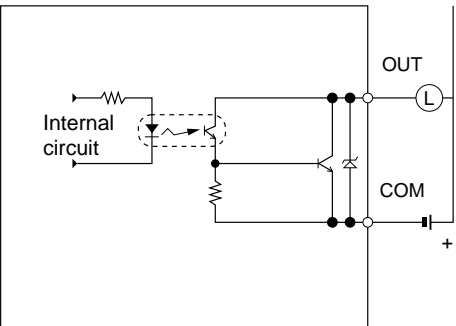
Pin No.	Name	Description	Signal direction
1	OK output	Outputs a signal when the readout data matches the preset data (verification OK).	Output
14	NG output	<ul style="list-style-type: none"> Outputs a signal when the readout data does not match the preset data (verification NG). Outputs a signal when an error (↪ See p. 139) has occurred. (Either one can be selected in the option set mode. ↪ See p. 96) 	Output
2, 15	COM2	Common for OK/NG output	Output
4	OUT1 output	Outputs the output No. corresponding to the preset data that matches the readout data. Bit output (preset No.: 1 to 10) Binary output (preset No.: 1 to 399) BCD output (preset No.: 1 to 399)	Output
17	OUT2 output		
5	OUT3 output		
18	OUT4 output		
6	OUT5 output		
19	OUT6 output		
7	OUT7 output		
20	OUT8 output		
8	OUT9 output		
21	OUT10 output		
3, 16	COM1	Common for output	Output
9	TIM1	Timing (trigger) input to a BL series bar code reader connected to serial port 1 (PORT 1)	Input
22	TIM2	Timing (trigger) input to a BL series bar code reader connected to serial port 2 (PORT 2)	Input
10	IN1	Functions in the same way as the [ENTER] key.	Input
23	IN2	Functions in the same way as the [CANCEL] key.	Input
11	IN3	Functions in the same way as the  key.	Input
24	IN4	Functions in the same way as the  key.	Input
12	IN5	Functions in the same way as the [PRESET No.] key. ↪ See p. 64	Input
13, 25	IN COM	Common for input	Input

I/O circuit diagram

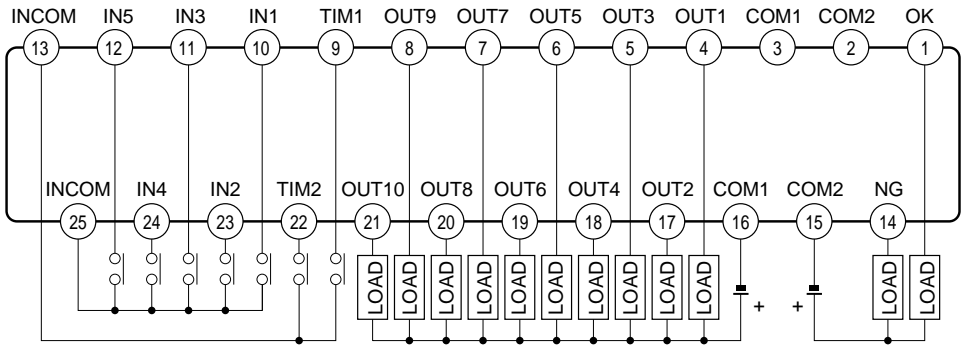
Input circuit



Output circuit



Wiring and connection



- * Pins 3 and 16 (COM1) are common inside.
Pins 2 and 15 (COM2) are common inside.
Pins 13 and 25 (INCOM) are common inside. } COM1, COM2 and INCOM are insulated from each other.
- * The rated load of output terminals is 30 V (100 mA) maximum.

Note: For a photoelectric sensor connected to TIM1 or TIM2, be sure to use a power supply other than that of the BL-V35E.

One D-sub 25-pin connector (male) and one connector case are available as accessories. Refer to the specifications above, and prepare the connector.

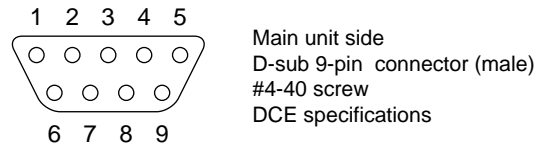
- 25-pin connector: DB-25PF-IN manufactured by NIHON KOKU DENSHI KOGYO or its equivalent
- Connector case: DB-C8-J10-F1-1 manufactured by NIHON KOKU DENSHI KOGYO or its equivalent

3.4 Wiring the Serial Interface

This section describes the serial interface ports of the BL-V35E.

Two serial interface ports, PORT 1 and PORT 2, are provided. Connect a personal computer or PLC to PORT 1. Connect a bar code reader to PORT 2.

3.4.1 Pin assignment for serial interface



* Both PORT 1 and PORT 2 have the same structure.

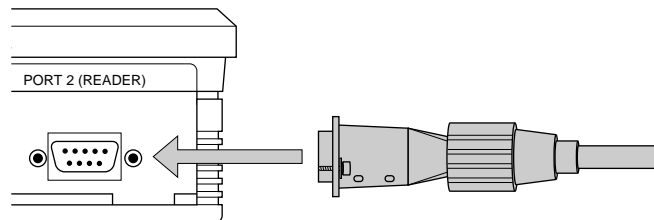
Pin No.	Name	Description	Signal direction
1	TIM	Provides timing (trigger) outputs to a bar code reader.	Output
2	RD (RXD)	Sends data.	Output
3	SD (TXD)	Receives data.	Input
4	ER (TDR)	Connected to pin No. 6 inside.	Input
5	SG	Signal ground	—
6	DR (DSR)	Connected to pin No. 4 inside.	Output
7	RS (RTS)	Enables send.	Input
8	CS (CTS)	Provides send requests (always ON).	Output
9	Vcc	+5 V power supply	Output

3.4.2 Connecting a bar code reader

Typically, you should connect a bar code reader to serial port 2 (PORT 2). However, when the connected unit is set to “bar code reader” in the communication set mode for serial port 1 (PORT 1), a bar code reader can also be connected to serial port 1.

■ Connecting a BL series bar code reader

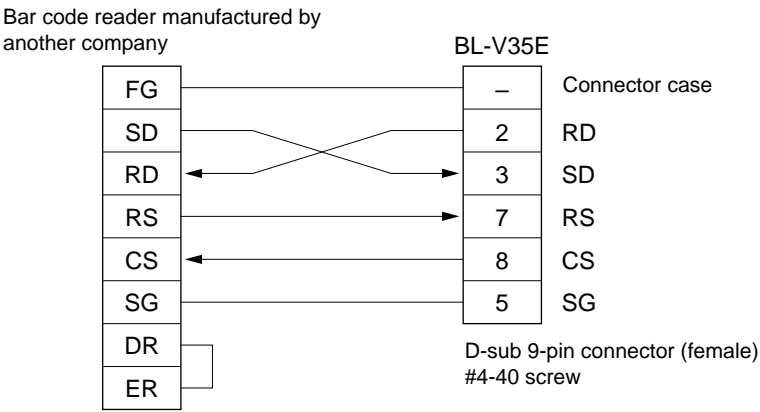
Connect a BL series bar code reader directly to serial port 2. Connect trigger inputs to the parallel interface of the BL-V35E. The +5 VDC power is supplied from the BL-V35E.



■ **Connecting a bar code reader manufactured by another company**

The wiring varies depending on the bar code reader to be connected. Read the Instruction Manual for the bar code reader. Use the following wiring diagram for reference.

Wiring example



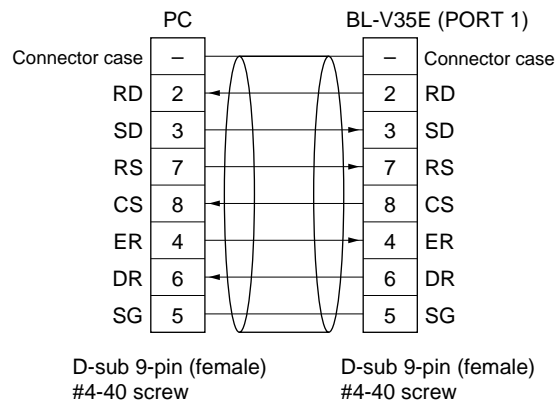
Note: When two bar code readers are connected, the capacity of the 5 VDC power supply supplied from the BL-V35E to the bar code readers is 750 mA maximum including PORT 1 and PORT 2. Ensure that the current consumption of all connected bar code readers does not exceed 750 mA. The current consumption of each bar code reader connected directly is as follows.

- BL-600 series: 330 mA or less
- BL-180 series: 300 mA or less
- BL-500 series: 320 mA or less
- BL-500H series: 340 mA or less
- BL-700 series: 510 mA or less
- BL-P1E (setup console for BL): 120 mA or less

3.4.3 Connecting an external unit

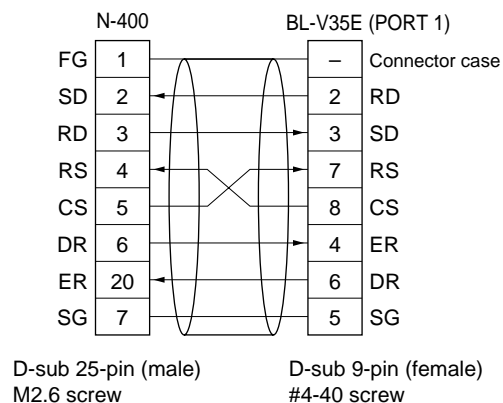
Connect an external unit such as a personal computer or PLC to serial port 1 (PORT 1).

■ Connecting a PC (personal computer)



* Optional cables OP-29859 (1.5 m) can be used for connection.

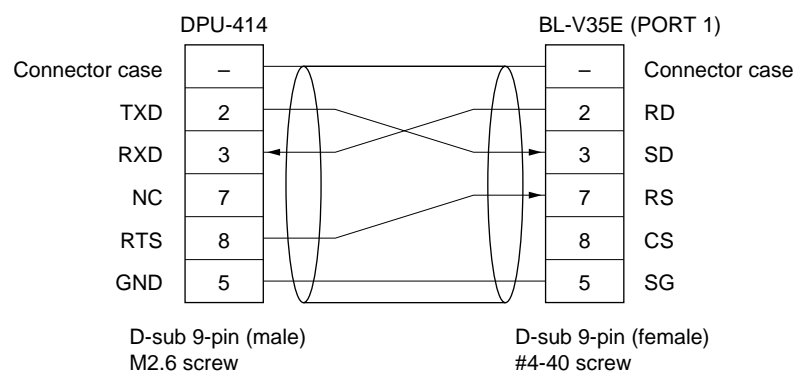
■ Connecting a multi-drop controller N-400



* Optional cables OP-22149 (1.5 m) and conversion connectors OP-25057 can be used for connection.

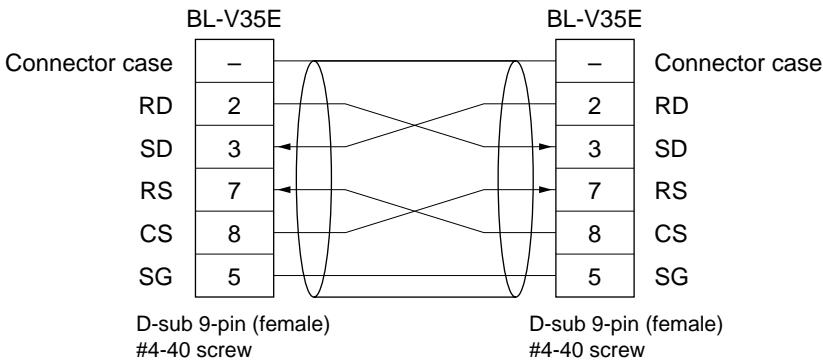
■ Connecting a serial printer

When connecting the serial printer DPU-414 manufactured by SEIKO Instruments Inc., perform wiring as follows.



■ Connecting another BL-V35E

When PORT 2 of another BL-V35E unit is connected to PORT 1 of the BL-V35E to which a bar code reader is connected, the data read by the bar code reader is also input to the other BL-V35E. In this way, more than 399 data presets can be set.

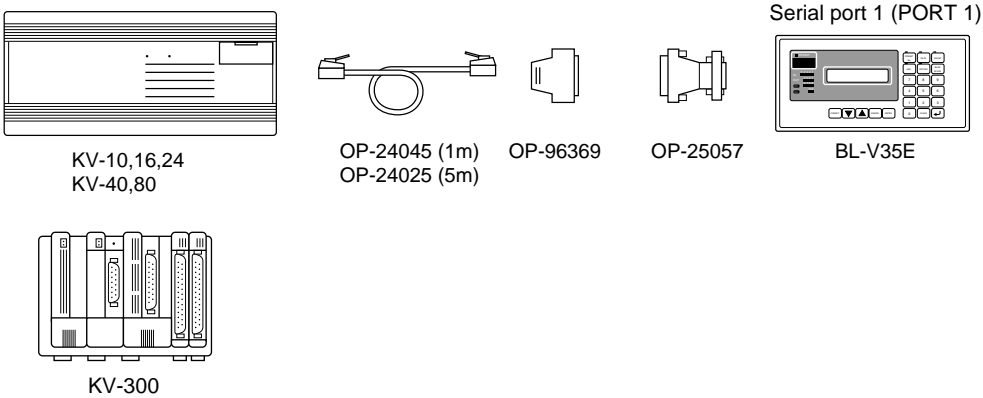


* Optional cables OP-27937 (2 m) can be used for connection.

To copy the settings between two BL-V35E units, connect PORT 1 of each BL-V35E unit to each other (⇒ See p. 74).

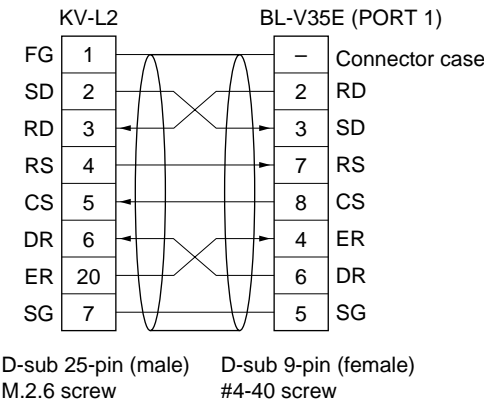
■ Connecting a KV series serial port

In the following configuration, a KV series serial port can be connected.

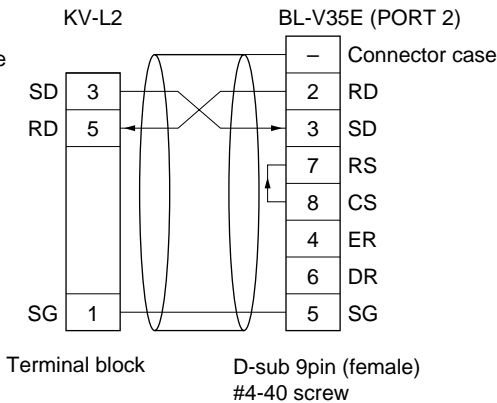


■ Connecting a KV-L2 unit

Connecting PORT 1



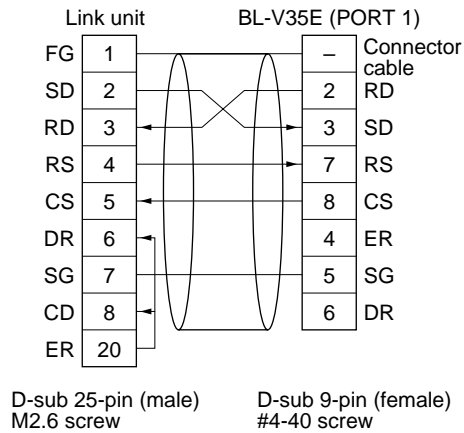
Connecting PORT 2



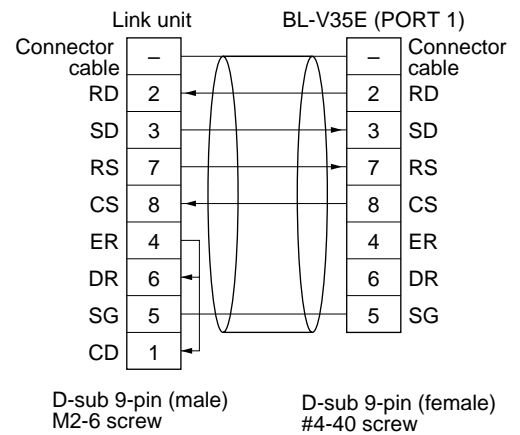
* Optional cables OP-29860 (1.5 m) can be used for connection.

■ Connecting the MELSEC-A series

Connecting an AJ71C24/
AJ71C24-S□/A0J2-C214-S1/
AJ71UC24 unit

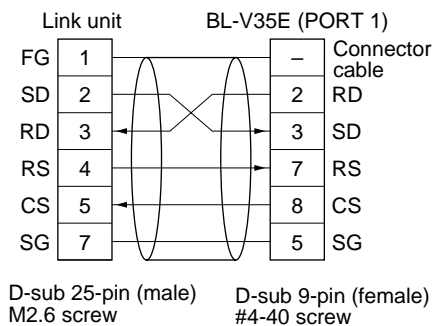


Connecting an A1SJ71(U)C24-
R2/PRF/A2CCPUC24/
A2CCPUC24-PRF unit

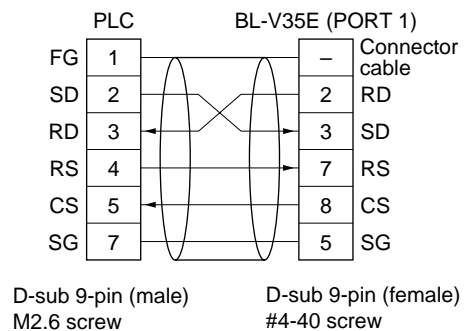


■ Connecting the SYSMAC-C series

Connecting a C200H-LK201(-V1)/
C500-LK203/C500-LK201-V1/
C120LK201-V1 unit



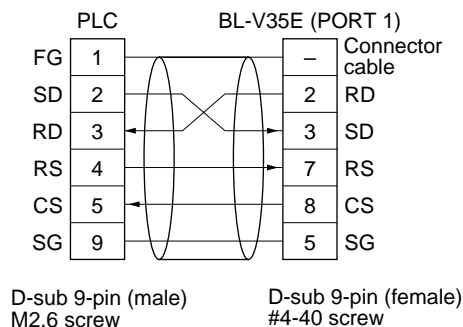
Connecting a C20H/C28H/C40H/
C60H unit



* Optional cables OP-29860 (1.5 m) can be used for connection.

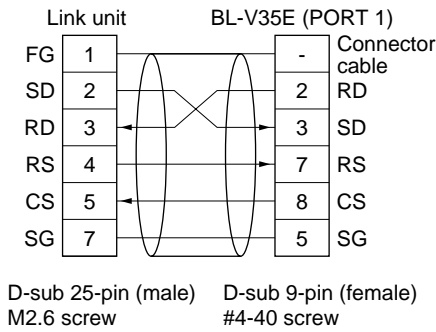
■ Connecting the SYSMAC-C series

Connecting a C200HS (CPU21/23/31/33)/CQM1 (CPU21/41/42/43/44)/
C200HE (CPU42)/C200HG (CPU43/63)/C200HX (CPU44/64)/C200HW-
COM02/COM04/COM05/COM06 unit

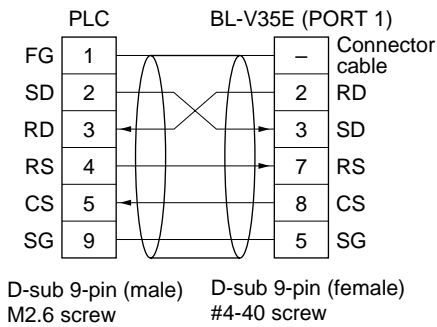


■ Connecting the SYSMAC-CV series

Connecting a CV500-LK201 unit (PORT 1)



Connecting a CV500-LK201 (PORT 2)/CV500/CV1000/CVM1 unit



* Optional cables OP-29860 (1.5 m) can be used for connection.

Chapter 4

Basic Functions

This chapter describes in detail the normal usage and operation of the BL-V35E such as the multi-preset function and step verification function.

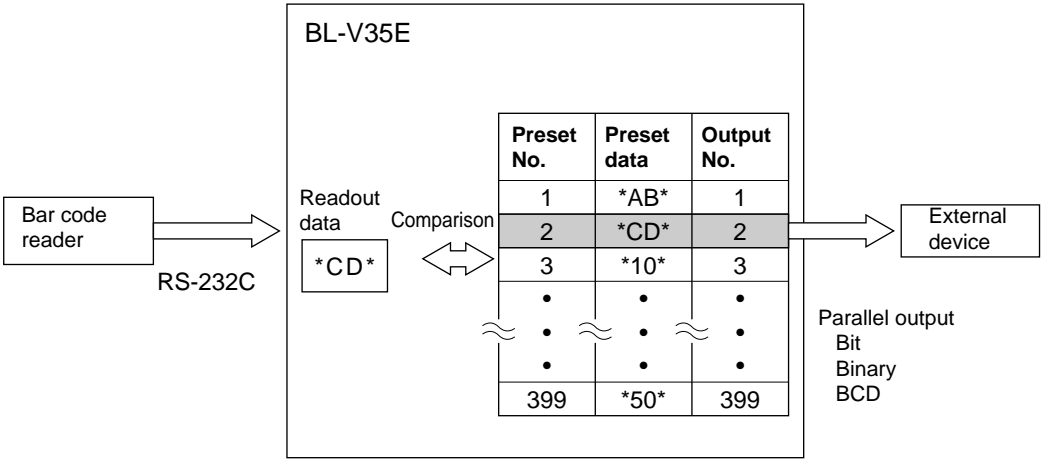
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4.1 Multi-preset Function

The multi-preset function compares the data registered in advance (preset data) to the readout bar code data.

4.1.1 Multi-preset function

The preset function compares the data registered in advance (preset data) to the readout bar code data. It then produces outputs to indicate whether or not the readout data matches one of the data presets.
The BL-V35E stores up to 399 data presets and compares them to the readout bar code data. When the readout data matches the preset data, the BL-V35E outputs the number assigned to the preset data using a bit, binary value, or BCD number from the parallel port.



4.1.2 Registration of preset data (Preset mode)

Before registering preset data, the following items must be set in the main setting mode. (⇒ See p. 92)

- No. of preset registration values [Max Preset No.]
- Form of parallel output [OUT]
- Automatic increment function (ON or OFF) [Auto Increment]

There are 2 methods for registering preset data.

- **Read bar codes using a stationary bar code reader (BL series).**
You can register the preset data by reading bar codes using bar code readers such as the BL series.
- **Enter data using the panel keys.**
You can manually register the preset data by entering bar codes using the BL-V35E's panel keys. (⇒ See p. 34)

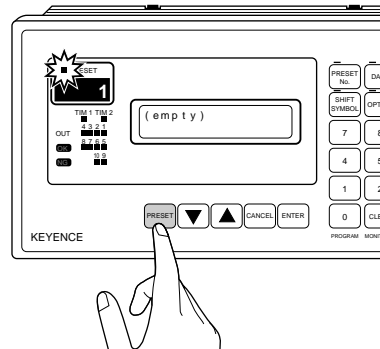
4.1.3 Registering preset data

■ When registering preset data using the panel keys

Procedure

1. Press the [PRESET] key.

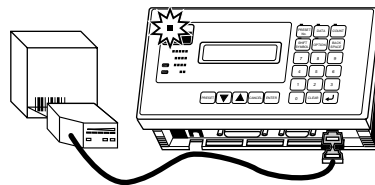
The preset LED turns on and the BL-V35E enters preset mode. The preset No. display LED displays "1", and the LCD display shows "(empty)" to indicate that no preset data is registered.



2. Read the bar code using the bar code reader.

The beeper sounds and the readout data is registered as preset data.

- When the Auto-increment function is ON, the number in the preset No. display is incremented by 1, and the next bar code data can be registered immediately.
- When the Auto-increment function is OFF, press the or key to select the desired preset number.



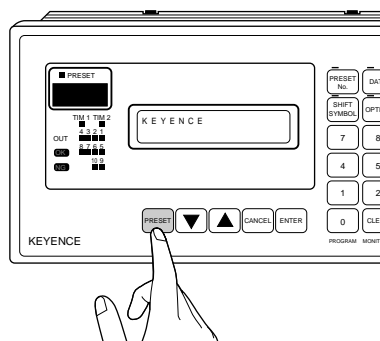
If a reading error occurs while the stationary type bar code reader is connected, a reading error code ("ERROR" with the BL series) is registered as preset data. When this happens, you must repeat the registration.

3. Repeat the procedure above until all necessary data is registered.

Continue to register preset data up to the specified number of preset registration values (default value: 10). You cannot register more than the specified number of preset registration values. (⇒ See p. 92)

4. Complete the registration.

When all preset data is registered, press the [PRESET] key. The preset LED turns off and the BL-V35E exits preset mode.



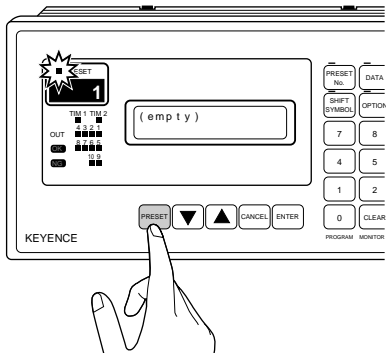
This completes registration of preset data using a bar code reader.

■ When registering preset data using the panel keys

Procedure

1. Press the [PRESET] key.

The preset LED turns on and the BL-V35E enters preset mode. The preset No. display LED displays "1", and the LCD display shows "(empty)" to indicate that no preset data is registered.

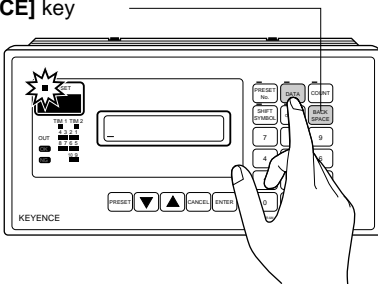


2. Press the [DATA] key.


The LED above the [DATA] key turns on and the LCD display shows "_". To enter numerical values, enter them using the numeric keypad.

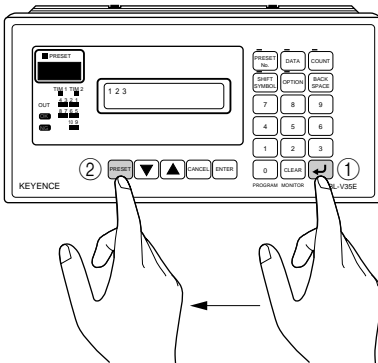
- When an incorrect number is entered, press the [BACK SPACE] key once to delete one character.

[BACK SPACE] key



3. Complete the registration.

When all preset data is registered, press the  key to turn off the LED above the [DATA] key. Then, press the [PRESET] key to turn off the Preset LED. The BL-V35E exits preset mode.



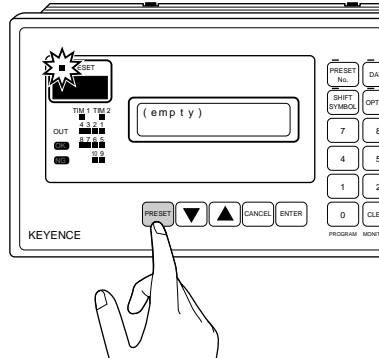
This completes registration of preset data using the panel keys.

■ Entering letters or symbols using the panel keys

Procedure

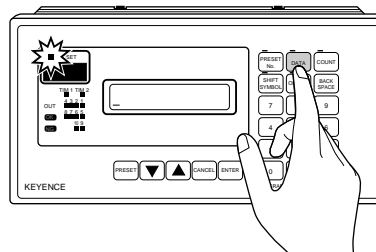
1. Press the [PRESET] key.

The preset LED turns on and the BL-V35E enters preset mode. The preset No. display LED displays "1", and the LCD display shows "(empty)" to indicate that no preset data is registered.



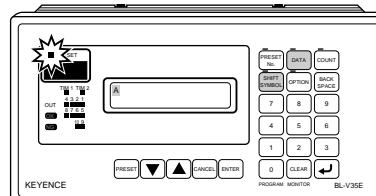
2. Press the [DATA] key.

The LED above the [DATA] key turns on and the LCD display shows "_".





3. Press the [SHIFT SYMBOL] key.



The LED above the [SHIFT SYMBOL] key turns on. A flashing "A" appears at the cursor position on the LCD display.

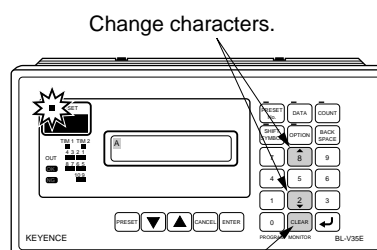


4. Enter letters or symbols.

Press the  or  key to change the character at the cursor position in sequence. Continue until the desired character or symbol appears.

- When the [CLEAR] key is pressed, characters can be skipped in order of "A, a, *, !, ?, _ (space), 0, ", °, and _".

It is useful to use the [CLEAR] key to move to the character closest to the desired one, and then use the  or  key to choose the desired character. (⇨ p.63)



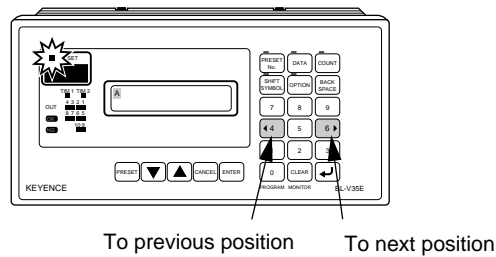
Change characters.

Skip characters

5. Press the **6▶** key.

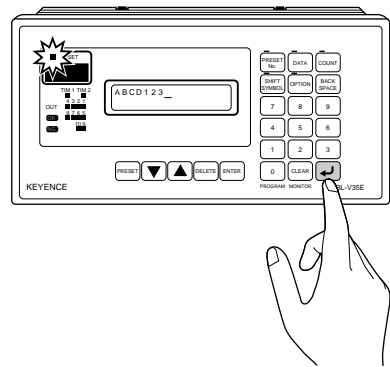
When the **6▶** key is pressed, the cursor moves one character to the right. Enter the next character using the same procedure as in step 4.

- When the **◀4** key is pressed, the cursor moves to the previous position. Use this key to correct the character if desired.



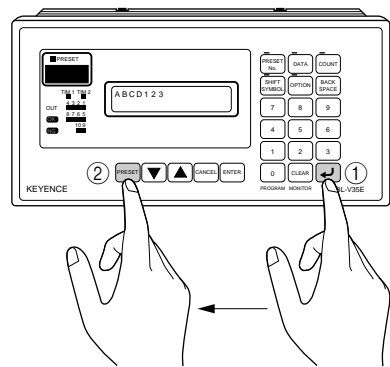
6. Press the **↵** key to complete the character input.

The LED above the **[SHIFT SYMBOL]** turns off and the BL-V35E returns to the numerical value input mode.



7. Complete the registration.

When all preset data is registered, press the **↵** key again. The LED above the **[DATA]** key turns off. Press the **[PRESET]** key to turn off the Preset LED. The BL-V35E exits preset mode.



Note: The data entered using the panel keys is not saved until the LED above the **[DATA]** key turns off.

This completes registration of letters and symbols in preset data.

4.1.4 Saving the preset data from any preset No.

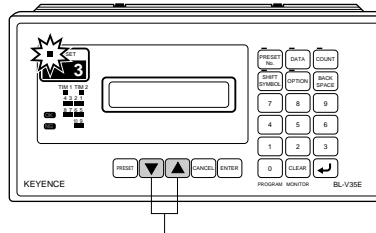
Preset data can be saved from any preset No.

Press the **[PRESET]** key to select the preset mode, and then select any No. using either of the following two methods.

■ Pressing the ▼ or ▲ key

While the preset LED is illuminated, press the ▼ or ▲ key and select a desired preset No.

- When this method is used, a preset No. can be specified within the range of saved preset data.

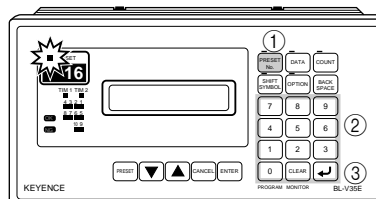


Select the preset No.

■ Pressing the [PRESET No.] key

When the **[PRESET No.]** key is pressed, the LED above it illuminates. Use the numeric keypad to enter a desired No. from which registration is started, and then press the ↵ key.

- When this method is used, a preset No. beyond the range of saved preset data can be specified.
- To display the minimum unregistered preset No., press the ↵ key immediately after pressing the **[PRESET No.]** key.



This completes preparation for saving preset data from any preset No.

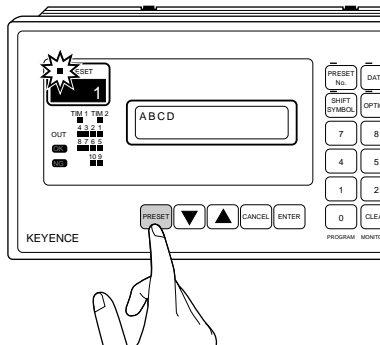
4.1.5 Deleting preset data

Use the **[CANCEL]** key to delete registered preset data.

Procedure

1. Press the **[Preset]** key.

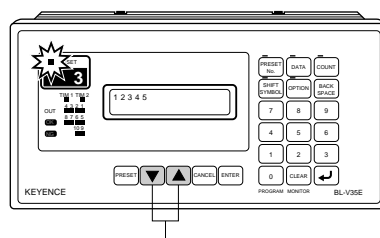
The preset LED turns on and the BL-V35E enters preset mode.



2. Select the preset No. to be deleted.

Press the **[▲]** or **[▼]** key to select the preset No. to be deleted.

The preset No. can also be specified by entering the preset No. using the numeric keypad.

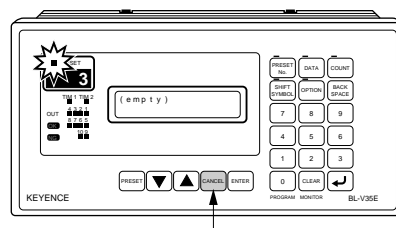


Select the preset No.

3. Press the **[CANCEL]** key.

When the preset No. is selected, the current preset data is displayed. To delete the displayed data, press the **[CANCEL]** key.

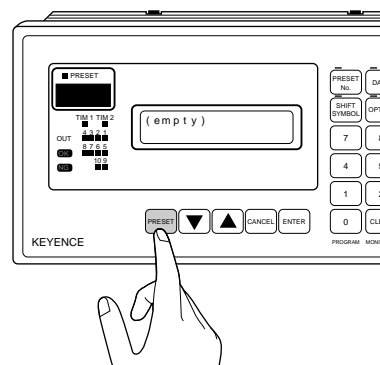
- When the data is deleted, "(empty)" appears on the LCD display.



Delete the preset data.

4. Complete the operation.

When the desired preset data is deleted, press the **[PRESET]** key. The Preset LED turns off and the BL-V35E exits preset mode.



This completes deletion of preset data.

4.1.6 Preset wildcard function

- Entering a "!" or "?" symbol in the preset data using the panel keys widens the range of the bar code data to be matched.
- ?: Represents any numbers (characters) in the bar code data.
When the preset data is "4912??56", any numbers (characters) are accepted in the "??" positions. This enables flexible comparison.
 - !: Represents certain numbers (characters) in the bar code data.
When the preset data is "4912!", all bar codes starting with "4912" are considered to be matched.
When the preset data is "!4912", all bar codes ending with "4912" are considered to be matched.

Example

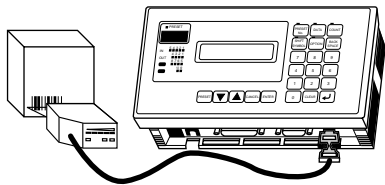
1. When preset data is "ABC?"	ABCD	ABC3	ABC	ABCDE	
	OK	OK	NG	NG	
2. When preset data is "ABC!"	ABCD	ABC3	ABC	ABCDE	AB
	OK	OK	OK	OK	NG
3. When preset data is "?????"	All 5-digit bar codes OK				
4. When preset data is "!CDE"	ABCDE	3CDE	CDE	ABBDE	ADE
	OK	OK	OK	NG	NG
5. When preset data is "A!E"	ABCDE	A3CE	ABCD	AE	
	OK	OK	NG	OK	

Note: Only a single "!" can be used in a single preset data.

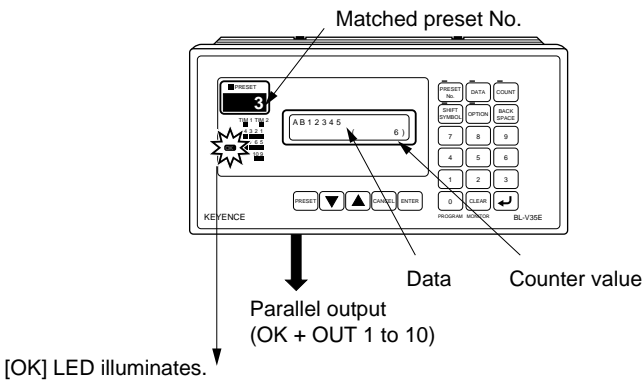
4.1.7 Operation (RUN mode)

After preset data registration, the BL-V35E operates as follows (RUN mode).

- **Reads bar codes.**
Read bar codes using a stationary bar code reader (BL series).
 - You can also enter numbers or letters using the panel keys (⇨ See p. 61)

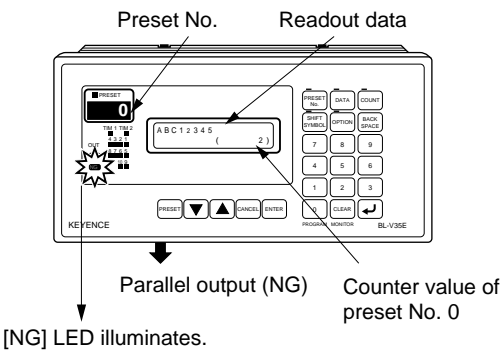


- **When readout data matches with preset data:**
 - Preset No. display LED: Displays the preset data that matches the readout data.
 - LCD display: Displays the readout data.
 - Counter function: Increments the counter of the preset data that matches the readout data.
 - Parallel output: Outputs OK and appropriate OUT signals in the specified output form. (⇨ See p. 45)



● When readout data does not match the preset data:

- LCD display: Displays the readout data.
- Counter function: Increments the counter of preset No. 0.
- Parallel output: Outputs NG signal. (⇒ See p. 45)



Note: The counter value is displayed only when the counter function is ON. (⇒ See p. 42)

4

Verification continues using the next preset data.

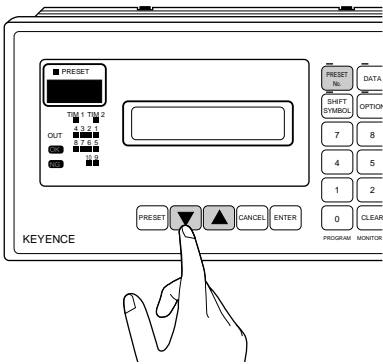
■ Checking the operation of parallel output

In RUN mode, parallel output can be performed manually so that the parallel output operation can be checked.

Procedure

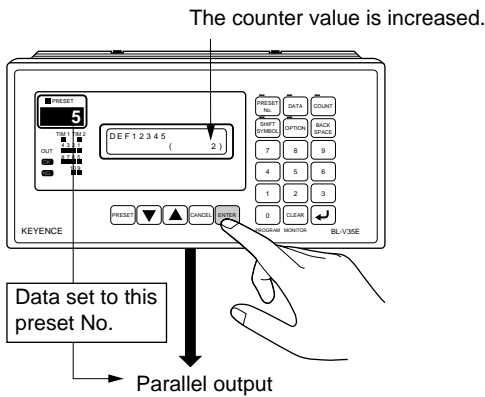
1. Select a preset No. to be checked.

Press the or key or press the **[PRESET No.]** key, and then select a preset No. whose operation is to be checked.



2. Press the **[ENTER]** key.

When the **[ENTER]** key is pressed, parallel output is performed using the set method in the same way in which a bar code matching the preset data is read. Check whether parallel output is performed normally.



Note: While the counter function is used, counting is performed even when the [ENTER] key is pressed.

Verification continues using the next preset data.

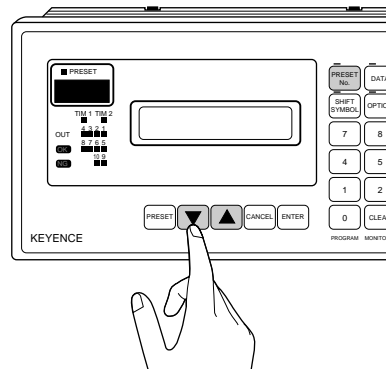
■ Confirming the preset data

In RUN mode, the contents of the preset data can be confirmed.

Procedure

1. Select a preset No. to be checked.

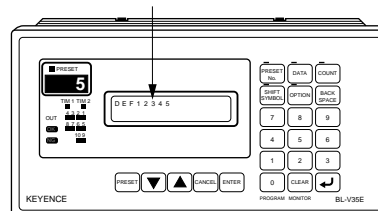
Press the ▼ or ▲ key or press the [PRESET No.] key, and then select a preset No. whose contents are to be checked.



2. Check the contents displayed on the LCD display.

The preset data saved in the selected preset No. is displayed on the LCD display.

The preset data is displayed.



Note 1: When the [ENTER] key is pressed at this time, parallel output is performed.

Note 2: When the reference data function is set, the data to be referenced is displayed.

4.1.8 Counter function

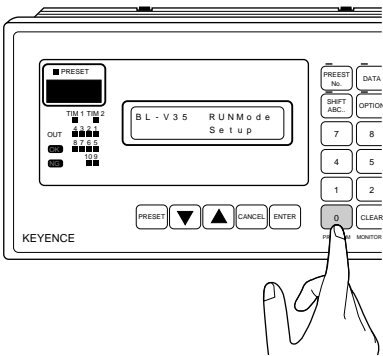
The counter function is used to count the number of times the data read by a bar code reader has matched the preset data in RUN mode. Up to 999,999 matches can be counted for each preset No.

■ Setting the counter function

Procedure

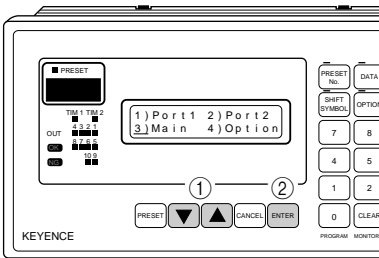
1. Select set mode.

Press and hold the [0] key for 2 seconds to select set mode.



2. Display the main setting menu.

Press the [▼] or [▲] key to select "3) Main".
Press the [ENTER] key.



3. Display the counter setting menu.

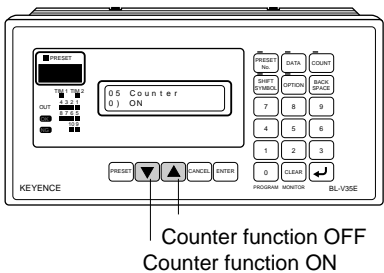
Press the [▼] or [▲] key to display the counter setting menu, and press the [ENTER] key.
"_" is displayed in the lower line.



4. Set the counter function.

When the [▼] key is pressed, "0) ON" is displayed to indicate that the counter function is valid.

When the [▲] key is pressed, "1) OFF" is displayed to indicate that the counter function is invalid.

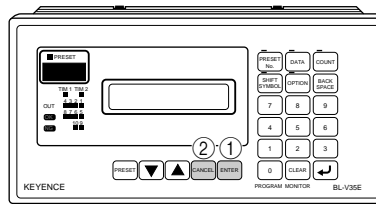


Counter function OFF
Counter function ON

5. Exit set mode.

When the **[ENTER]** key is pressed once, the setting currently displayed is saved and the main setting menu is displayed again.

Press the **[CANCEL]** key twice to exit set mode.

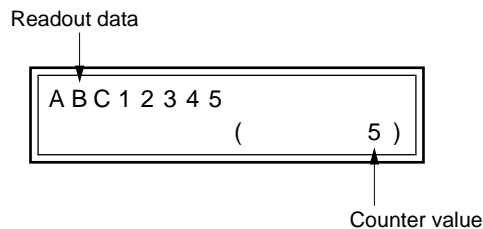


This completes setting of the counter function.

■ Operation of the counter function

When the counter function is on, the LCD display format is changed.

The data read by a bar code reader is displayed in the upper line, and the counter value corresponding to the data is displayed in the lower line.



Note 1: Data not matching the preset data is added to the counter value for preset No. 0.

Note 2: Because the counter value is displayed, up to 24 digits of the bar code data is displayed.

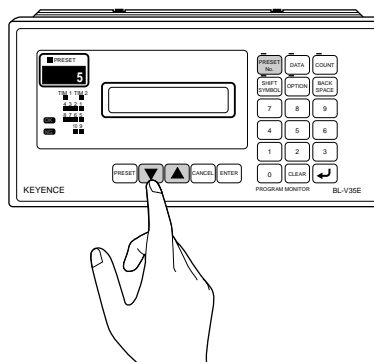
■ Entering the counter value

In RUN mode, any value can be entered as the counter value.

Procedure

1. Press the **▼** or **▲** key or press the **[PRESET No.]** key, and then select a desired preset No.

- If a preset No. is not selected, the data currently displayed on the LCD display is to be changed.



2. Press the [COUNT] key.

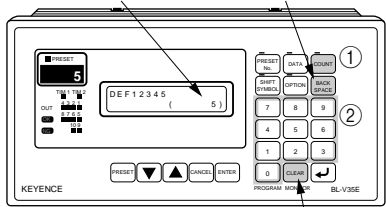
When the [COUNT] key is pressed, the LED above it illuminates and “_” appears below the counter value displayed on the LCD display.

Enter any value using the numeric keypad.

- When the [CLEAR] key is pressed, the current counter value or a entered number is deleted.
- When the [BACK SPACE] key is pressed, one digit at the right end is deleted.

The counter value can be changed.

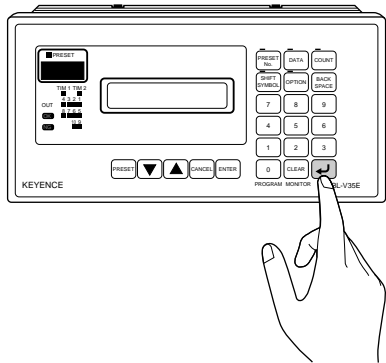
Deletes the last character of the counter value.



Clear the current counter value.

3. Save the entered value.

When the [ENTER] key is pressed, the LED above the [COUNT] key turns off and the entered counter value is saved.



This completes changes to the counter value.

■ Resetting the counter value

The counter value can be reset at any of the following times.

- When the power is turned off
- When the preset data is updated

In the BL-V35E, reset or hold can be selected at any of the above times.

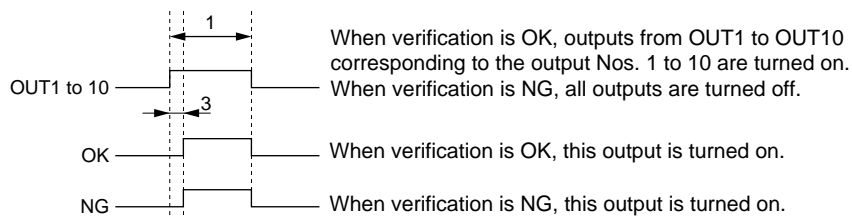
The interval at which the counter value is to be reset should be set in main set mode. The operating procedure in main set mode is described in Chapter 7 (⇒ See p. 92).

4.1.9 Parallel output form

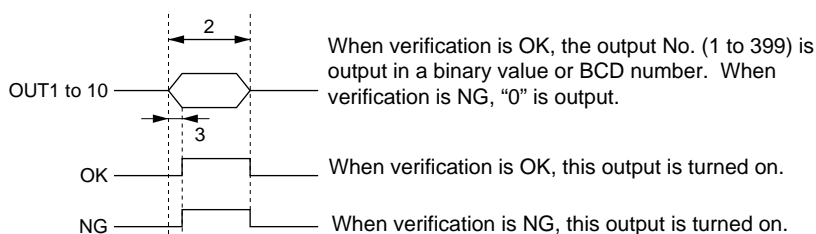
Parallel output is performed in the form of a bit, binary value or BCD number. The parallel output form can be set in main set mode (See p. 92).

When the preset-active function or the serial No. check function is used, only verification OK (OUT1) or verification NG is output.

- **Bit**



- **Binary value of BCD number**



- 1, 2: Set the duration in "Out ON Timer" in the option set mode (⇒ See p. 96). The setting range is from 10 ms to 2.55 s. It is set to 500 ms at the time of shipment.
- 3: Set the duration in "Out Delay" in the option set mode (⇒ See p. 96). The setting range is from 0 to 255 ms. It is set to 5 ms at the time of shipment.

Example

In the case of output No. 235

- **Binary value**

OUT	10	9	8	7	6	5	4	3	2	1
ON/OFF	OFF	OFF	ON	ON	ON	OFF	ON	OFF	ON	ON

- **BCD number**

OUT	10	9	8	7	6	5	4	3	2	1
ON/OFF	ON	OFF	OFF	OFF	ON	ON	OFF	ON	OFF	ON

10 to 9: 100's digit
8 to 5: 10's digit
4 to 1: 1's digit

Note: In the case of bit output, only up to 10 data (output Nos. 1 to 10) can be output even if 11 or more data presets have been saved.

4.2 Preset-active Function

This section describes the function for selecting from the saved preset data and checking whether it matches the readout data.

4.2.1 Preset-active function

The multi-preset function checks whether the readout data matches any of the preset data. In the preset-active function, the readout data is checked against only a single selected preset data. Accordingly, only OK or NG is given as parallel output.

4.2.2 Using the preset-active function

The preset-active function can be used for the following tasks.

1. Saving the preset data
2. Setting the preset-active function
3. Selecting the preset data to be used for verification
4. Reading a bar code

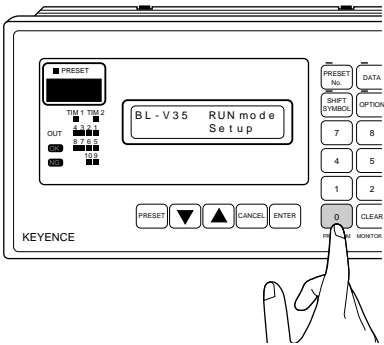
Before using the preset-active function, save the preset data. The preset data entry procedure is described in “Multi-preset function” (See p. 33). Even when the preset-active function is used, new preset data can be saved, and the saved contents can be deleted or modified.

■ Setting the preset-active function

Procedure

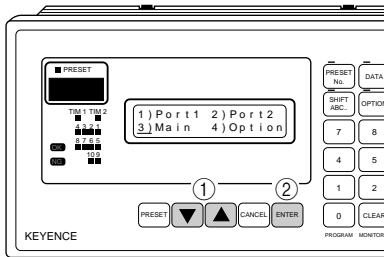
1. Select set mode.

Press and hold the [0] key for 2 seconds to select set mode.



2. Display the main setting menu.

Press the [▼] or [▲] key to select “3) Main”.
Press the [ENTER] key.





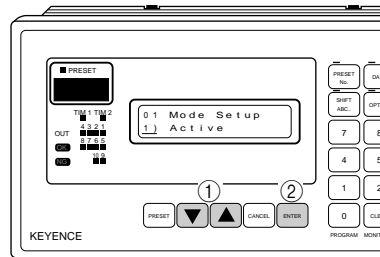
3. Set the operation mode.

Ensure that "01 Mode Setup" is displayed, and then press the **[ENTER]** key.
 " _ " is displayed below the item No. in the lower line.

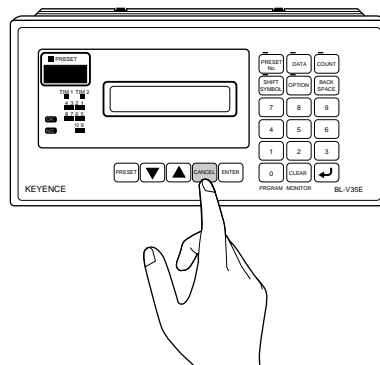
0 1	Mode	Set	up
0 _	Normal		

4. Set the preset-active function.

Press the  or  key to display "1) Active" in the lower line. Then, press the **[ENTER]** key to save the selection.

**5. Exit set mode.**

Press the **[CANCEL]** key twice to exit set mode.



This completes setting of the preset-active function.

4.2.3 Selecting the preset data to be verified in the preset-active function

Select the preset data to be verified in the preset-active function. The preset data can be selected using the [PRESET] key or the [ENTER] key.

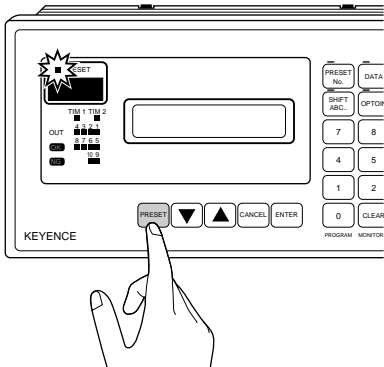
■ When using the [PRESET] key

You can select the preset data while looking at the preset No.



Procedure

1. Press the [PRESET] key.

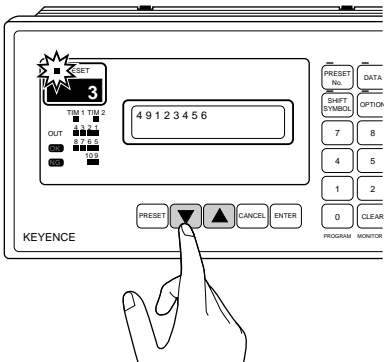
The preset LED illuminates, and the preset data corresponding to the current preset No. is displayed on the LCD display.



2. Select a preset No.

Press the  or  key to display a desired preset No. You can also specify a desired preset No. directly by pressing the [PRESET No.] key.

- When you have used the [PRESET No.] key to specify a preset No., press the  after using the numeric keypad so that the specified No. is saved.



3. Press the [PRESET] key.

When the [PRESET] key is pressed, the preset LED turns off.

This completes selection of the preset data to be verified.

■ When using the [ENTER] key

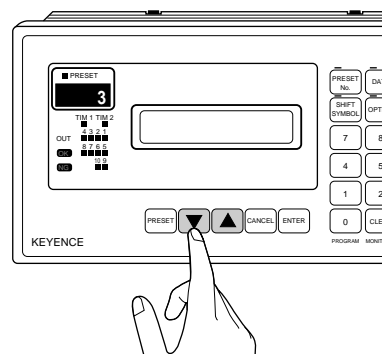
You can select the preset data while looking at the preset No. and the reference data.

Procedure

1. Select a preset No.

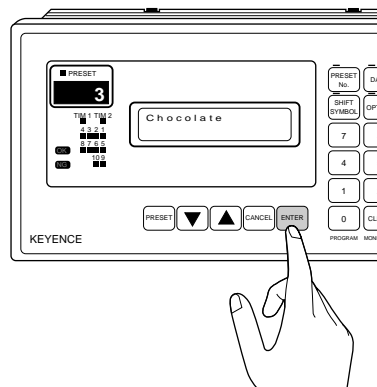
In RUN mode, press the  or  key or use the [PRESET No.] key to select a desired preset No.

- If an unregistered preset No. is selected, the preset No. indication LED flashes.
- When reference data has been set in advance (↪ See p. 66), you can select a preset No. while looking at the reference data.



3. Press the [ENTER] key to save a desired preset No.

When a desired preset No. is displayed, press the [ENTER] key to save it.



Note: In this case, parallel outputs are not given even if the [ENTER] key is pressed.

This completes selection of the preset data to be verified in the preset-active function.

4.2.4 Operation using the preset-active function

Operation using the preset-active function is the same as normal operation (RUN mode) with the exception of the following points.

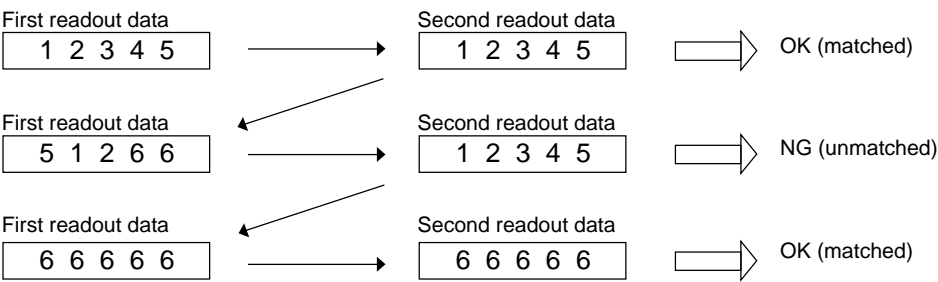
- Only OK or NG is given as parallel outputs. For the output form, see p. 45.
- When the readout data matches the contents of the selected preset No., the OK output (OUT1) is turned on.
- When the readout data does not match the contents of the selected preset No., the NG output is turned on.

4.3 Step Verification Function

This section describes the step verification function for verifying whether the previous data read out matches the current data read out.

4.3.1 Step verification function

The step verification function compares two consecutive data readings, and evaluates whether they are equivalent.
For example, when the first readout data is “12345” and the second readout data is also “12345”, “OK” is output. When the first readout data is “51266” and the second readout data is “12345”, “NG” is output.



4.3.2 Using the step verification function

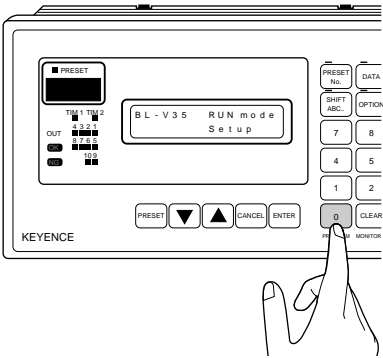
Before using the step verification function, set the operation mode to “Verify Step” in advance.

■ Changing the operation mode to “Verify Step”

Procedure

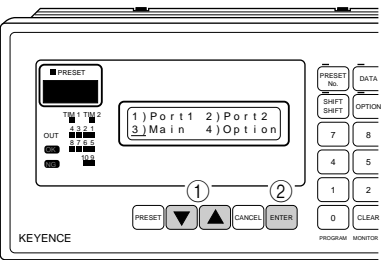
1. Select set mode.

Press and hold the [0] key for 2 seconds to select set mode.



2. Display the main setting menu.

Press the [▼] or [▲] key to select “3) Main”. Then, press the [ENTER] key.



3. Set the operation mode.

Ensure that "01 Mode Setup" is displayed, and then press the **[ENTER]** key. " " is displayed below the item No. in the second line.

```

0 1   M o d e   S e t u p
0 )   N o r m a l

```

4. Select the step verification function.

Press the **▼** or **▲** key to display "2) Verify Step" in the second line. Then, press the **[ENTER]** key to save the selection.

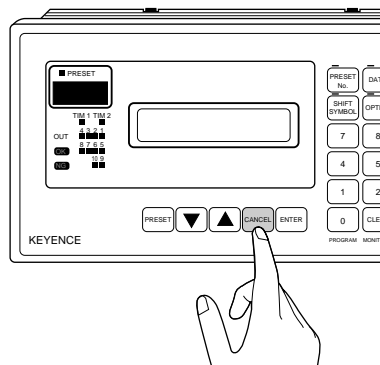
```

0 1   M o d e   S e t u p
2 )   V e r i f y   S t e p

```

5. Exit set mode.

Press the **[CANCEL]** key twice to exit set mode.



This completes setting of the step verification function.

4.3.3 Operation using the step verification function

Operation using the step verification function is performed as follows.

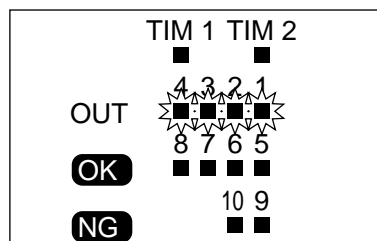
1. When the BL-V35E is started up, "Verify Step" appears on the LCD display.

```

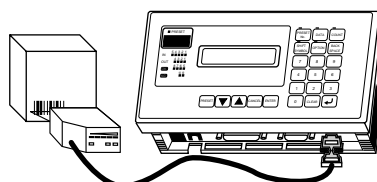
R e a d y
V e r i f y   S t e p

```

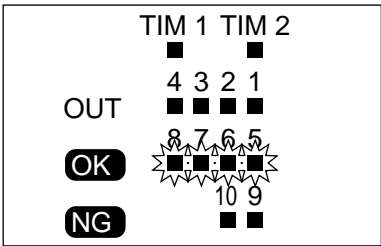
2. The parallel output LEDs OUT1 to OUT 4 illuminate to indicate that the BL-V35E is waiting for the first data to be read. At this time, OUT1 to OUT4 in the actual parallel output are turned on.



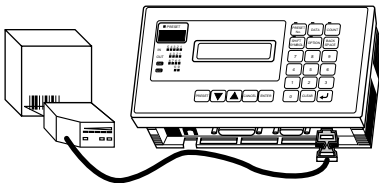
3. Read the first bar code.



4. The first bar code is stored, and the BL-V35E is waiting for the second data to be read. The parallel output LEDs OUT1 to OUT4 turn off, and OUT5 to OUT8 illuminate.
- When the **[CANCEL]** key is pressed, the BL-V35E continues waiting for the first bar code to be read.

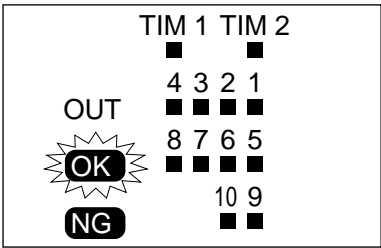


5. Read the second bar code.

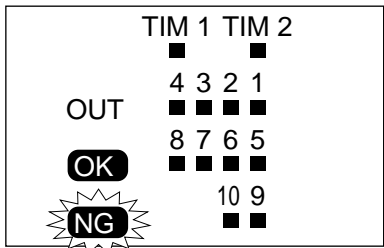


6. The first readout data is compared to the second readout data. OK is output when they match each other. NG is output when they do not match.

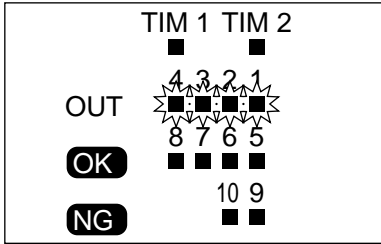
In the case of OK



In the case of NG



7. The parallel output LEDs OUT5 to OUT8 turn off, and the BL-V35E is waiting for the first bar code to be read. The LEDs OUT1 to OUT4 illuminate.

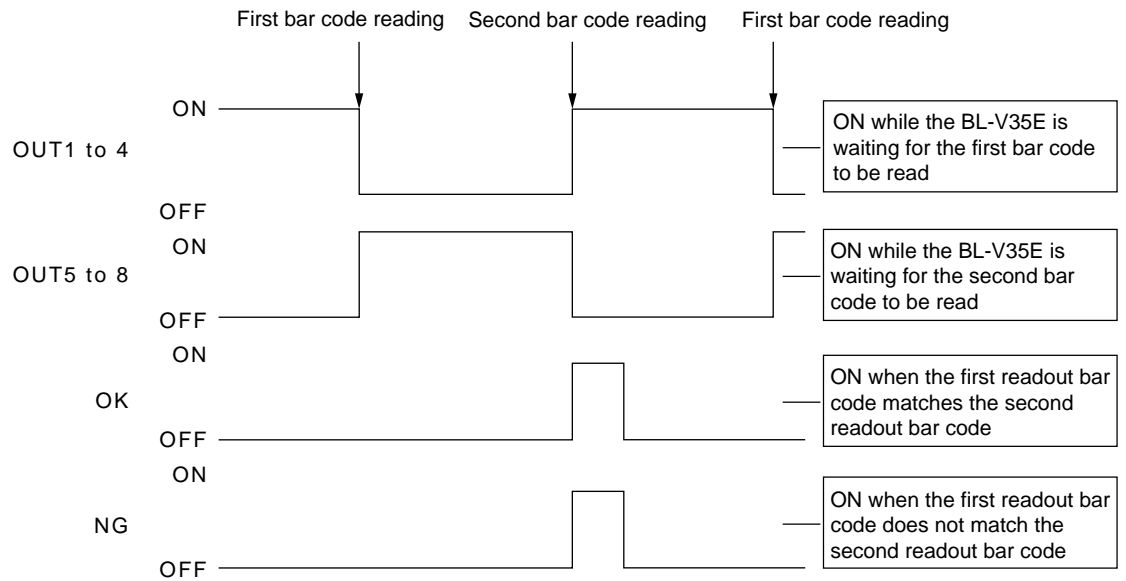


Continuously read the first bar code.

4.3.4 Parallel output form

The output form of OK, NG and OUT1 to OUT8 is shown below.

The OK output ON time and the NG output ON time can be set in the option set mode (⇒ See p. 94).



4.4 Serial No. Check Function

This section describes the serial No. check function to check whether readout bar codes are serial numbers.

4.4.1 Serial No. check function

The serial No. check function checks whether readout bar codes are serial (00001, 00002 and 00003, for example). When the serial No. increment is set to “+1”, OK is output when “00002” is read after “00001” and NG is output when “00003” is read after “00001”.

4.4.2 Using the serial No. check function

Before using the serial No. check function, first switch the operation mode and change some setting parameters.

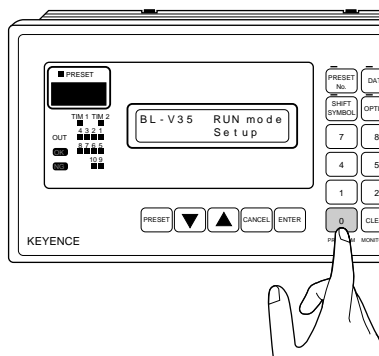
■ Setting the serial No. check function

First set the BL-V35E to the serial No. check mode.

Procedure

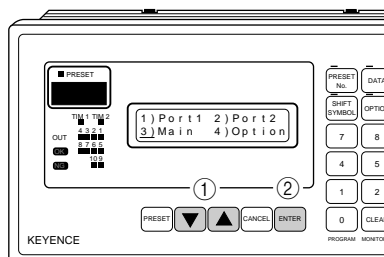
1. Select set mode.

Press and hold the [0] key for 2 seconds to select set mode.



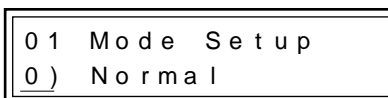
2. Display the main setting menu.

Press the [▼] or [▲] key to select “3) Main”. Then, press the [ENTER] key.



3. Set the operation mode.

Ensure that “01 Mode Setup” is displayed, and then press the [ENTER] key. “_” is displayed below the item No. in the second line.



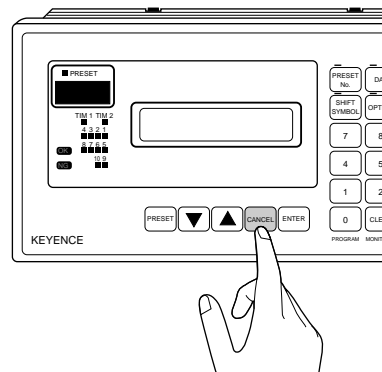
4. Select the serial No. check function.

Press the [▼] or [▲] key to display “3) Serial No.” in the second line. Then, press the [ENTER] key to save the selection.



5. Exit set mode.

Press the **[CANCEL]** key twice to exit set mode.



Note: Using the procedure above, the serial No. check function becomes available. However, when the serial No. check function is selected for the first time, the serial No. direction, the serial No. start digit, the serial No. effective digits and the serial No. increment should be set according to the bar codes to be read (⇒ See below).

This completes setting of the serial No. check function.

4

4.4.3 Setting the parameters of the serial No. check function

The following setting parameters are available for the serial No. check function.

- Serial No. direction
- Serial No. start digit
- Serial No. effective digits
- Serial No. increment
- Serial No. protect

Set each parameter in the main set mode (⇒ See p. 93).

For the procedure for changing the settings of the serial No. check function, see p. 57 and following.

■ Serial No. target digits

The serial No. target digits indicate the digits actually making a serial number in a bar code.

Serial No. target digits
 A B C 0 0 1 → A B C 0 0 2 → A B C 0 0 3 → ...

The serial No. target digits can be set by combining the serial No. direction, the serial No. start digit and the serial No. effective digits.

The parameter “serial No. direction” can be set to “Forward” or “Reverse”. This parameter determines whether the number of digits is calculated from the head (forward) or from the bottom (reverse) of a readout bar code.

The parameter “serial No. start digit” determines which digit seen in the serial No. direction is regarded as the first target digit.

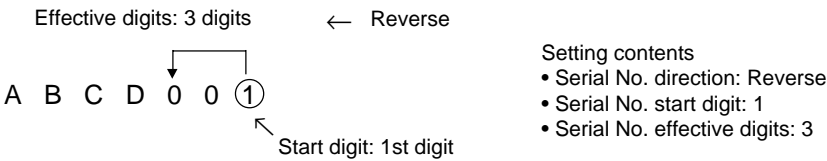
The parameter “serial No. effective digits” determines how many digits are regarded as target digits from the serial No. start digit in the serial No. direction.

When “0001” is regarded as serial No. target digits in a bar code “KEY0001W”

Serial No. direction	Reverse	Forward
	← K E Y 0 0 0 1 W	K E Y 0 0 0 1 W →
Serial No. start digit	2nd digit	4th digit
	K E Y 0 0 0 ① W	K E Y ① 0 0 1 W
Serial No. effective digits	4 digits	4 digits
	K E Y ① ① ① ① W	K E Y ① ① ① ① W

Examples

- When “001” is regarded as serial No. target digits in a bar code “ABCD001”



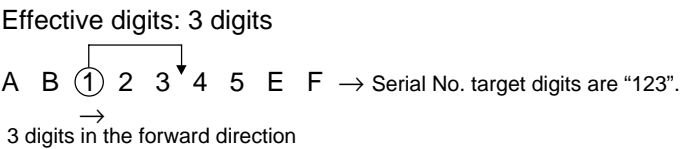
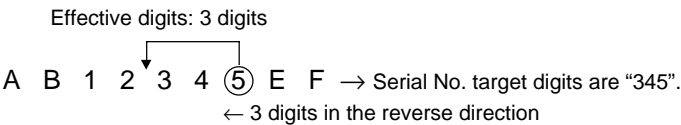
- When “01” is regarded as serial No. target digits in a bar code “AA01BBB”



Note 1: Only a number is allowed in a serial No. target digit. If a letter or symbol is included in a serial No. target digit, an error occurs.

Note 2: A number with up to 6 digits can be checked as a serial No. Any serial No. larger than “999999” cannot be checked.

Other setting examples



Serial No. increment

The serial No. increment determines the difference between a readout data and the next readout data. The serial No. increment can be set to a number between +127 and -128. When a negative value is set, serial Nos. decreasing from a start value can be checked.

- When the serial No. increment is set to “+1”
Start value “001” → 002 → 003 → 004 → 005 . . .
- When the serial No. increment is set to “+3”
Start value “001” → 004 → 007 → 010 → 013 . . .
- When the serial No. increment is set to “-2”
Start value “100” → 098 → 096 → 094 → 092 . . .

Note: For example, when the serial No. effective digits is set to “3” and the serial No. data exceeds “999”, the data returns to “000”. The serial No. data does not exceed the number of digits specified by the parameter “serial No. effective digits”.

- When the serial No. effective digits is set to “3” and the serial No. increment is set to “+2”
Start value “001” → 003 → 005 → . . . → 999 → 001
- When the serial No. effective digits is set to “3” and the serial No. increment is set to “+3”
Start value “001” → 004 → 007 → . . . → 997 → 000 → 003

■ Serial No. protect

The parameter “serial No. protect” determines the serial No. data hold status when the power is turned off.

The following setting options are available for this parameter.

● Reset

Every time the power is turned off, the serial No. data is reset.

● Continue

The serial No. data read just before the power is turned off is stored even if the power is turned off.

For example, when the last data read on the previous day was “ABC779”, the start value becomes “ABC780” when the power is turned on the next day (if the serial No. increment is set to “+1”).

● Registration hold

The data first read while the serial No. data is empty is regarded as the start value. Even when the power is turned off and turned on again, the serial No. check is started from that start value. For example, assume the serial No. check had been started from “ABC001” while the serial No. data had been empty and “ABC523” was read last on the previous day. In this case, the start value becomes “ABC001” when the power is turned on and serial No. check is started the next day.

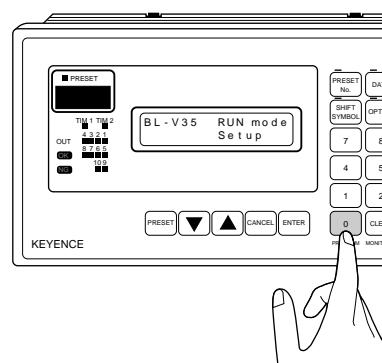
■ Setting the parameters of the serial No. check function

Set the parameters “serial No. direction”, “serial No. start digit”, “serial No. effective digits”, “serial No. increment” and “serial No. protect”.

Procedure

1. Select set mode.

Press and hold the **[0]** key for 2 seconds to select set mode.







2. Display the main setting menu.

Press the **[▼]** or **[▲]** key to select “3) Main”. Then, press the **[ENTER]** key.





1) Port 1	2) Port 2
3) Main	4) Option

3. Set the serial No. direction.

Press the  or  key to select “09 No. Direction”. Press the [ENTER] key, and set the serial No. direction using the  and  keys. Then, press the [ENTER] key to save the setting.





09 No. Direction
1) Reverse

4. Set the serial No. start digit.

Press the  or  key to select “10 Start Digit”. Press the [ENTER] key, and set the start digit using the  and  keys. Then, press the [ENTER] key to save the setting.





10 Start Digit
6

5. Set the serial No. effective digits.

Press the  or  key to select “11 Max Digits”. Press the [ENTER] key, and set the effective digits using the  and  keys. Then, press the [ENTER] key to save the setting.





11 Max Digit
3

6. Set the serial No. increment.

Press the  or  key to select “12 No. Change”. Press the [ENTER] key, and set the increment using the  and  keys. Then, press the [ENTER] key to save the setting.

12 No. Change
+ 3

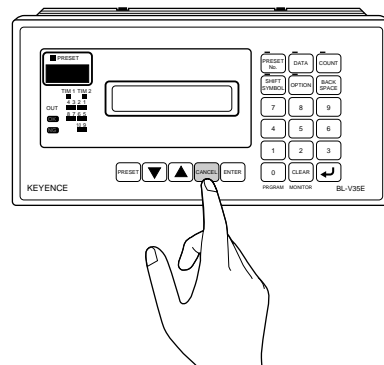
7. Set the serial No. protect.

Press the  or  key to select “13 No. Protect”. Press the [ENTER] key, and set the serial No. protect using the  and  keys. Then, press the [ENTER] key to save the setting.

13 No. Protect
0) Reset

8. Exit set mode.

Press the [CANCEL] key twice to exit set mode.



Note: When the operation mode is not set to “Serial No.”, the setting parameters “09 No. Direction”, “10 Start Digit”, “11 Max Digits”, “12 No. Change” and “13 No. Protect” are not displayed.

This completes setting of serial No. target digits.

4.4.4 Operation using the serial No. check function

Operation using the serial No. check function is performed as follows.

1. When the BL-V35E is started up, "Serial No." appears on the LCD display.

Ready
 Verify Serial No

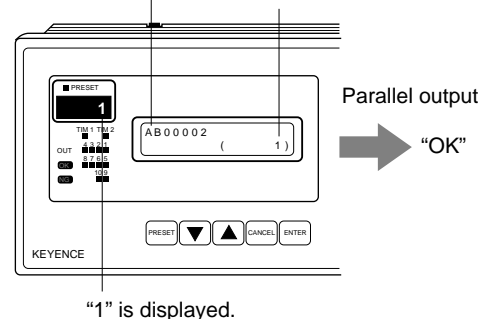
2. When a bar code is read, the serial No. start value is saved.

OK is output, the data to be read next is displayed in the upper line of the LCD display, and the counter value of the readout serial No. data is displayed in the lower line.

- If data located in the serial No. target digits of the readout data is incorrect (when a character other than a number is located in a serial No. target digit, for example), NG is output and the start value is not saved. Read a correct bar code.

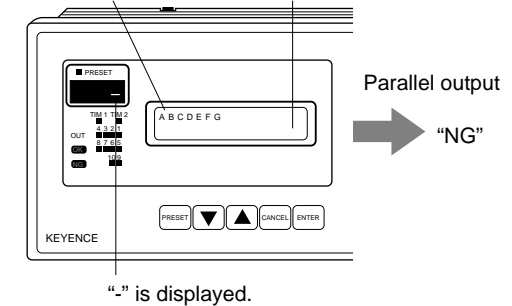
When serial No. target digits are correct

Data to be read next Counter value



When serial No. target digits are not correct

Readout data Counter value is not displayed.



Note 1: When the power is turned on, the serial No. data is empty. Accordingly, when OK is output for the first readout data, it means that the serial No. target digits of the readout data are correct. If the serial No. target digits of the readout data are incorrect, the entire bar code becomes NG.

Note 2: When the output is OK, the data to be read next (next serial No. data) is displayed on the LCD display. The readout data is not displayed.

3. Read serial Nos. one by one to check them.

Every time the readout data is a serial No., OK is output.

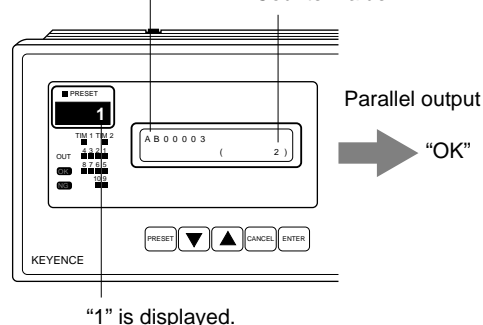
When the readout data is not a serial No., NG is output, "Err" is displayed on the preset No. indication LED, and the readout data itself is displayed on the LCD display.

When a correct serial No. is read after that, OK is output and the BL-V35E waits for the next serial No.

- When the [CLEAR] key is pressed while "Err" is displayed, the serial No. data to be read next is displayed.
- The available parallel outputs are OK and NG only. For details, see p. 45.

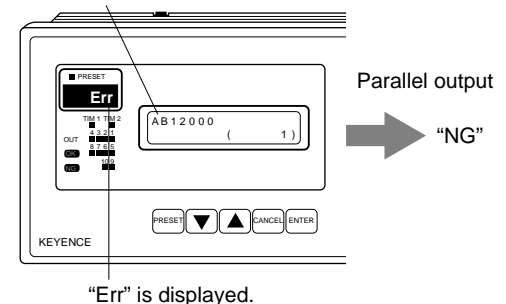
When the readout serial No. is OK

Data to be read next Counter value





When the readout serial No. is NG

Readout data



■ **Key operations available during serial No. check**

-  key : Decreases the serial No. by the increment value. (The output is not turned on.)
-  key : Increases the serial No. by the increment value. (The output is not turned on.)
- [PRESET]** key : Clears the serial No. data to empty status.
- [CANCEL]** key : Restarts serial No. check from the start value first saved when the serial No. was empty.
- [ENTER]** key : Outputs OK, and increases the serial No. by the increment value.

Note: The counter value indicates the number of bar codes checked. The counter value increases by “1” each time even when the serial No. increment is set to a number other than “+1”.

4.5 Key Input Procedure

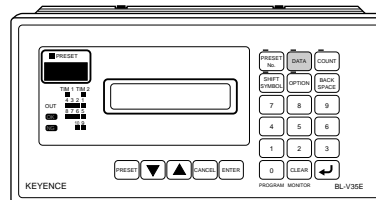
This section describes how to enter preset mode, as well as reference data for using the numeric keypad.

Procedure

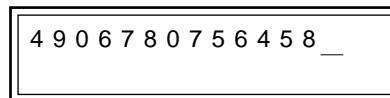
1. Press the [DATA] key.

The numeric keypad becomes available.

The LED above the [DATA] key illuminates.



When the [DATA] key is pressed and held for 1 second, data can be entered from the last digit of the preset data currently displayed.

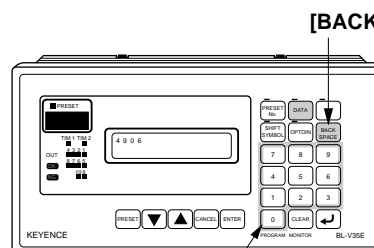


Note: When the [DATA] key is pressed again, the data being entered is deleted.

2. Enter numbers using the numeric keypad.

In this status, numbers can be entered.

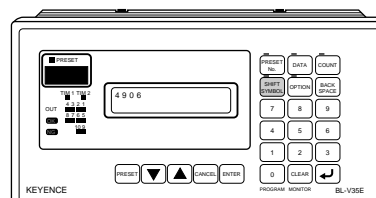
To delete the last number entered, press the [BACK SPACE] key.



Numbers can be entered

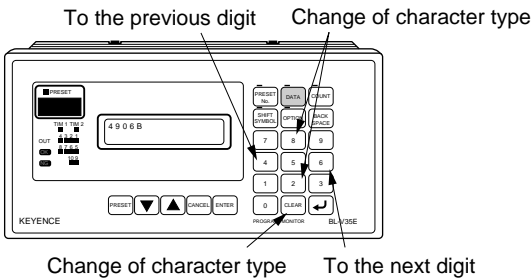
3. To enter letters or symbols, first press the [SHIFT SYMBOL] key.

When the [SHIFT SYMBOL] key is pressed, the LED above it illuminates.



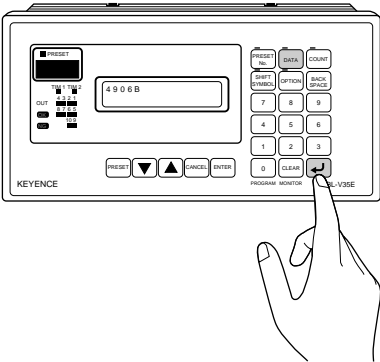
4. Enter characters.

- When the or key is pressed, various characters are displayed in turn.
- When the **[CLEAR]** key is pressed, the characters “Aa*!?(space)0"°-” are displayed in this order. It is convenient to display the character nearest to a desired one using the key, and then select the desired character using the or key (⇒ p. 63).
 - When the key is pressed, the cursor shifts to the next digit. When the key is pressed, the cursor shifts to the previous digit to allow modifications.



5. Press the key to finish character input.

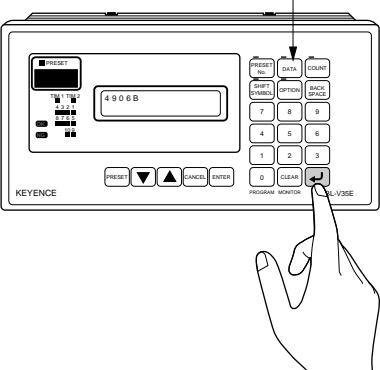
The LED above the **[SHIFT SYMBOL]** key turns off, and the BL-V35E waits for input of numbers.



6. Finish input using the numeric keypad.

When the key is pressed again, the LED above the **[DATA]** key turns off. In RUN mode, when data has been entered using the numeric keypad and the **[ENTER]** key is pressed, the parallel output is given in response to the entered data.

The LED above the **[DATA]** key turns off.




Note: While the LED above the **[DATA]** key is illuminated, the data entered using the numeric keypad is not yet saved.

■ List of characters that can be entered in the BL-V35E

The following characters can be entered while the **[SHIFT SYMBOL]** key is in effect.

By pressing the **[CLEAR]** key while characters are being entered, the character type can be changed.

It is convenient to press the **[CLEAR]** key to display the character nearest to a desired one.

When the  key is pressed, characters are displayed in the following sequence.

Display sequence

→
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z
a b c d e f g h i j k l m n o p q r s t u v w x y z
—
" ° " # \$ % & ' () * + , - . / [¥] @ ^ _ : ; < = > { }
0 1 2 3 4 5 6 7 8 9 ? !

When the **[CLEAR]** key is pressed, the character type is switched in the following sequence.

A a * ! ? _ 0 " ° —

4.6 Parallel Inputs

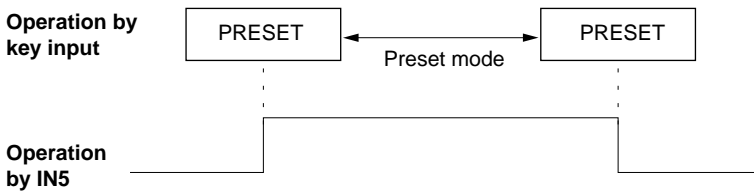
This section describes parallel inputs that allow an external unit to perform the operations available using the main keys of the BL-V35E.

Parallel inputs are used to allow an external unit to perform the operations available using the main keys ([PRESET], ▼, ▲, [CANCEL] and [ENTER]) of the BL-V35E.

These keys correspond to parallel inputs as follows.

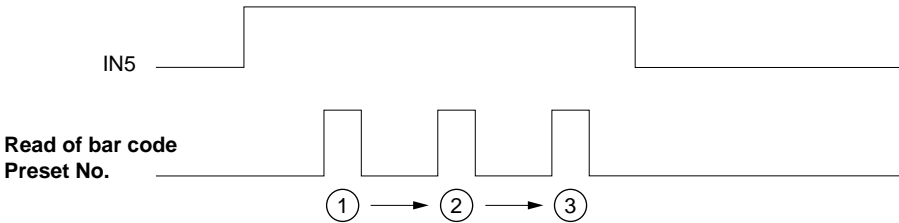
- [PRESET] . IN5
- ▼ IN4
- ▲ IN3
- [CANCEL].. IN2
- [ENTER] IN1

Note: Only IN5 offers a different operation, and functions as follows.



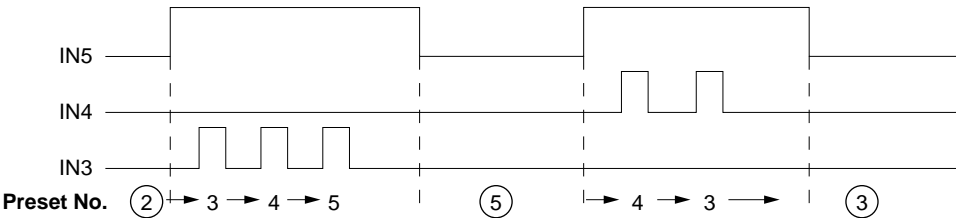
■ Entering the preset data using parallel inputs

When entering the preset data using parallel inputs, enter as follows.



■ Selecting the preset data while the preset-active function is used

When selecting the preset data while the preset-active function is used, use the following procedure.



A circled preset No. indicates the selected number.

Chapter 5

Extended Functions

This chapter describes useful functions of the BL-V35E such as the data reference function, digit designation function and parallel output setting function.

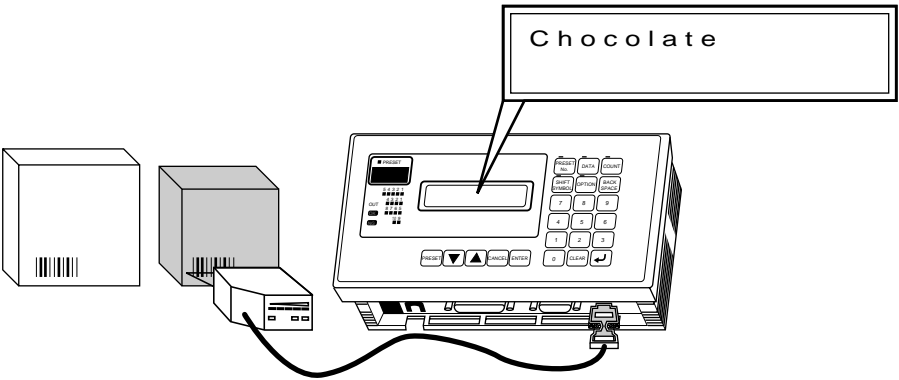
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5.1 Data Reference Function

By using the data reference function, characters that have been entered in advance can be displayed on the LCD display instead of the bar code data.

5.1.1 Data reference function

Normally, data that is read using a connected bar code reader is displayed as is on the LCD display. The data reference function replaces the readout bar code data with a character string that has been entered in advance. Instead of bar code data, more meaningful data such as the product name can be displayed.



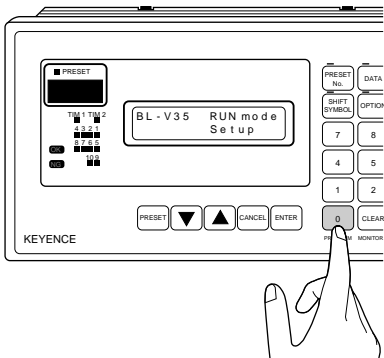
Note: Letters, numbers and symbols are available in the data reference function.

5.1.2 Setting procedure for the data reference function

Procedure

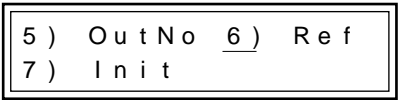
1. Select set mode.

Press and hold the **[0]** key for 2 seconds to select set mode.





2. Display the reference function menu.

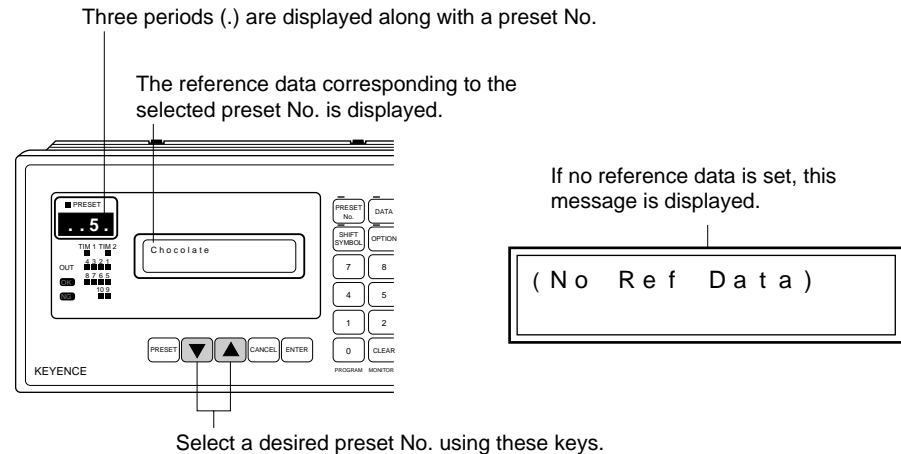
Press the **▼** or **▲** key to select "6) Ref". Then, press the **[ENTER]** key.



3. Confirm the reference data.

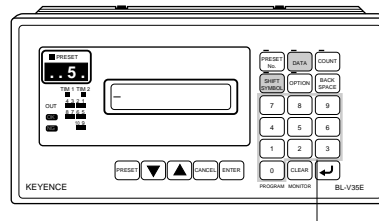
The reference data set to the preset No. displayed on the preset No. indication LED is displayed on the LCD display. Press the  and  keys to display the preset No. to which the data reference function is to be set.

- If the reference data is not set, the message “No Ref Data” is displayed.
- Three periods (.) are displayed on the preset No. indication LED so that reference data entry can be distinguished from preset data entry.




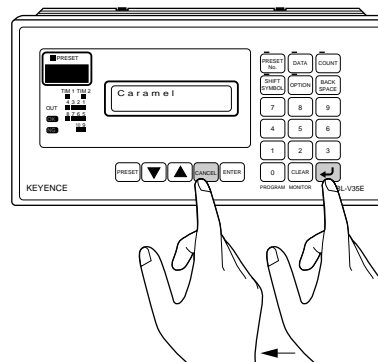
4. Enter the reference data.

When the **[DATA]** key is pressed, “_” is displayed on the LCD display. When entering numbers, use the numeric keypad. When entering letters and symbols, press the **[SHIFT SYMBOL]** key (⇒ See p. 61).



5. Exit set mode.

When registration is completed, press the  key to save the entered data. Ensure that the LED above the **[DATA]** key is turned off. Press the **[CANCEL]** key twice to exit set mode.



This completes setting of the data reference function.

5.2 Digit Designation Function

This section describes the digit designation function for designating certain digits of the readout bar code data to be output.

5.2.1 Digit designation function

For example, when the bar code data “49123456” is read, all of the digits are usually output. By using the digit designation function, only certain digits such as “1234” or “456” may be output. This function is useful when only a certain part of the readout data is meaningful.

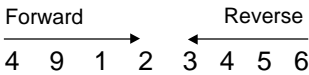
5.2.2 Setting the digit designation function

The digit designation function has the following setting parameters.

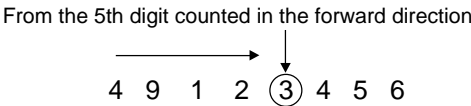
- Digit designation direction
- Digit designation start digit
- Digit designation effective digits

Each of these parameters can be set in the option set mode.

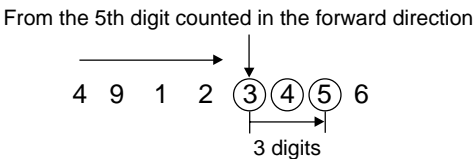
- For the digit designation direction, “Forward” or “Reverse” can be set.



- The parameter “digit designation start digit” determines which digit counted in the digit designation direction is regarded as the first effective digit. It can be set to a number between 1 and 32.



- The parameter “digit designation effective digits” determines how many digits will be output in the digit designation direction. It can be set to a number between 1 and 32.



Example

When only “34” is to be output for the bar code data “158423421” and “58423421”.

Digit designation direction: Reverse
Digit designation start digit: 3rd digit

1 5 8 4 2 3 4 2 1

Digit designation effective digits: 2 digits

Digit designation direction: Forward
Digit designation start digit: 3rd digit

1 5 8 4 2 3 4 2 1

Digit designation effective digits: 2 digits

Two digits will be output from the 3rd digit counted in the reverse direction.

Note 1: Data is output from the left in communication, without regard to the digit designation direction.

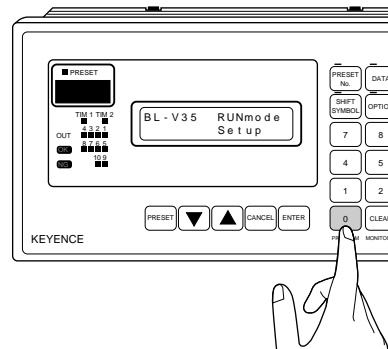
Note 2: Pay strict attention when setting the digit designation direction if the number of digits in the bar codes varies.

■ Setting the digit designation function

Procedure

1. Select set mode.

Press and hold the **[0]** key for 2 seconds to select set mode.



2. Display the option setting menu.

Press the **▼** or **▲** key to select "4) Option". Then, press the **[ENTER]** key.

```
1) Port 1  2) Port 2
3) Main    4) Option
```

3. Set the digit designation direction.

Press the **▼** or **▲** key to select "02 Digit Specify". Press the **[ENTER]** key, and select the direction ("Forward" or "Reverse") using the **▼** or **▲** key. Press the **[ENTER]** key to save the selection.

```
02 Digit Specify
0) OFF
```

4. Set the digit designation effective digits.

Press the **▼** or **▲** key to select "03 Max. Digits". Press the **[ENTER]** key, and set the number of effective digits using the **▼** or **▲** key. Press the **[ENTER]** key to save the selection.

```
03 Max. Digits
16
```

5. Set the digit designation start digit.

Press the **▼** or **▲** key to select "04 Start Digit". Press the **[ENTER]** key, and set the start digit using the **▼** or **▲** key. Press the **[ENTER]** key to save the selection.

```
04 Start Digit
1
```

6. Exit set mode.

Press the **[CANCEL]** key twice to exit the option set mode.

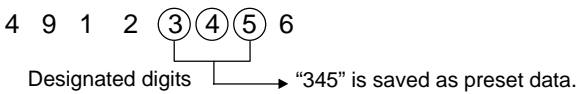
Note: When the digit designation function is set to OFF, the parameters "Max. Digit" and "Start Digit" are not displayed.

This completes setting of the digit designation function.

■ **Application for the preset function**

By using the digit designation function, only the specified number of digits can be saved as preset data.

Example



In this case,

1	1	1	2	③	④	⑤	4
2	2	2	2	③	④	⑤	8
6	8	8	4	③	④	⑤	1

Note: The digit designation function can be used in the same way as the preset wild card function (↪ See p. 39).

5.3 Parallel Output Setting Function

By using the parallel output setting function, an output No. corresponding to a preset No. can be set.

5.3.1 Parallel output setting function

In the default settings, each preset No. is equivalent to each output No. Using the parallel output setting function, you can change an output No. corresponding to a preset No. Using this function,

- The same output No. can be assigned to two or more different preset Nos.
- A NG output can be assigned to a preset No. (1 to 399).

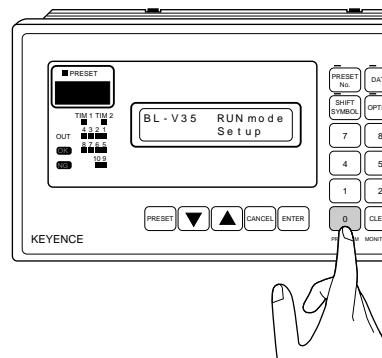
Preset No.	Output No.		Preset No.	Output No.
0 (verification NG)	NG (NG output)		0	5
1	1	➔	1	1
2	2		2	1
3	3		3	399
4	4		4	NG

■ Setting procedure for the parallel output setting function

Procedure

1. Select set mode.

Press and hold the **[0]** key for 2 seconds to select set mode.





2. Display the parallel output setting menu.

Press the **▼** or **▲** key to select "5) OutNo". Then, press the **[ENTER]** key.

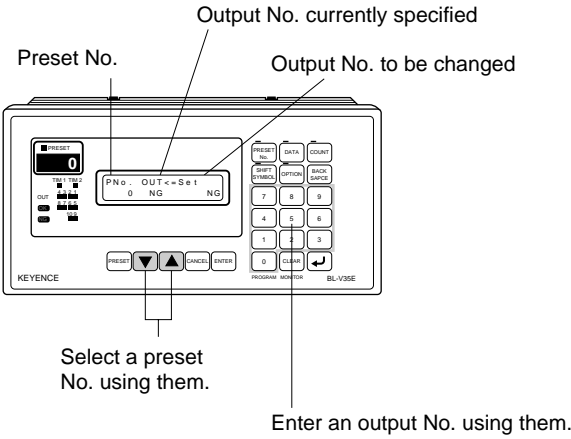
5) OutNo	6) Ref
7) Init	

3. Set the correspondence between preset Nos. and parallel output Nos.


Ensure that the contents shown below are displayed on the LCD display. A preset No. is displayed under “P No.” An output No. is displayed under “OUT”.


Press and hold the  or  key until a preset No. whose parallel output No. is to be changed is displayed.

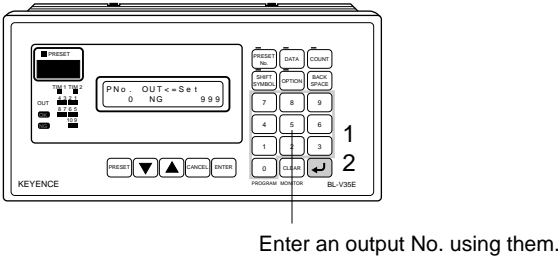
- A preset No. can also be selected using the [PRESET No.] key.



4. Enter a parallel output No.

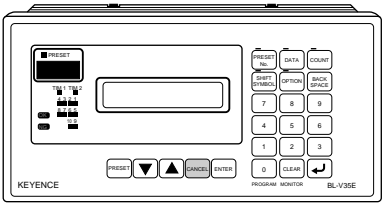
Enter a desired output No. using the numeric keypad, and press the  key to save the input.

- When setting an output No. to NG output, enter “999” and press the  key.



5. Exit set mode.

Press the [CANCEL] key twice to exit set mode.



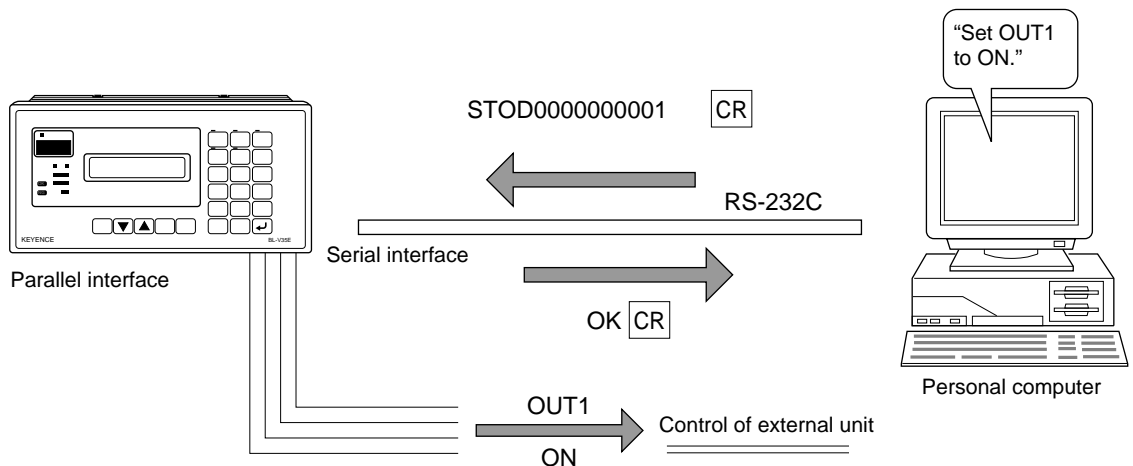
This completes setting of the parallel output.

5.4 Parallel I/O Direct Control Function

Parallel inputs and outputs of the BL-V35E can be controlled directly using serial communication.

5.4.1 Parallel I/O direct control function

By sending serial commands from a personal computer connected to the serial interface of the BL-V35E, the ON/OFF status of the BL-V35E parallel inputs (IN1 to IN5) can be read. Parallel outputs (OUT1 to OUT5) can also be turned on or off directly. In other words, parallel inputs and outputs of the BL-V35E can be used as external I/O terminals of the personal computer.



5.4.2 Directly controlling parallel inputs and outputs

Parallel inputs and outputs can be controlled directly using the following methods.

- **Releasing parallel inputs and outputs to the outside**

At first, a parallel input/output to be controlled should be released to the outside in the option set mode (⇒ See p. 96) or by using serial commands (⇒ See p. 108). In this case, normal parallel I/O operations are disabled.

- **Directly controlling parallel inputs and outputs**

By using serial commands (⇒ See p. 109), the ON/OFF status of parallel inputs can be read and parallel outputs can be turned on and off directly.

5.5 Function for Copying Settings between Two BL-V35E Units

When there are two BL-V35E units, the setting contents in one unit can be copied to another unit.

5.5.1 Function for copying settings between two BL-V35E units

By connecting two BL-V35E units via the RS-232C, various settings (internal settings, preset data, reference data, etc.) can be copied from one unit to the other unit. You can check whether the settings are the same for both units.

5.5.2 Copying the setting contents between BL-V35E units

■ **Connection**

Connect two BL-V35E units using their serial port 1 (PORT 1).
For the cable and the connection method, see p. 28.

■ **Copying the setting contents**

While two BL-V35E units are connected, perform the following steps. The BL-V35E unit that sends the setting is referred to as the sender, and the BL-V35E unit that receives the setting is referred to as the receiver in the description below.



Procedure

1. Display sub mode.

In both the sender and the receiver, press and hold the **[OPTION]** key for 3 seconds.
The message below is displayed.

BL - V 3 5 S u b M o d e
V e r i f y C o p y

2. Set the communication rate.



In both the sender and the receiver, select “Auto=1” using the  or  key and then press the **[ENTER]** key.

Comm R a t e
A u t o = 1 , S e t = 2

Select “Auto=1”

Note: Never select “Set=2”.

3. Select an operation to be copied.

When the  or  key is pressed, the following items are displayed in turn in the upper line of the LCD display.

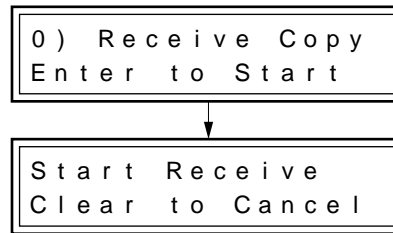
- 0) Receive Copy Receiver of copy
- 1) Receive Verify Receiver of verification
- 2) Send All Sender of copy of all settings
- 3) Send Settings Sender of copy of internal settings
- 4) Send Preset Sender of copy of preset data
- 5) Send Ref Data Sender of copy of reference data
- 6) Send Counter Sender of counter

0) R e c e i v e C o p y
E n t e r t o S t a r t

4. Prepare the receiver.

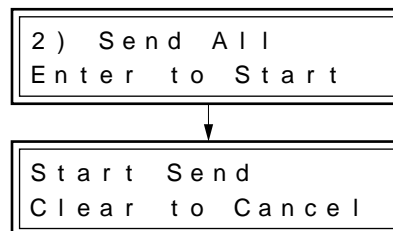
In the receiver, select “0” and then press the **[ENTER]** key. The message shown below is displayed.

- When the **[CLEAR]** key is pressed, execution is canceled.

**5. Prepare the sender.**

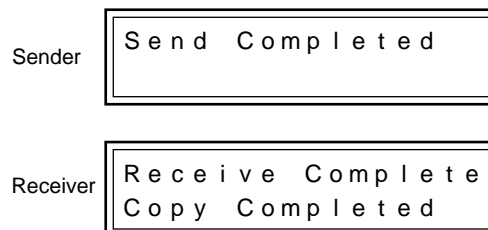
In the sender, select a number between “2” and “6” according to the setting to be copied, and then press the **[ENTER]** key. The settings are copied.

- When the **[CLEAR]** key is pressed, execution is canceled.

**6. Execute copy.**

When copying is started, the message “Sending. . .” appears to indicate that the settings are being copied.

When copying is completed, the messages shown below are displayed respectively.

**7. Exit the copy function**

In both the sender and the receiver, press the **[OPTION]** key to exit the copy function.

This completes copying of settings between two BL-V35E units.

■ **Verifying the copied setting contents**

To check whether the copied setting contents have been transferred properly, verification can be performed.
Send the setting contents from one BL-V35E unit, and perform verification in the BL-V35E unit that received the settings.
The BL-V35E unit that sends the setting is referred to as the sender, and the BL-V35E unit that receives the setting is referred to as the receiver in the description below.



Procedure

1. Display sub mode.

In both the sender and the receiver, press and hold the **[OPTION]** key for 3 seconds.
The message below is displayed.

BL - V 3 5 S u b M o d e
V e r i f y C o p y



2. Set the communication rate.

In both the sender and the receiver, select “Auto=1” using the  or  key and press the **[ENTER]** key.

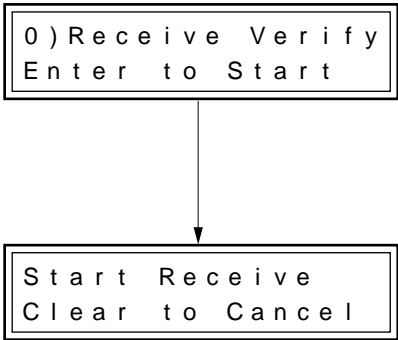
Comm R a t e
A u t o = 1 , S e t = 2

Note: Never select “Set=2”.

3. Prepare the receiver.

When the  or  key is pressed, the upper line on the display is switched.
In the receiver, select “1” and then press the **[ENTER]** key. The message shown below is displayed.

- When the **[CLEAR]** key is pressed, execution is canceled.

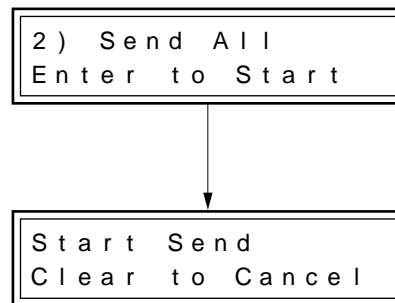


4. Prepare the sender.

In the sender, select the setting to be verified, and then press the **[ENTER]** key (⇒ See p. 75).

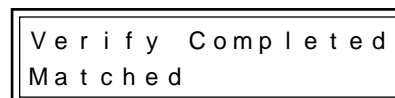
The message shown below is displayed, and verification is started.

- When the **[CANCEL]** key is pressed, execution is canceled.

**5. Execute verification.**

When the verified contents match, the message shown below is displayed in the receiver.

Matched



When the verified contents do not match, the message shown below is displayed in the receiver.

Not matched

**6. Exit the verification function**

In both the sender and the receiver, press the **[OPTION]** key to exit the verification function.

This completes verification of the setting contents between two BL-V35E units.

Chapter 6

Setting

This chapter describes in detail the setting procedure for each function of the BL-V35E, the setting contents and the meaning of the setting parameters.

6.1	Setting Procedure	80
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6.1 Setting Procedure

Set mode is used to change various internal settings of the BL-V35E.
This section describes each setting procedure.

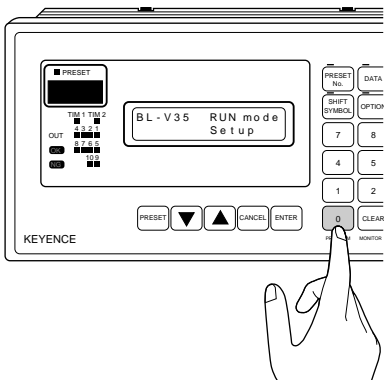
6.1.1 Starting set mode

Change each setting of the BL-V35E using the following procedure.

Procedure

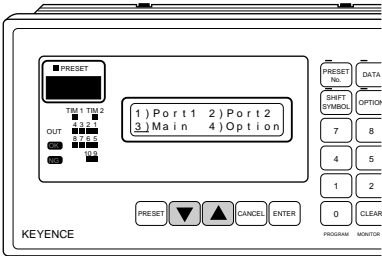
1. Press and hold the [0] key for 2 seconds.

The message shown below appears on the LCD display. The main set mode menu appears.



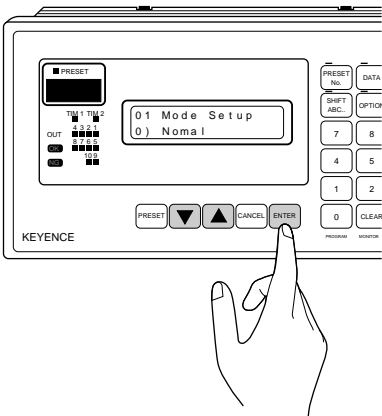
2. Press the ▲ or ▼ key to select the setting menu.

The selected setting menu is indicated by "_" below the number.
When the ▲ key is pressed several times, the next menu (5 to 7) appears.



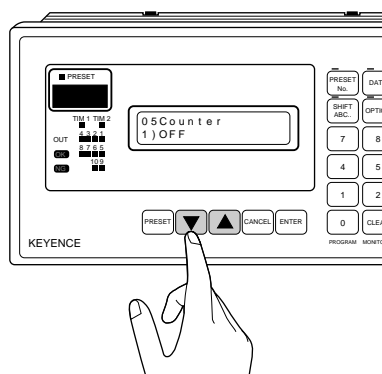
3. Press the [ENTER] key.

When the [ENTER] key is pressed, the parameters of the selected setting menu are displayed.
The display below shows the parameters of "3) Main".





4. Select the parameter to be changed.

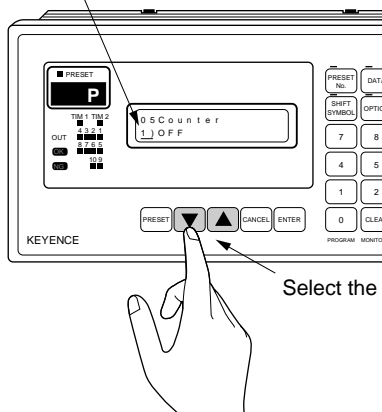
Press the  or  key to select the parameter.

**5. Press the [Enter] key to change the parameter setting.**

"_" appears on the lower line in the display.

Press the  or  key to change the parameter setting in the lower line. Continue until the desired parameter setting appears.

The parameter indicated by "_" can be changed.

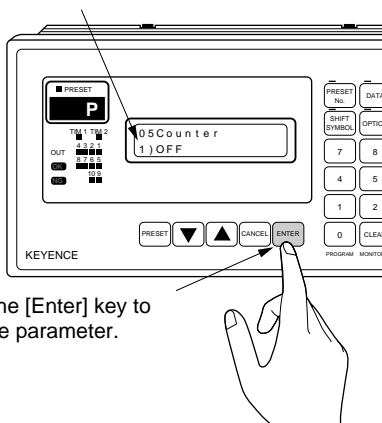


Select the parameter setting.

6. Press the [ENTER] key to save the parameter setting.

When the [CANCEL] key is pressed, the setting is canceled.

When the parameter is saved, "_" disappears.



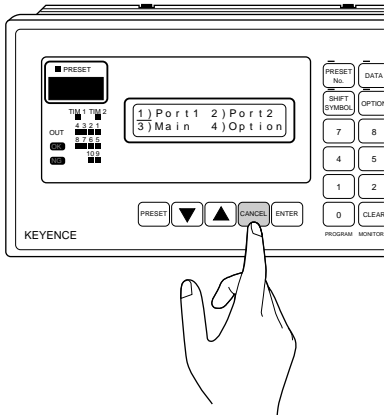
Press the [Enter] key to save the parameter.

Change the other settings by repeating the above procedure.

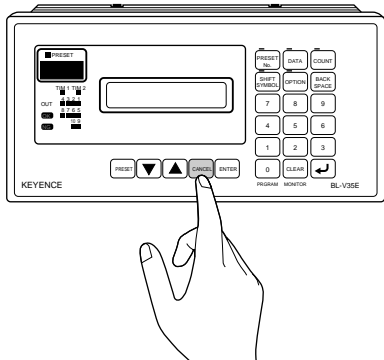
6.1.2 Exiting set mode

Procedure

- 1. Press the [CANCEL] key.
The main set mode menu appears.
From this display, you can select another setting menu to change parameters.



- 2. Press the [CANCEL] key again.
The BL-V35E exits set mode.



This completes set mode operation.

6.2 Setting Parameters of the BL-V35E

This section lists the setting menus and parameters of the BL-V35E. For details about each parameter, see the appropriate section.

6.2.1 Menu list

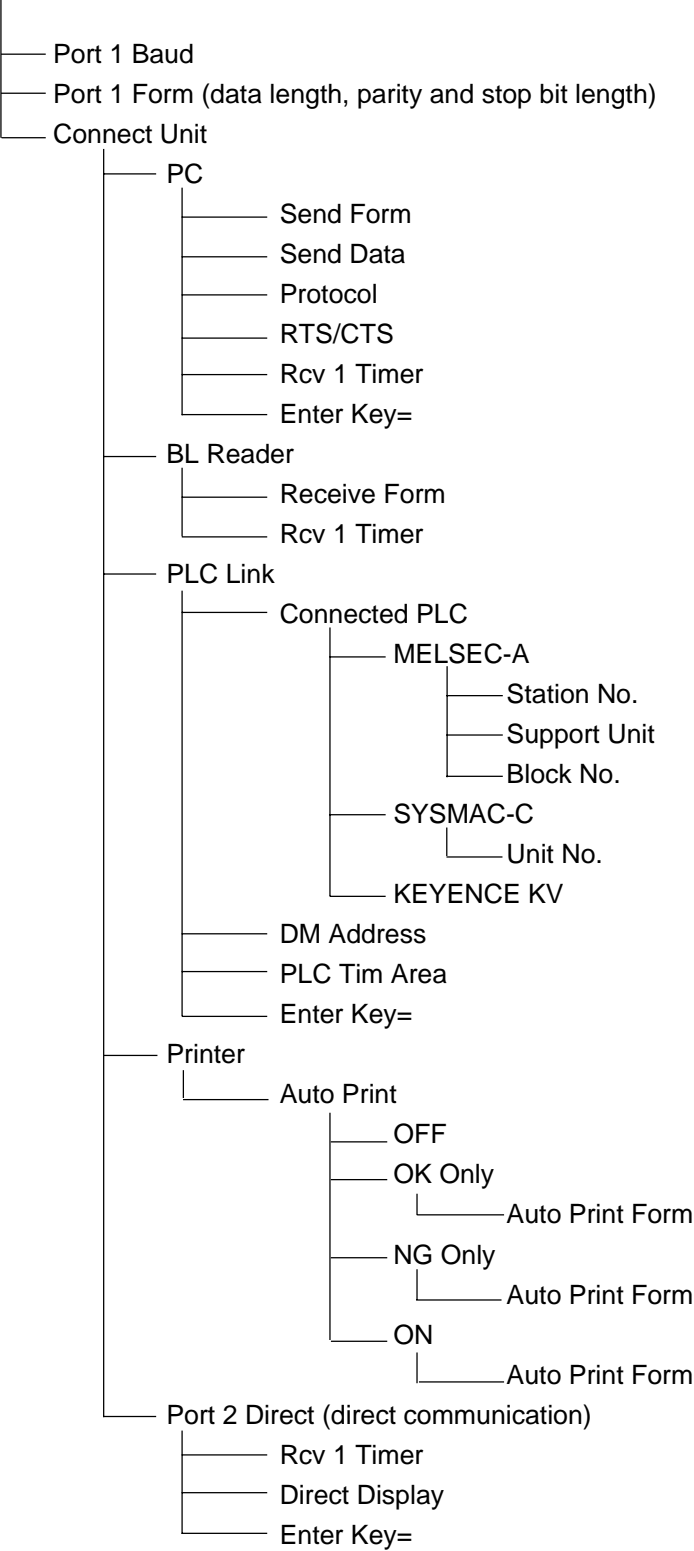
Main menu

1) Port 1	Communication settings for serial 1 (⇒ See p.84)
Serial communication	
Communication settings with a bar code reader	
PLC link	
2) Port 2	Communication settings for serial 2 (⇒ See p.90)
Communication settings with a bar code reader	
3) Main	Main setting mode (⇒ See p.91)
RUN mode setting	
Counter setting	
4) Option	Option setting mode (⇒ See p.94)
Beep	
Digit designation	
Key protect	
Details of parallel Output setting	
5) OutNo	Parallel output setting (⇒ See p.71)
6) Ref	Reference data setting (⇒ See p.75)
7) Init	Initialization of each setting (⇒ See p.97)

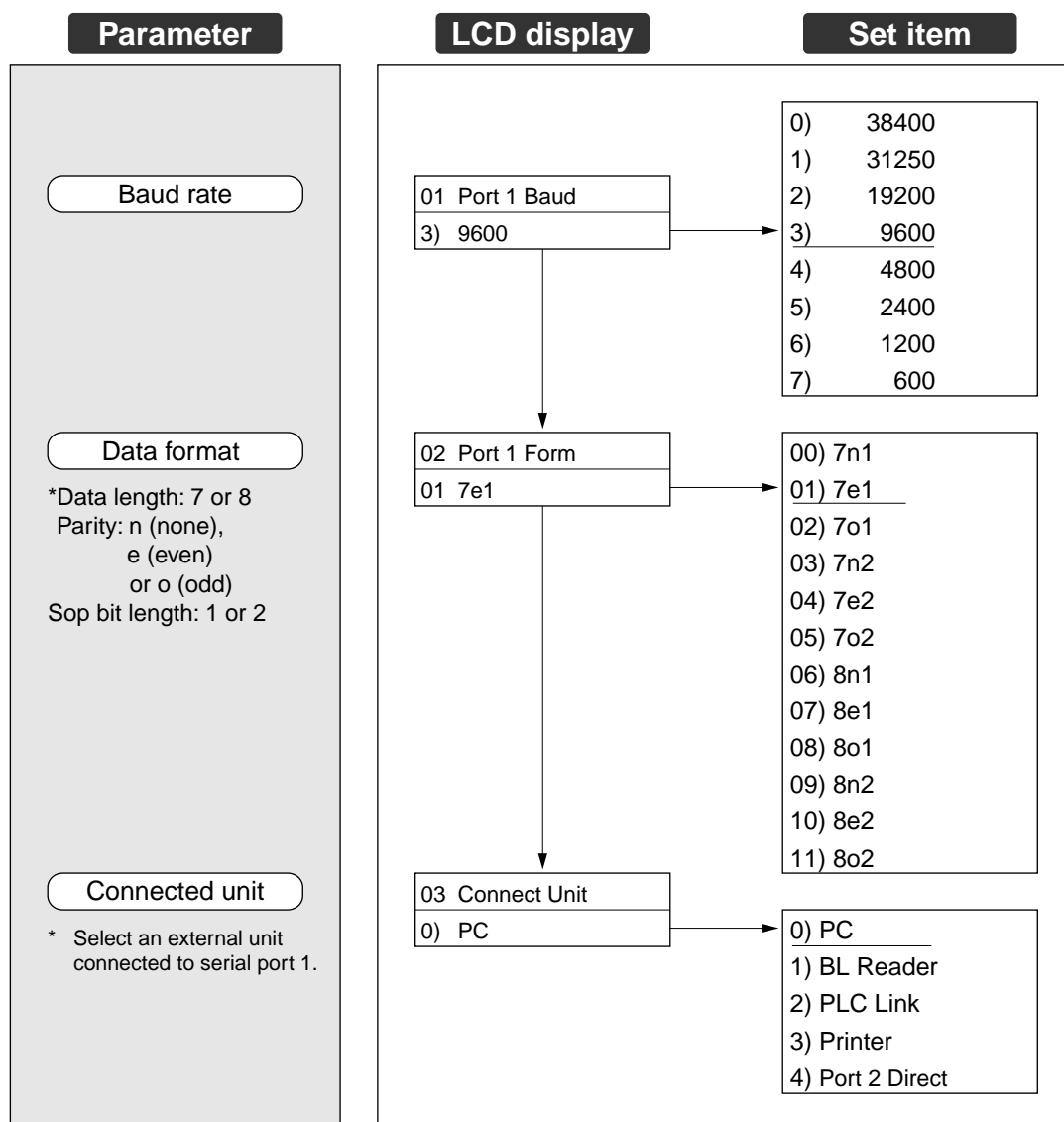
6.2.2 Communication set mode for serial port 1

■ Menu list

Communication settings for serial port 1



Detailed settings



When selecting "0) PC", proceed to p.86.

When selecting "1) BL Reader", proceed to p.87.

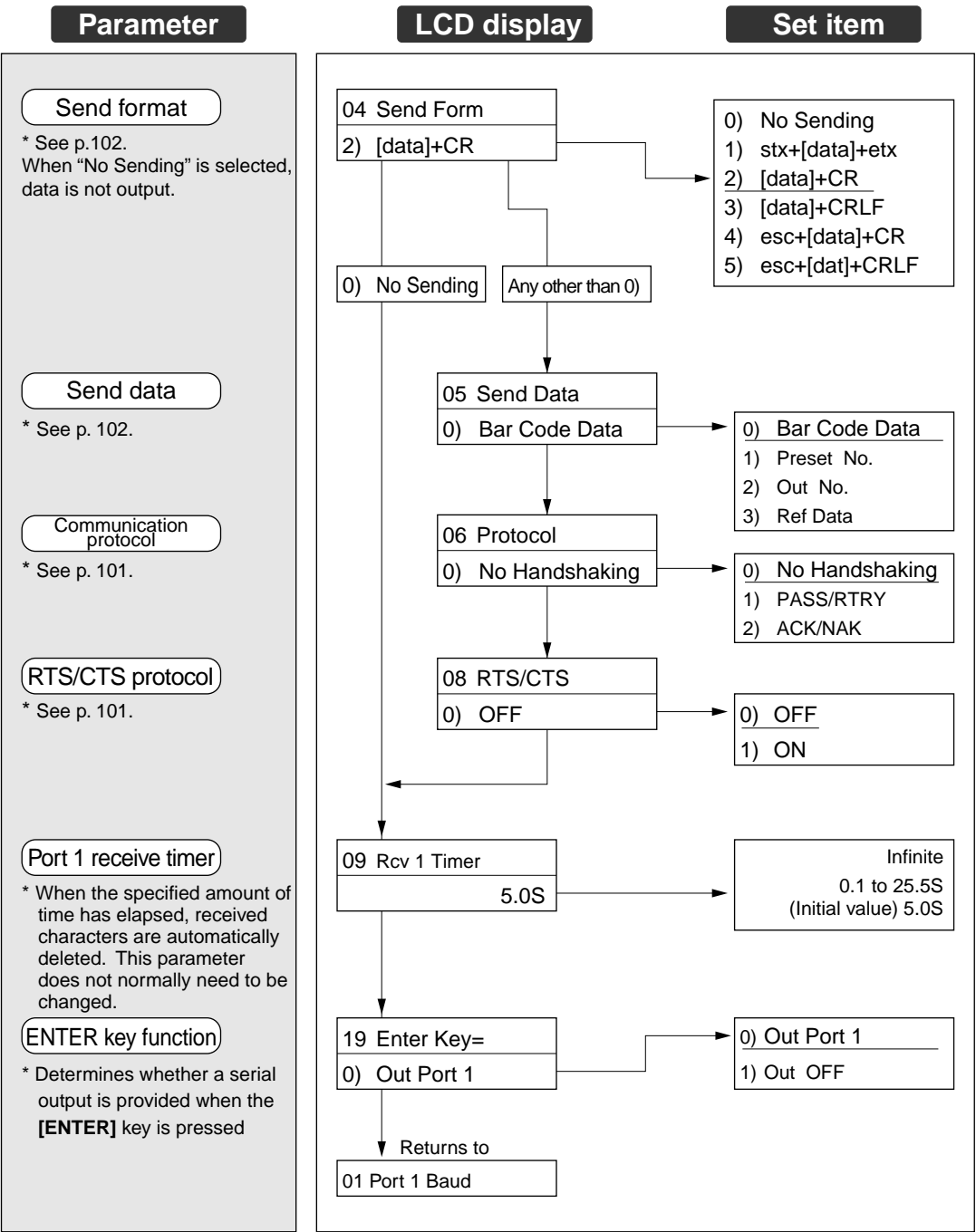
When selecting "2) PLC Link", proceed to p.88.

When selecting "3) Printer", proceed to p.89.

When selecting "4) Port 2 Direct", proceed to p.89.

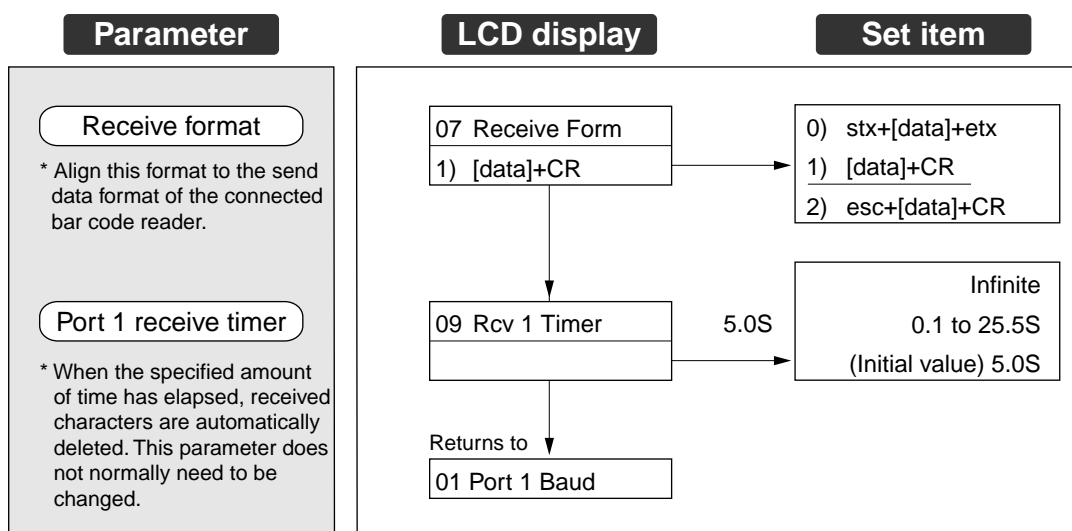
Note: When "Connected Unit" is set to "PC" and "Printer", set the data length to "8 bits".

■ When “Connect Unit” is set to “0) PC”
0) PC



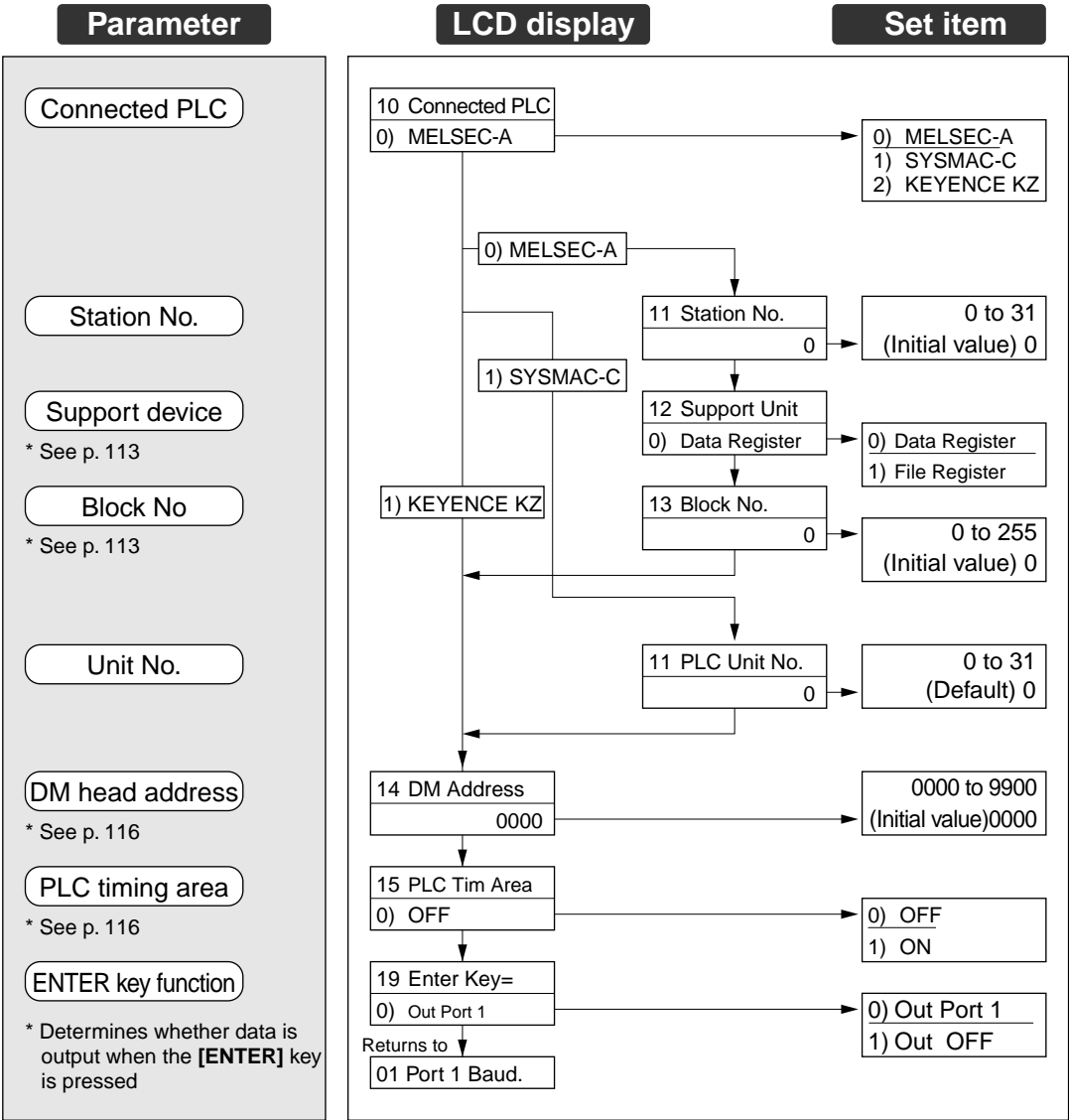
■ When “Connected Unit” is set to “1) BL Reader”

1) BL Reader



- * Change the parameters according to the connected bar code reader. These parameters do not need to be changed when a BL series bar code reader is used. When a bar code reader manufactured by another company is connected, check its communication specifications and change only the required parameters.

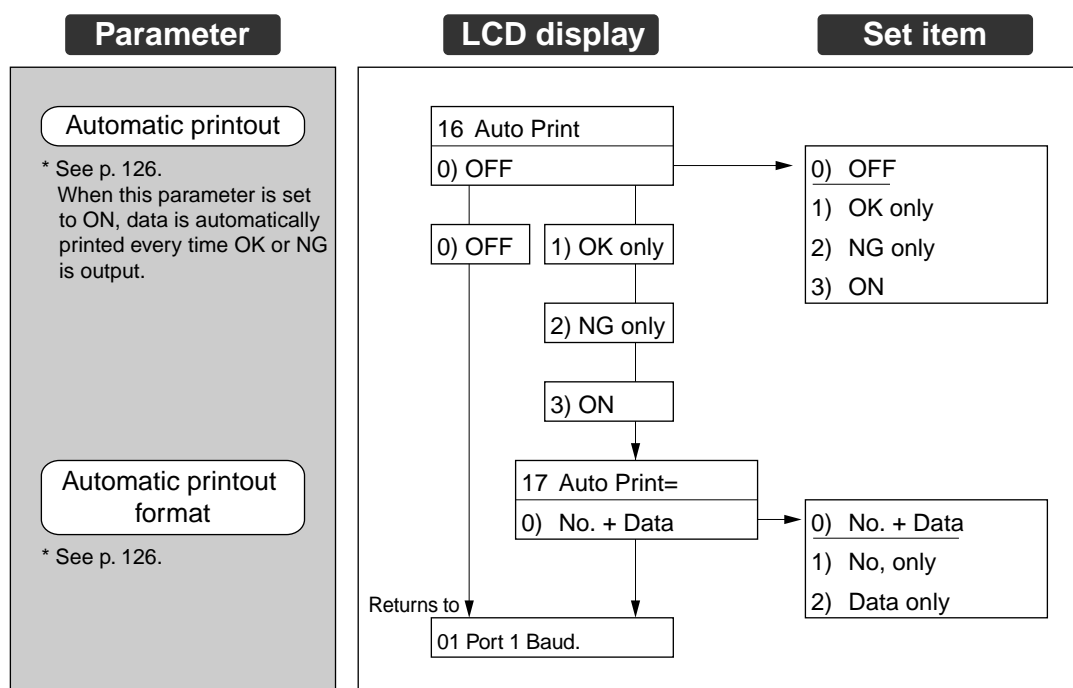
■ When “Connect Unit” is set to “2) PLC Link”
2) PLC Link



* “13 Block No.” is displayed only when “12 Support Unit” is set to “1) File Register”.

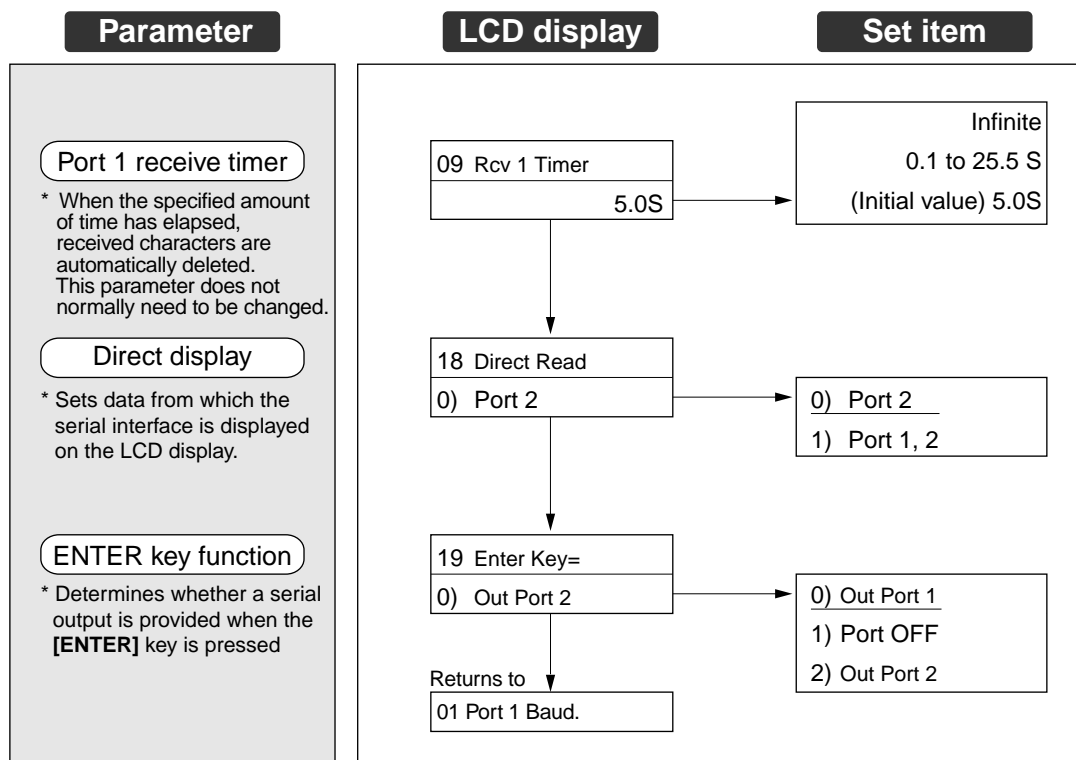
■ When “Connect Unit” is set to “3) Printer”

3) Printer



■ When “Connect Unit” is set to “4) Port 2 Direct”

4) Port 2 Direct



* When “4) Port 2 Direct” is selected, direct communication is enabled. Direct communication is described on p.9.

Before starting direct communication, the following setting procedure should first be performed.

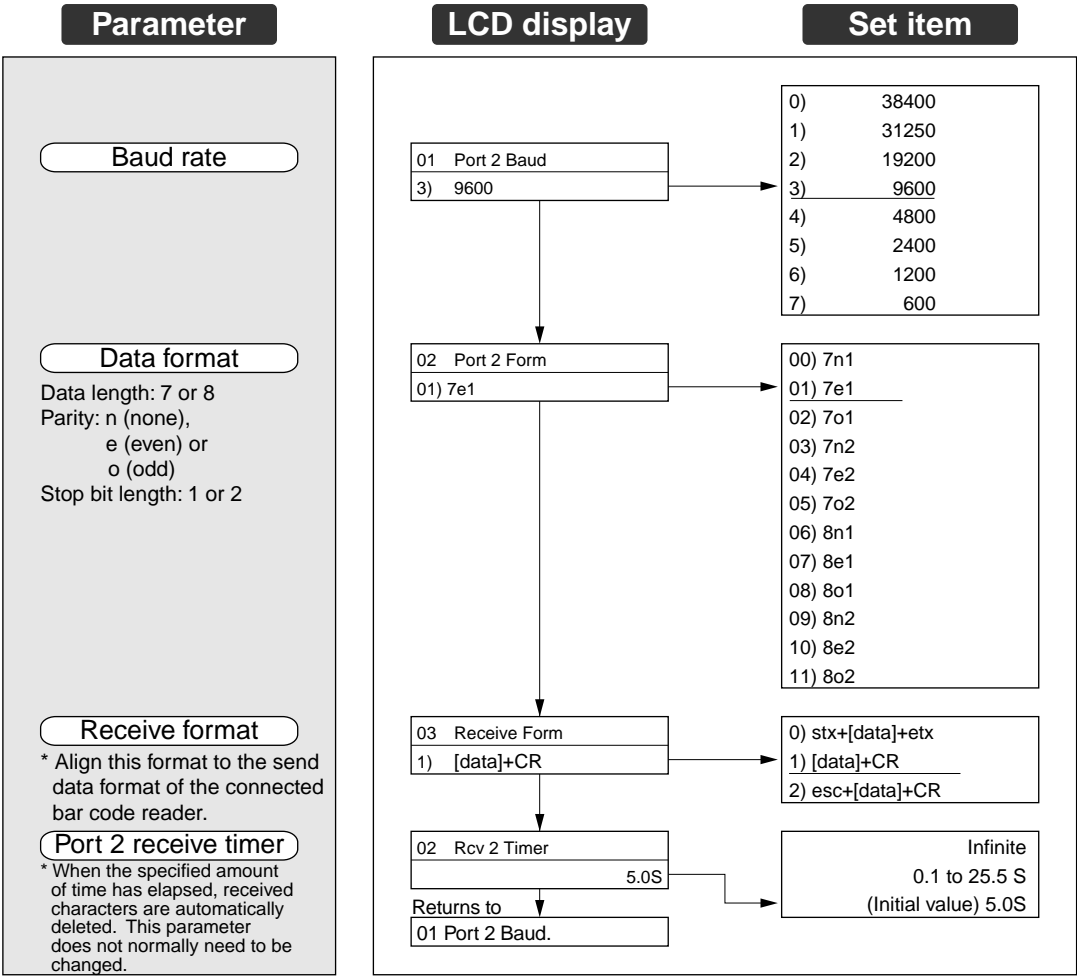
- Align the baud rate of serial port 1 to that of the connected personal computer.
- Align the data format (data length, parity and stop bit) of serial port 1 to that of the connected personal computer.

6.2.3 Communication set mode for serial port 2

Menu list

- Communication settings for serial port 2
- Port 2 Baud
 - Port 2 Form (data length, parity and stop bit)
 - Receive Form
 - Rcv 2 Timer

Detailed settings



* Change the parameters according to the connected bar code reader. These parameters do not need to be changed when a BL series bar code reader is used. When a bar code reader manufactured by another company is connected, check its communication specifications and change only the required parameters.

6.2.4 Main setting mode

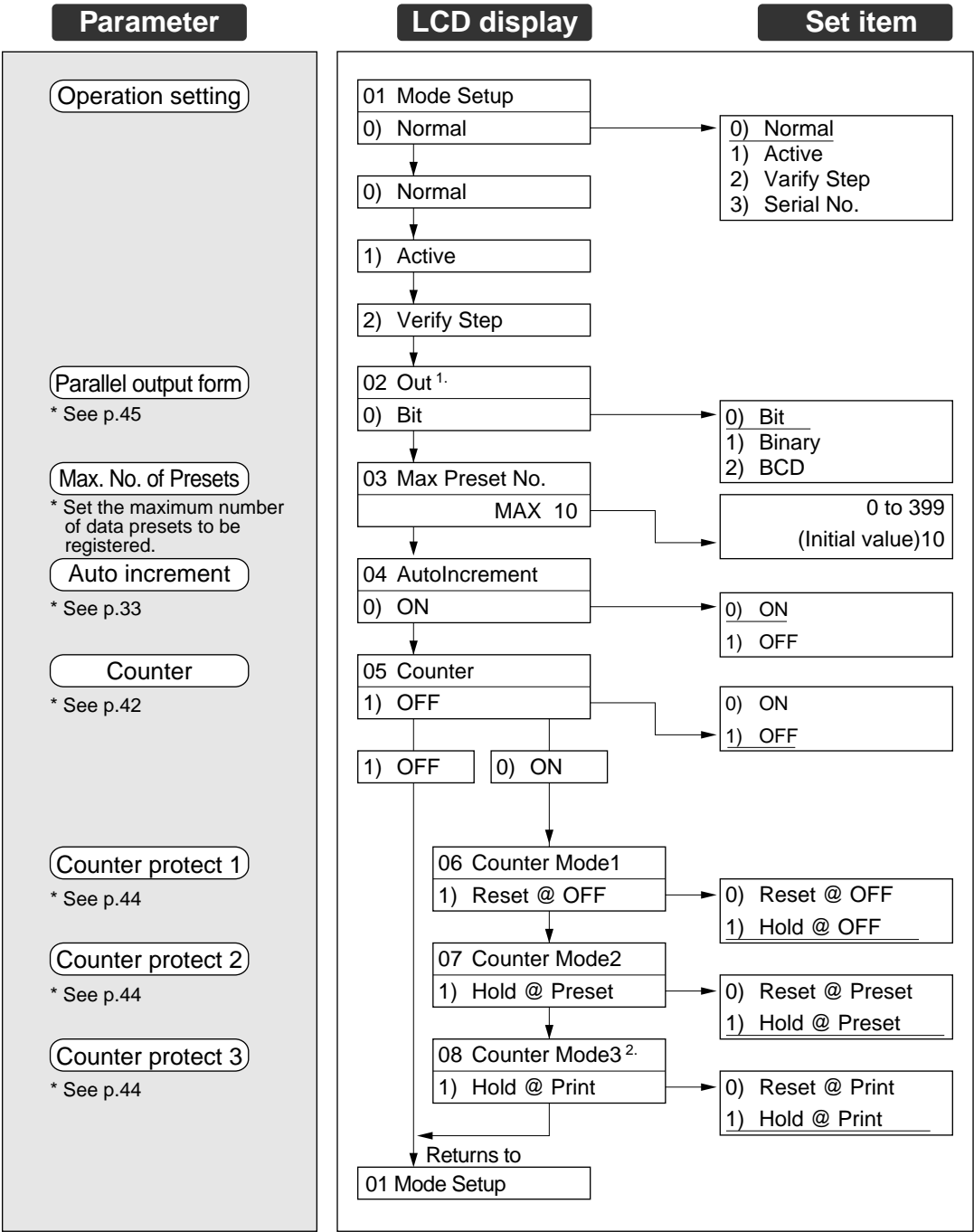
■ Menu list

Main setting

- Normal (Normal operation) See p. 32
 - Parallel output form
 - Max. No. of Presets
 - Auto increment
 - Counter
 - Counter protect
- Preset active function See p. 46
 - Max. No. of Presets
 - Auto increment
 - Counter
 - Counter protect
- Verify step function See p. 50
 - Max. No. of Presets
 - Auto increment
 - Counter
 - Counter protect
- Serial No. check function See p. 54
 - Serial No. direction
 - Starting digit
 - Max. No. of digits
 - Amount of change
 - Serial No. protect

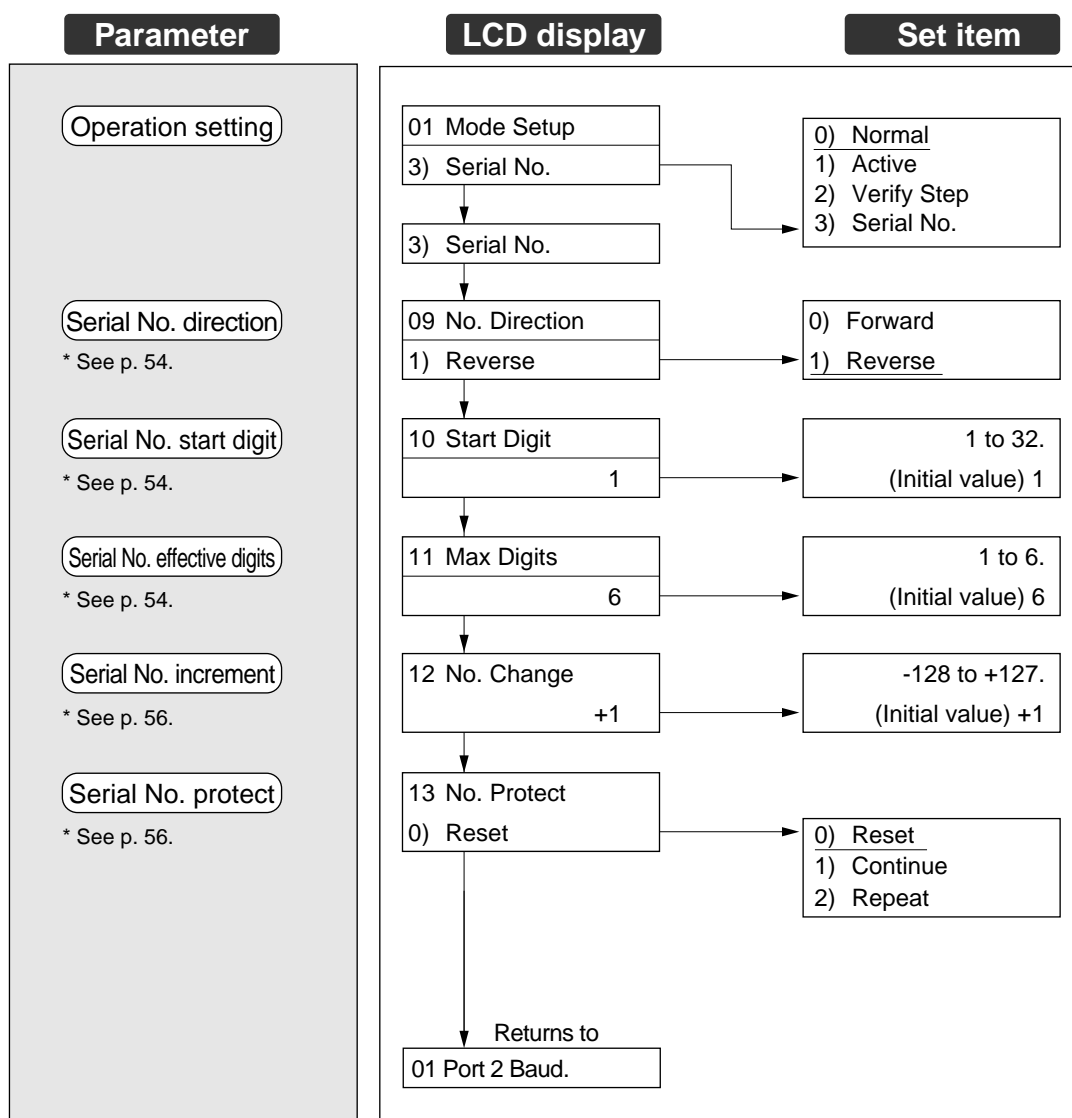
Note: The parameters of the main setting mode cannot be changed when the connected device is set to "Serial 2 Direct" in the Serial 1 Communication setting mode.

■ Detailed settings for Normal (Multi-preset) operation, Preset active function, or Verify step function



1. "02 Out" is displayed only when the "01 Mode Setup" is set to "0) Normal".
2. "08 Counter Mode 3" is displayed only when the device connected to serial port 1 is set to "Printer".

■ Detailed settings for the serial No. check function



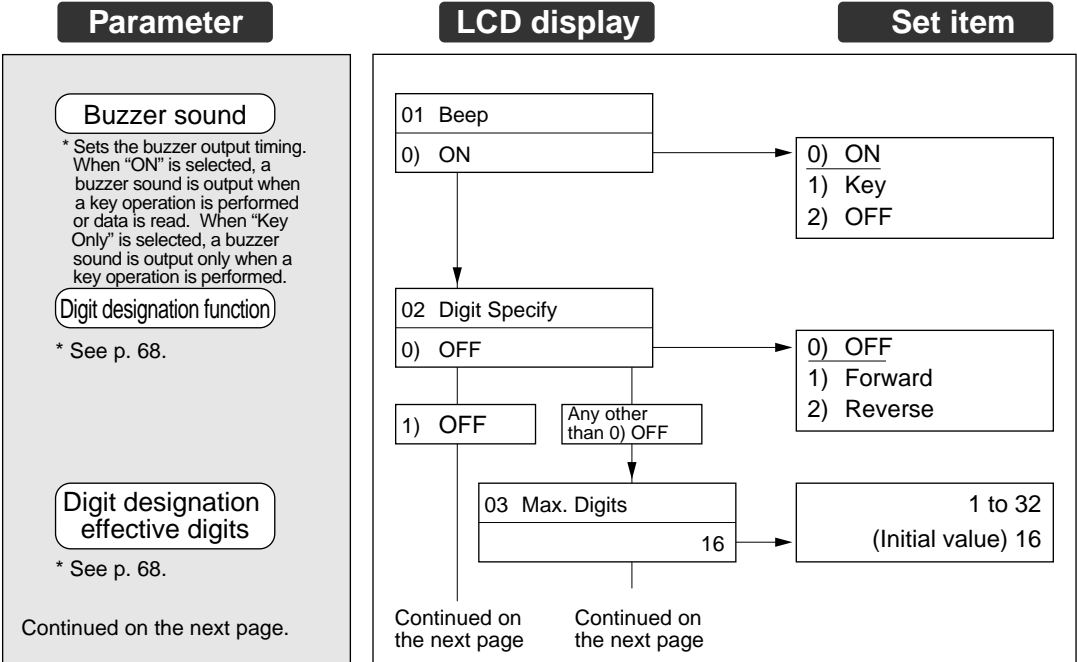
6.2.5 Option set mode

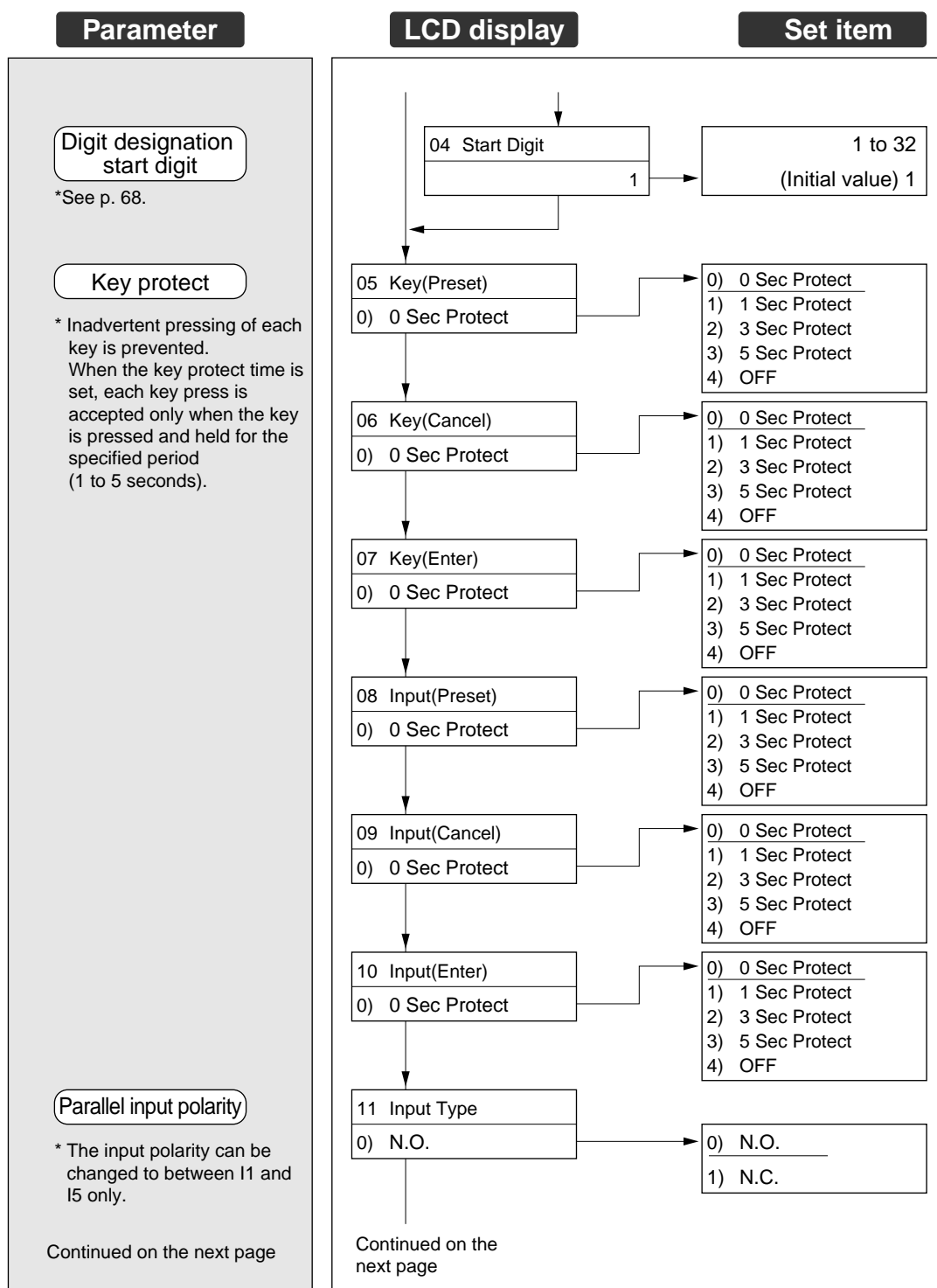
■ Menu list

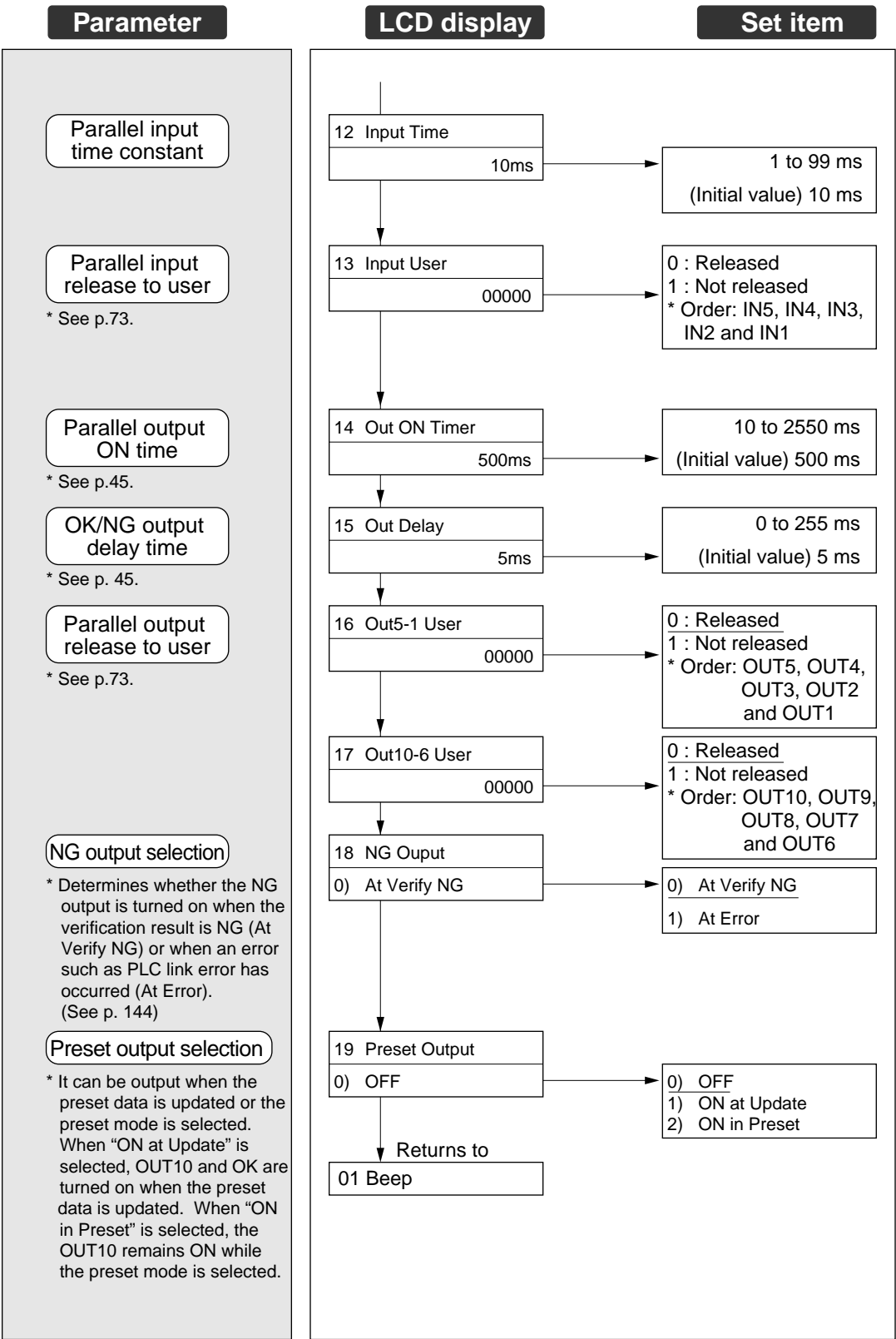
Optional settings

- Beep
- Digit Specify
- Max. Digits
- Start Digit
- Key (Preset)
- Key (Cancel)
- Key (Enter)
- Input (Preset)
- Input (Cancel)
- Input (Enter)
- Input Type
- Input Time
- Input User
- Out ON Timer
- Out Delay
- OUT5-1 User, OUT10-6 User
- NG Output
- Preset Output

■ Detailed settings







6.3 Initialization of Each Setting

Each setting parameter in the BL-V35E can be initialized to the default value set at the time of shipment.

■ Initializing the setting

Procedure

1. Select "7) Init" in "Setup".

5)	Out No	6)	Ref
7)	Init		

2. Select an item to be initialized using the and key, and press the [ENTER] key.

The following items can be initialized.

1) Init All:

Initializes all settings to the default values at the time of shipment.

2) Init Preset:

Clears all preset data.

1)	Init All
2)	Init Preset

3) Init Out:

Initializes parallel settings to the default values at the time of shipment.

4) Init Counter:

Initializes all counter values.

3)	Init Out
4)	Init Counter

5) Init Ref Data:

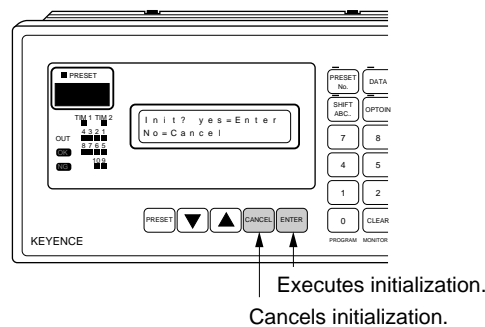
Clears the reference data.

5)	Init Ref Data
1)	Init All

3. The message shown below is displayed to request confirmation for the initialization.

Press the [ENTER] key to execute initialization.

Press the [CANCEL] key to cancel initialization.



Chapter 7

Serial Communication

This chapter describes the data send format used when a personal computer is connected to the serial interface of the BL-V35E. It also describes the command send/control method.

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7.1 Serial Communication

Using serial communication, data can be sent from the BL-V35E to a personal computer and the BL-V35E can be directly controlled by a personal computer.

7.1.1 Communication format of the BL-V35E

The following two types of communication formats are available for the BL-V35E.

- **Data communication**

The bar code data (ASCII codes) read by a connected bar code reader is sent to a personal computer.

- **Command communication**

Commands (ASCII codes) are sent from a personal computer, and the BL-V35E is controlled directly.

Note: Communication is always performed using ASCII codes.

7.1.2 Setting the serial communication

Before starting serial communication, first set the same communication settings to both of the personal computer and the BL-V35E (serial port 1).

■ **Settings in the BL-V35E**

In the communication set mode for serial port 1, set the following (⇒ See p. 85).

- Set the baud rate, data length, parity and stop bit length.
- Set “Connect Unit” to “PC”.
- Set the send data type and send format.

■ **Settings in the personal computer**

Set the DIP switch and memory switch in the personal computer according to the settings for the BL-V35E. Set the synchronization method to “start-stop method”.

- * For information about the settings in the personal computer, refer to the personal computer’s Instruction Manual.

7.2 Details about Data Communication

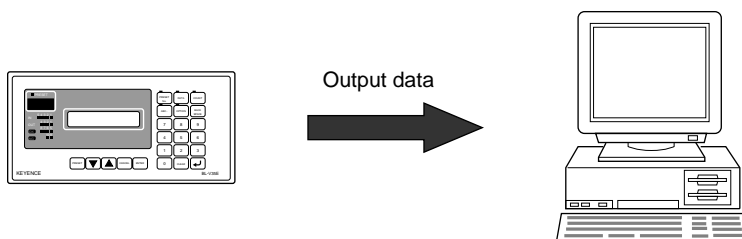
Using data communication, the readout bar code data can be sent to a personal computer.

7.2.1 Selecting communication protocols

The following four types of communication protocols are available. Select any one in communication set mode for serial port 1. Typically, you should select “No handshaking”.

■ No handshaking

After sending the output data, the BL-V35E does not wait for a response from the personal computer, but continues to send data. In other words, there are no communication procedures.

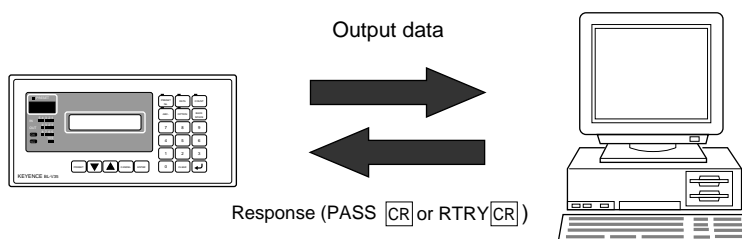


■ PASS/RTRY protocol

- After sending the output data, the BL-V35E waits for a response of “PASS [CR]” or “RTRY [CR]” from the personal computer. If neither response is given, the BL-V35E continues to wait for a response and does not send the next data.
- When receiving new bar code data while waiting for “PASS [CR]”, the BL-V35E stores new data in the send buffer (⇒ See p. 102).

If the send buffer capacity is insufficient for the data to be stored, an error message is displayed (⇒ See p. 144).

- Even while the BL-V35E is waiting for “PASS [CR]”, command communication is enabled.



Response type and operation

Response	Operation
PASS [CR] (normal processing)	Normal termination Next data can be sent.
RTRY [CR] (request for resend)	The BL-V35E sends the data again, and waits for a response (PASS).

■ ACK/NAK protocol

- With this protocol, [ACK] (06H) is used instead of PASS [CR] which is used in the PASS/RTRY protocol, and [NAK] (15H) is used instead of RTRY [CR]. Operation is equivalent to the PASS/RTRY protocol except that different characters are used in the responses.

■ **RTS/CTS protocol**

- By setting the RTS signal to OFF via the RS-232C, data sending can be paused. When the RTS signal is set to ON, data is sent.
- When receiving new bar code data while the RTS signal is OFF, the BL-V35E stores new data in the send buffer. (For the capacity of the send buffer, refer to “Capacity of the send buffer” below.) If the send buffer capacity is insufficient for the data to be stored, an error message is displayed (⇒ See p. 144).
- Even while the RTS signal is OFF, command communication is enabled. In this case, a response (OK [CR]) to a received command is also saved in the send buffer.

7.2.2 Capacity of the send buffer

The send buffer in the BL-V35E can store up to 99 pieces of data. If the amount of data is 100 or more, the message “Send Buffer Over” is displayed and operation stops (⇒ See p. 144).

7.2.3 Send format

The following six types of send formats are available for the output data. Select any one according to the specifications and communication program of the equipment that will receive the output data. Set the send format in “Send Form” in communication set mode for serial port 1 (⇒ See p. 86).

- ① Output data is not sent.
- ②

STX	Output data	ETX
-----	-------------	-----
- ③

Output data	CR
-------------	----
- ④

Output data	CR	LF
-------------	----	----
- ⑤

ESC	Output data	CR
-----	-------------	----
- ⑥

ESC	Output data	CR	LF
-----	-------------	----	----

* In addition to these formats, there are commands for setting the send format of the output data (⇒ See p. 107).

7.2.4 Output data type

The following four types of output data are available. Set the output data type in “Send Data” in communication set mode for serial port 1 (⇒ See p. 86).

■ **Bar code data**

The bar code data read by a bar code reader connected to serial port 2 is sent. When the [ENTER] key is pressed, the following data is output in serial format.

- When the [ENTER] key is pressed while the saved preset data is displayed, the displayed preset data is sent.
- When the [ENTER] key is pressed while preset No. 0 is displayed, “Preset NG” is sent.
- When the [ENTER] key is pressed while an unregistered preset No. is displayed, “empty” is sent.

■ **Preset No.**

A matching preset No. is sent.

- 001 to 399
When the readout data matches the preset data of a preset between No. 1 and 399.
- 000
When the readout data does not match any preset data.

■ Output No.

An output No. corresponding to the matching preset No. is sent.

- 001 to 399
Output No. corresponding to the matching preset No.
- 999
NG output

■ Reference data

The reference data is sent.

If the reference data is not saved, the readout data is sent.

7.2.5 Output data when the step verification function is used

When the step verification function is used, the output data is as follows.

■ When the output data is “bar code data” or “reference data”

- When the first data is read
“p:” is added to the head of the data.
- When the second data is read
In the case of OK: “o:” is added to the head of the data.
In the case of NG: “x:” is added to the head of the data.

Examples

- When the first readout data matches the second readout data
When the first data is read: p : 4912345
When the second data is read: o : 4912345
- When the first readout data does not match the second readout data
When the first data is read: p : 4912345
When the second data is read: x : 4912346

■ When the output data is “preset No.” or “output No.”

- When the first data is read
Normal data (Matching preset No. and output No. are sent.)
- When the second data is read
In the case of OK: “400” is sent.
In the case of NG: “401” is sent.

7.2.6 Output data when the serial No. check function is used

When the serial No. check function is used, the output data is as follows.

■ When the output data is “bar code data” or “reference data”

The readout bar code data is sent.

■ When the output data is “preset No.” or “output No.”

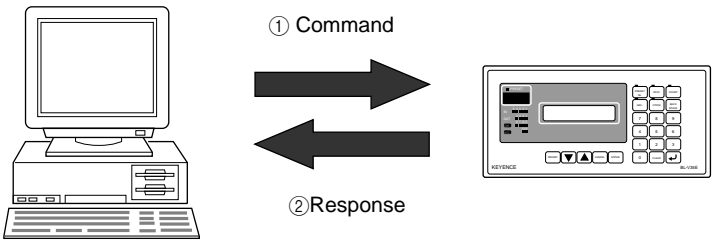
- In the case of OK: “001” is sent.
- In the case of NG: “000” is sent.

7.3 Details about Command Communication

This section describes command communication in the BL-V35E.

7.3.1 Command communication format

Command communication is performed as follows.



1. Send a command from the personal computer to the BL-V35E.
Follow the format shown in this manual when you send the command with parameters. No space is required between the command and the parameters.
2. After receiving the command, the BL-V35E sends back a response.
 - When the received command is to write data to the BL-V35E or change a setting, the BL-V35E sends back "OK [CR]".
 - When the received command is to read data or a setting from the BL-V35E, the BL-V35E sends back the contents of the command.
 - If the command cannot be processed, the BL-V35E sends back "NG [CR]".
 - While the [PRESET No.], [DATA], [COUNT] or [OPTION] key is being used, the BL-V35E sends back "BUSY [CR]" and the command is not executed.

Note 1: "[LF]" can be added to the end of a series of commands. However, "[LF]" is not added in a response.

Note 2: When "[ESC]" is added to the head of a sent command, the receive buffer of the BL-V35E is cleared by the "[ESC]". If unnecessary characters are being stored in the BL-V35E's receive buffer due to abnormal character conversion during communication, add "[ESC]" to a command to be sent.

7.3.2 Command list

The following commands are available in the BL-V35E.

Manipulation of preset data
These commands save and read the preset data.

- **Saving, changing and clearing the preset data**
- Send command : PSETmmm#nnn...[CR]
 mmm = 001 to 399: Preset No.
 nnn...= Preset data (up to 32 characters)
- Response : OK[CR] NG[CR] BUSY[CR]
- Description : When "nnn..." is omitted (PSETmmm#[CR]), the preset data for preset No. mmm is cleared.

■ Reading the preset data

Send command : PREDmmm[CR]
 mmm = 001 to 399: Preset No.
 Response : nnn...[CR]
 nnn...= Preset data (up to 32 characters)
 Description : When preset data is not saved, "(empty) [CR]" is sent back.

Manipulation of reference data

These commands save and read the reference data.
--

■ Saving, changing and clearing the reference data

Send command : OSETmmm#nnn...[CR]
 mmm = 001 to 399: Preset No.
 nnn...= Reference data (up to 32 characters)
 Response : OK[CR] NG[CR] BUSY[CR]
 Description : When "nnn..." is omitted (OSETmmm#[CR]), the reference data for preset No. mmm is cleared.

■ Reading the reference data

Send command : OREDmmm[CR]
 mmm = 001 to 399: Preset No.
 Response : nnn...[CR]
 nnn...= Reference data (up to 32 characters)
 Description : When the reference data is not saved, "(empty) [CR]" is sent back.

Parallel output setting

These commands set and read an output No. corresponding to a preset No.

■ Parallel output setting

Send command : WOGPmmm#nnn[CR]
 mmm = 000 to 999: Preset No.
 nnn = 000 to 399: Output No.
 999: NG output
 Response : OK[CR] NG[CR] BUSY[CR]

■ Reading the parallel output setting

Send command : ROGPmmm[CR]
 mmm = 000 to 999: Preset No.
 Response : nnnCR]
 nnn = 000 to 399: Output No.
 999: NG output

Manipulation of the counter

These commands read and write a counter value for a specified preset No.
--

■ Writing the counter

Send command : WRCTmmm#nnnnnn[CR]
 mmm = 000 to 999: Preset No.
 nnnnnn = 000000 to 999999: Counter value
 Response : OK[CR] NG[CR] BUSY[CR]

■ Reading the counter

Send command : RDCTmmm[CR]
 mmm = 000 to 999: Preset No.
 Response : nnnnnn[CR]
 nnnnnn = 000000 to 999999: Counter value

These commands change the operation of the BL-V35E and read the operation status.

Send command	: SMDP[CR]
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: When the serial No. check function is used, this command functions in the same way as the [PRESET] key (resets the serial No. data).

Send command	: SMDR[CR]
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: When the serial No. check function is used, this command functions in the same way as the [CANCEL] key (returns to the start value of the serial No. data).

Send command	: SNUMmmm[CR] mmm = 000 to 399: Preset No.
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: When the preset-active function is used, a preset No. can be selected.

Response command : RMOD[CR]
Response : PRE[CR] RUN[CR]
PRE: Preset mode
RUN: RUN mode

Send command	: RNUM[CR]
Response	: mmm[CR]
	mmm = 000 to 399: Preset No.
Description	: When the preset-active function is used, a selected preset No. can be read.

These commands initialize and software-reset the settings in the BL-V35E.

Send command : DFLT[CR]
Response : OK[CR] NG[CR] BUSY[CR]

```
Send command : DFLP[CR]
Response    : OK[CR] NG[CR] BUSY[CR]
```

Send command : DELO[CR]
Response : OK[CR] NG[CR] BUSY[CR]

Send command : DELC[CR]
Response : OK[CR] NG[CR] BUSY[CR]

■ Initializing the parallel output setting

Send command : DELG[CR]
Response : OK[CR] NG[CR] BUSY[CR]

■ Software reset

```
Send command : DLER[CR]
Response    : OK[CR] NG[CR]
```

Setting the send format
These commands allow you to set the desired send format.

■ Setting the send format

< Setting of the header >

Send command	: WDC1mnnn...[CR]
	m = 1 to 8: Number of characters in the header
	nnn...= Header (up to 8 characters)
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: Use ASCII codes to specify the characters to be set.

< Setting of the terminator >

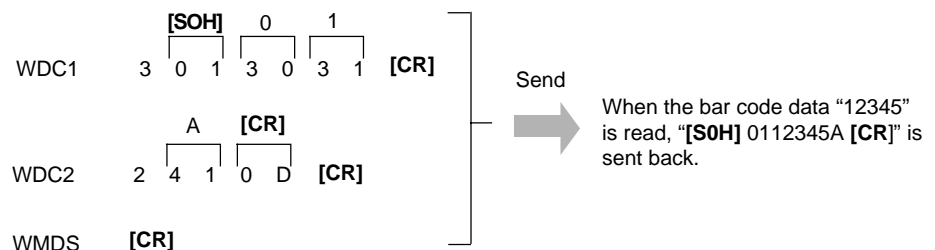
Send command	: WDC2mnnn...[CR]
	m = 1 to 8: Number of characters in the terminator
	nnn...= Terminator (up to 8 characters)
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: Use ASCII codes to specify the characters to be set.

■ Setting the setting function for the send format

Send command	: WMDS[CR]
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: After this command has been sent, the header and terminator can be set.

Example

When setting the format “[S0H] 01 [Bar code data] A [CR]”



■ Resetting the setting function for the send format

Send command	: WMDN[CR]
Response	: OK[CR] NG[CR] BUSY[CR]
Description	: When this command is sent, the setting function for the header and terminator is reset.

■ Reading the setting of the send format

< Setting of the header >

Send command : RDC1[CR]
 Response : mnnn...[CR]
 m = 1 to 8: Number of characters in the header
 nnn...= Header (up to 8 characters)

< Setting of the terminator >

Send command : RDC2[CR]
Response : mnnn...[CR]
m = 1 to 8: Number of characters in the terminator
nnn...= Terminator (up to 8 characters)

LCD display control
This command displays characters on the LCD display.

Send command : SLCD[CR]
nnn...= Characters to be displayed
(up to 32 characters)
Response : OK[CR] NG[CR] BUSY[CR]
Description : Even while the characters specified by this command are displayed, the displayed contents will be switched when the status changes (by reading a bar code, etc.).

Example

When displaying “ ” on the LCD display
Send “SLCD [CR]”.

Dummy bar code input
This command executes a dummy bar code input.

Send command : BCR#nnn...[CR]
nnn...= Bar code data (up to 32 characters)
Response : Not given
Description : This command effects the operation performed when the readout data is sent from a bar code reader during serial communication. For this data, verification with the preset data and parallel output can be performed.

Sending data to serial port 2
This command sends data to serial port 2.

Send command : SOUTnnn...[CR]
nnn...= Data (command) to be sent to serial port 2
Response : Not given
Description : This command can send a command to a bar code reader connected to serial port 2. However, a response from the bar code reader to the sent command is processed as the data read by the bar code reader.

Release of parallel inputs and outputs to the outside
These commands let the parallel interface be used by an external unit.

When parallel inputs and outputs are released to the outside, parallel inputs and outputs of the BL-V35E can be used as external inputs and outputs of a personal computer. After releasing parallel inputs and outputs to the outside, control them using parallel I/O direct control commands (⇒ See p. 109).

■ Releasing parallel inputs to the outside

Send command : WINMmmmm[CR]
m=0: Does not release a parallel input to the outside.
1: Releases a parallel input to the outside.
Response : OK[CR] NG[CR] BUSY[CR]
Description : The parallel IN inputs are handled in the order of “IN5, IN4, IN3, IN2, IN1”.

■ Releasing parallel outputs to the outside

Send command : WOTMmmmmmmmmmm[CR]

$m=0$: Does not release a parallel output to the outside.

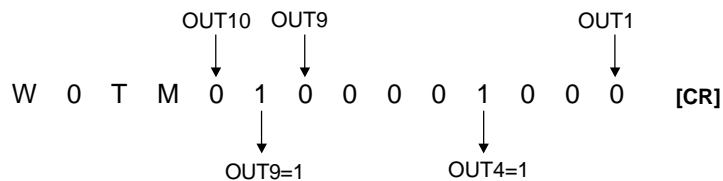
1: Releases a parallel output to the outside.

Response : OK[CR] NG[CR] BUSY[CR]

Description	: The parallel outputs are handled in the order of “OUT10, OUT9, OUT8, OUT7, OUT6, OUT5, OUT4, OUT3, OUT2, OUT1”.
-------------	---

Example

When releasing OUT9 and OUT4 to the outside



Send the following command.

■ Reading the parallel input status

Send command : RINM[CR]

Response : mmmmm[CR]

$m=0$: Not released to the outside.

1: Released to the outside.

Description	: The parallel inputs are handled in the order of “IN5, IN4, IN3, IN2, IN1”.
-------------	--

■ Reading the parallel output status

Send command : ROTM[CR]

Response : mmmmmmmmmm[CR]

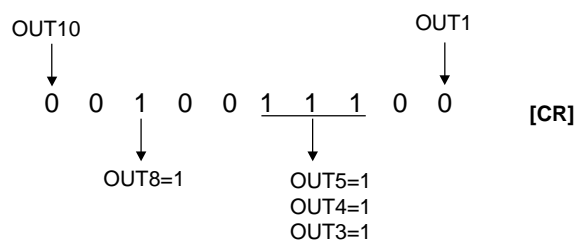
$m=0$: Not released to the outside.

1: Released to the outside.

Description	: The parallel outputs are handled in the order of “OUT10, OUT9, OUT8, OUT7, OUT6, OUT5, OUT4, OUT3, OUT2, OUT1”.
-------------	---

Example

When “0010011100 [CR]” is sent back



It indicates that OUT8 and OUT5 to OUT3 are released to the outside.

Direct control of parallel inputs and outputs
These commands directly control inputs and outputs of the parallel interface.

By using the following commands, parallel inputs and outputs in the BL-V35E can be directly controlled.

- **Controlling parallel inputs directly**

Send command : RIND[CR]

Response : mmmmm[CR]

Response	: 0000000000000000
Description	: The parallel inputs are handled in the order of "IN5, IN4, IN3, IN2, IN1".

■ Controlling parallel outputs directly

Send command : SOTDmmmmmmmmmm[CR]
 m=0: OFF
 1: ON
Response : OK[CR] NG[CR] BUSY[CR]
Description : The parallel outputs are handled in the order of "OUT10,
OUT9, OUT8, OUT7, OUT6, OUT5, OUT4, OUT3, OUT2,
OUT1".

Example

- When turning on and off OUT10 of the BL-V35E from a personal computer
- To release OUT10 to the outside, send "WOTM1000000000 [CR]".
 - To turn on OUT10 directly, send "SOTD1000000000 [CR]". To turn off OUT10 directly, send "SOTD0000000000 [CR]".

■ Reading the output result of parallel outputs

Send command : ROTD[CR]
Response : mmmmmmmmmmm[CR]
 m=0: OFF
 1: ON
Description : This command reads the parallel output status without
regard to whether or not it is being released to the outside.
The parallel outputs are handled in the order of "OUT10,
OUT9, OUT8, OUT7, OUT6, OUT5, OUT4, OUT3, OUT2,
OUT1".

Chapter 8

PLC Link

This chapter describes the operating procedure and setting procedure used when the BL-V35E is used in the PLC link.

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8.1 PLC Link

This section provides an overview of the PLC link.

8.1.1 PLC link

Using the PLC link, the data read by a bar code reader connected to serial port 2 of the BL-V35E can be directly written to the internal memory of a programmable controller (PLC) connected to serial port 1.

Because the BL-V35E handles the memory of the PLC directly, communication programs are not required in the PLC and the program creation process can be reduced.

While the BL-V35E is used in the PLC link, the following restrictions are imposed compared to when serial communication is performed using a computer.

- Because the PLC cannot send commands to the BL-V35E, neither preset data nor reference data can be saved. However, the read control address is provided to start and end reading by a connected bar code reader.
- The test mode cannot be started up in a bar code reader connected to serial port 2.

Note: The read control address is available only when a BL series bar code reader is connected. When any other bar code reader (manufactured by KEYENCE or another company) is connected, the read control address is not available but other PLC link control is available.

8.1.2 List of available PLC units

The BL-V35E can be linked to any of the following PLC units.

KEYENCE KV series	(CPU built-in port) KV-10/16/24/40/80, KV-300, Visual KV Series (Personal computer link unit) KV-L2
Mitsubishi Electric Corporation MELSEC-A series	(CPU built-in port) A2CCPUC24, A2CCPUC24-PRF (Computer link unit) AJ71C24, AJ71C24-S□, AJ71UC24, AOJ2-C214-S1, A1SJ71(U)C24-R2/PRF
OMRON SYSMAC-C series	(CPU built-in port) C20H/28H/40H/60H, C200HS(CPU21/23/31/33), C200HE(CPU42), C200HG(CPU43/63), C200HX(CPU44/64) (Host link unit) C200H-LK201(-V1), C500-LK203, C500-LK201-V1, C120-LK201-V1 (Communication board) C200HW-COM02/COM04/COM05/COM06
OMRON SYSMAC-CQM1 series	(CPU built-in port) CQM1(CPU21/41/42/43/44)
OMRON SYSMAC-CV series	(CPU built-in port) CV500, CV1000, CV-M1 (Host link unit) CV500-LK201

8.1.3 Available devices

The list below shows PLC devices supported by the BL-V35E.

In the MELSEC-A, either data register or file register should be selected.

In the MELSEC-A and the SYSMAC-A, the available range may be narrower in some models. For details, refer to the PLC's Instruction Manual.

PLC	Device name	Available range
KV-10/16	Data memory	DM0000 to DM0999
KV-24/40/80, Visual KV	Data memory	DM0000 to DM1999
KV-300	Data memory	DM0000 to DM8999
MELSEC-A	Data register	D0000 to D8191
	File register	R0000 to R8191
SYSMAC-C	Data memory	DM0000 to DM6143

In the MELSEC-A, extended file registers are also supported.

When the block No. is set in communication set mode for serial port 1 in the BL-V35E, the specified extended file register can be used.

- When the block No. is set to "0", extended file registers of the block Nos. specified by a PLC program are used.
- If the block No. is not set (in the setting in the BL-V35E or a PLC program), file registers inside the CPU are used.

8.2 Setting

This section describes the settings for the BL-V35E and the PLC.

8.2.1 Settings in the BL-V35E

In the set mode of the BL-V35E, set serial port 1 as follows. For differences in the settings due to the link unit and PLC type, refer to “Settings in the PLC” on the next page.

Set the following in communication set mode for serial port 1.

- Align the settings of “Port 1 Baud” and “Port 1 Form” (data length, parity and stop bit length) to those in the PLC.
- Set “Connect Unit” to “PLC Link”.
- Select the PLC model to be connected.
When using the KV-L2 in link mode, select “SYSMAC-C”.
- Set the PLC unit No./station No.
- Set “Support Unit” to “Data Register” or “File Register”. (This parameter can be set only when the MELSEC-A is used.)
- Set “DM Address”.
- Set “PLC Tim Area”.

Note: Never change the setting of the timing ON/OFF command (LON/LOFF) in a connected BL series bar code reader. If it is changed, the read timing cannot be controlled in the PLC link.

8.2.2 Settings in the PLC

Set the following according to the PLC unit or link unit to be used (⇒ See p. 88).

■ Settings in the MELSEC-A Series

- Align the baud rate, data length, parity and stop bit length to those in the BL-V35E.
- Align the station No. to that in the BL-V35E.
- Set the mode to the protocol mode of format 4.
- Set the main channel to “RS-232C”.
- Select “with sum check”.
- Select “write enabled in RUN”.
- Set “computer link/multi-drop selection” to “computer link” (in the AJ71UC24 only).

■ Settings in the SYSMAC-C Series

- Align the baud rate, data length, parity and stop bit length to those in the BL-V35E.
- Align the unit No. to that in the BL-V35E.
- Set the command level to “Levels 1, 2 and 3 are valid.”
- Set the “1:1/1:N” procedure to “1:N”.
- Set the I/O port selection to “RS-232C”.
- Set the synchronization setting to “internal”.
- Set absence/presence of 5 V supply to “5 V not supplied”.
- Set the CTS selection to “0 V (always ON)”.

* Some of the settings such as “I/O port selection”, “synchronization setting”, “absence/presence of 5 V supply” and “CTS selection” may not be available in some link units.

■ Settings in the KV series serial port

In the KV series serial port, the communication condition is fixed as follows.

- Baud rate: 9600 bit/s
- Data length: 8 bits
- Parity: Even
- Stop bit length: 1 bit

Align the settings in the BL-V35E to those above. Set “Connected PLC” in the BL-V35E to “KEYENCE KV”. No other settings are required.

■ Settings in the KV-L2/KV mode

- Set the communication mode in the KV-L2 to “KV mode”. Set “Connected PLC” in the BL-V35E to “KEYENCE KV”.
- In the KV mode, the communication condition is fixed as follows.
 - Baud rate: 9600 bit/s
 - Data length: 8 bits
 - Parity: Even
 - Stop bit length: 1 bitAlign the settings in the BL-V35E to those above.
- Set the station No. to “00”.
- When using port 2 of the KV-L2, set the port 2 selector switch to “RS-232C”.

■ Settings in the KV-L2/link mode

- Set the communication mode in the KV-L2 to “link mode”. Set “Connected PLC” in the BL-V35E to “SYSMAC-C”.
- Align the baud rate, data length, parity and stop bit length to those in the BL-V35E.
- Align the unit No. to that in the BL-V35E.
- When using port 2 of the KV-L2, set the port 2 selector switch to “RS-232C”.

8.3 Assigning Devices

This section describes assignment of devices.

8.3.1 Data write area

The data area used to control the BL-V35E is provided in the memory area (D area or DM area) inside the PLC. When the DM head address is set in communication set mode for serial port 1 in the BL-V35E, the data write head area is automatically assigned from that area (⇒ See p. 88).

■ **Data write head area**

The area “set head address + 00” specifies the area in which data is to be written. The area “set head address + 01/02” is used to give a read timing from the PLC to a BL series bar code unit connected to serial port 2 of the BL-V35E. This area is not assigned when “PLC Tim Area” is set to “OFF” in the BL-V35E. (In this case, this area can be used for another purpose.)

Address	Description	Reference page
+00	Data write head address	p. 118
+01	Read timing area	p. 117
+02	Read timing response area	p. 117
+03 to +04	Reservation area	—

■ **Data write destination area**

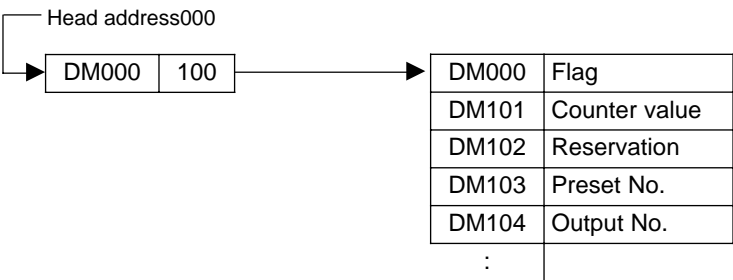
In this area, the bar code data read by the BL-V35E is written from the data write head address set by address “+00” (when the data write head address is set to “A”).

Address	Description	Reference page
A + 00	Data write flag area	p. 118
A + 01	Counter value	p. 119
A + 02	Reservation	
A + 03	Preset No.	
A + 04	Output No.	
A + 05	Number of digits	p. 119
A + 06	1st digit of bar code data	
A + 07	2nd digit of bar code data	
A + 08	3rd digit of bar code data	
:	:	
A + 37	32nd digit of bar code data	

8.3.2 Detailed description on assignment

Address	+00
Description	Data write head address

This area specifies the head address of the area in which the readout data is written. (Write it as binary data.)



Address	+01 to +02
Description	Read timing/timing input response area

This area is used to give a read timing to a BL series bar code reader connected to serial port 2.

Never use this area when a photoelectric sensor, etc. is connected to the BL-V35E to provide a timing input.

This area is not assigned when "PLC Tim Area" is set to "OFF" in the BL-V35E. (In this case, this area can be used for another purpose.)

Note: The read control address is available only when a BL series bar code reader is connected. While any other bar code reader (manufactured by KEYENCE or another company) is connected, the read control address is not available but other PLC link control is available.

The read timing area (address "+01") is used to start reading (turn on the laser) in a BL series bar code reader.

The read timing input response area (address "+02") is used to confirm whether the address "+01" is normally transferred to the BL series bar code reader. When the BL series confirms the address "+01" (that is, when processing is completed), the address "+02" becomes "1".

Address	Description	Reference page
+01	Read timing area	1: Timing ON 0: Timing OFF
+02	Timing input response area	1: Processing completed 0: Processing not completed

Operating procedure

- Set the address "+02" to "0".
- Set the address "+01" to "1" when causing a BL series bar code reader connected to the BL-V35E to start reading (that is, when setting the reading timing to ON).
- When the BL-V35E has recognized a change in the address "+01", the address "+02" becomes "1" and reading starts.
- When the address "+02" becomes "1", it means that the timing ON has functioned normally in the BL-V35E.
If the address "+02" does not become "0", it means that the BL-V35E has not recognized the address "+01" yet. Never perform processing that changes the address "+01" to "0" immediately.
Ensure that the address "+02" has changed to "1", and then return it to "0".
- When a bar code is read, new data is written to addresses "A+05" to "A+37".
- To set the read timing to OFF, set the address "+01" to "0".
- When the BL-V35E has recognized a change in the address "+01", the address "+02" becomes "1" and the read timing is turned OFF.
- When the address "+02" becomes "1", it means that the timing OFF has functioned normally in the BL-V35E.
If the address "+02" does not become "0", it means that the BL-V35E has not recognized the address "+01" yet. Never perform processing that changes the address "+01" to "0" immediately.
Ensure that the address "+02" has changed to "1", and then return it to "0".
- When a read error has occurred, a read error code (ERROR) is written to addresses "A+05" to "A+37".

Note: The address “+02” monitors whether or not the BL-V35E has recognized the address “+01” normally. When the read timing is set to ON and OFF at high speed using the address “+01”, the BL-V35E may not recognize a change in the address “+01” and the read timing may not turn ON or OFF. In such a case, make a program that forces the address “+02” to confirm whether the BL-V35E has recognized the address “+01”.

When the above recognition error does not occur, monitoring by the address “+02” (1, 3, 4, 7 and 8 above) is not required.

Address	A+00 (“A” is the data write head address specified by “+00”)
Description	Data write flag area

This area is used as a flag to indicate that bar code data has been written. This area can be used in the following two methods.

■ **Real-time processing**

- Write a number “1” or “0” here.
- While a bar code reader connected to the BL-V35E is reading a bar code and the BL-V35E is writing the data to the PLC, “1” is set.
- When the data has been written, the flag becomes “0” to indicate that new data has been written to addresses “A+05” to “A+37”.
In other words, the data is valid while the A+00 address is “0”.
- If the timing at which a bar code reader connected to the BL-V35E reads a bar code is faster than communication in the PLC link, unwritten data is stored in the send buffer of the BL-V35E (See “Capacity of the send buffer” p. 102). If the data to be stored exceeds the capacity of the send buffer, a buffer overflow error occurs and an error message is displayed.

Use example 1:

Normally set the address “A+00” to “0”.
While data is being written, the address “A+00” is “1”. When it becomes “0” (at the rising edge), process the data written in addresses “A+05” to “A+37” using a program.

Use example 2:

Normally set the address “A+00” to “1”.
When data has been written, the address “A+00” becomes “0”. Process the data written in addresses “A+05” to “A+37” using a program.
As soon as processing is completed, set the address “A+00” to “1”. Using this setting, the time at which the address “A+00” becomes “0” can be used as the timing point at which new data is written.

Note: When bar codes are read consecutively, new data may be overwritten during real-time processing before processing of data by a program inside the PLC is completed. In this case, use sequence processing.

■ **Sequence processing**

- Write a number “2” or “3” here.
- While the address “A+00” is “2”, new data is written.
- When the data has been written, the flag becomes “3” to indicate that new data has been written to addresses “A+05” to “A+37”.
- As soon as processing by a program is completed, set the address “A+00” to “2”. If it is not set to “2”, new data cannot be written.
- Unwritten data is stored in the send buffer of the BL-V35E. If the data to be stored exceeds the capacity of the send buffer, a buffer overflow error occurs and an error message is displayed.

Address	A+01 to A+04
Description	Diversified data area

This area is used to write a counter value, matched preset No. and corresponding output No. when the counter function (See p. 42) is used. (If the counter function is not used, the counter value is not written.)

Address	Description	Reference page
A + 01	Counter value	0 to 65535 (binary) * Data larger than "65536" cannot be written.
A + 02	Reservation area	—
A + 03	Preset No.	1 to 399 (binary): Preset No. 0: Verification NG
A + 04	Output No.	1 to 399 (binary): Output No. 999 (binary): NG output

Address	A+05 to A+37
Description	Data (number of digits and data) write area

- In the address "A+05", the number of digits of data is written.
- In addresses "A+06" to "A+37", the readout bar code data is written in ASCII codes (2-digit hexadecimal) one digit at a time.
- If a read error has occurred in a connected bar code reader, a read error code (ERROR in a BL series bar code reader) is written.

Address	Description	Reference page
A + 05	Number of digits of data (1 to 32)	1 to 32 (binary): Number of digits
A + 06	1st digit of readout data	One ASCII code
A + 07	2nd digit of readout data	One ASCII code
:	:	:
A + 37	32nd digit of readout data	One ASCII code

Note: While the BL-V35E is set to monitor mode, data is not written.

Example 1

When a bar code reader has read "KE12"

A + 05	4	← Number of digits
A + 06	\$004B	← Written in ASCII codes (hexadecimal)
A + 07	\$0045	
A + 08	\$0031	
A + 09	\$0032	

Example 2

When a read error (ERROR) has occurred in a BL series bar code reader

A + 05	5	← Number of digits
A + 06	\$004B	← Written in ASCII codes (hexadecimal)
A + 07	\$0052	
A + 08	\$0052	
A + 09	\$004F	
A + 10	\$0052	

8.3.3 Details of assignment when the step verification function is used

When the step verification function is used, addresses are assigned as follows.

- When the first data is read
Same as in normal operation
- When the second data is read

Address	Description	Reference page
A + 03	Preset No.	400 (binary): OK 401 (binary): NG
A + 04	Output No.	400 (binary): OK 401 (binary): NG

Other addresses are equivalent to those in normal operation.

8.3.4 Details of assignment when the serial No. check function is used

When the serial No. check function is used, addresses are assigned as follows.

Address	Description	Reference page
A + 03	Preset No.	1: OK 0: NG
A + 04	Output No.	1: OK 0: NG

Other addresses are equivalent to those in normal operation.

8.4 PLC Link Error

When a communication error has occurred in the PLC link, communication is aborted.

8.4.1 Troubleshooting of PLC link error

When a communication error occurs, check the following items.

- Check whether the baud rate, data length, parity and stop bit length are the same in the BL-V35E and the PLC (link unit).
- Check whether “Connect Unit” in the settings for serial port 1 is set to “PLC Link”.
- Check whether the settings in the PLC are correct (⇒ See p. 114).
- Check whether the cable wiring is correct, whether disconnection is not being detected and whether the cable is connected to serial port 1 of the BL-V35E.
⇒ See pp. 28 to 30, and confirm the wiring using testers.
- Check whether the device range has exceeded the allowable range.
If the area occupied by the BL-V35E set by the head address is not present in the PLC, communication is disabled.
- Check whether the status of the link unit is normal.

To restart the BL-V35E, press the **[CLEAR]** key.

For the settings in the link unit, refer to the link unit's Instruction Manual.

8.5 Communication Time

This section describes communication time in the BL-V35E.

■ Communication time required to send data

The table below shows the time required to send data from the BL-V35E to the PLC.

The time shown below may change depending on the scan time and PLC type.

- When the RS-232C baud rate is set to 9600 bits/s

Number of digits of data	MELSEC-A	SYSMAC-C	KV (KV mode)
10	Approx. 390 ms	Approx. 410 ms	Approx. 920 ms
20	Approx. 450 ms	Approx. 460 ms	Approx. 1260 ms
32	Approx. 510 ms	Approx. 540 ms	Approx. 1650 ms

■ Communication time required to start reading in the read timing area

When reading by a BL series bar code reader is controlled using the read timing area, provide a timing ON command to the PLC and obtain the communication time between when the command is sent and when it is received by the BL series bar code reader.

- When the RS-232C baud rate is set to 9600 bits/s

MELSEC-A	SYSMAC-C	KV (KV mode)
Approx. 220 ms	Approx. 280 ms	Approx. 210 ms

Chapter 9

Printout Function

This chapter describes how to connect a printer to the BL-V35E, print the readout bar code data and set the printing parameters.

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9.1 Overview of the Printout Function

This section provides an overview of the printout function in the BL-V35E.

9.1.1 Overview of the printout function

When the serial printer DPU-414 manufactured by SEIKO Instruments Inc. is connected to the BL-V35E, preset data, output Nos. and readout data can be printed out. Automatic printout and manual printout are available as printout methods.

■ Automatic printout function

While the serial printer DPU-414 is connected to serial port 1, bar code data can be automatically printed out as soon as the bar code data is read (or the **[ENTER]** key is pressed).

Note: When the counter function is used, the counter value is also printed out.
When the data reference function is used, the reference data is also printed out.

■ Manual printout function

Data can be printed out according to the specified key operation. The following two types are available.

- **One data printout**
One readout data currently displayed on the LCD display is printed out.
- **All data printout**
All currently saved preset data is printed out.

9.1.2 Connection and setting during printout

Before printing, connect and set up the BL-V35E and a printer as described below.

■ Connection

Connect serial port 1 of the BL-V35E to the serial connector of the printer DPU-414. For the connection cable, see p. 27.

■ Setting

- **BL-V35E**
In communication set mode for serial port 1 (⇒ See p.85 and 89), change the settings as follows.
 - Align the baud rate and data format (data length, parity and stop bit length) with the printer's settings.
 - Set "Connect Unit" to "Printer".
 - When using the automatic printout function, set the automatic printout timing and the automatic printout format.

Note: If "Connect Unit" is not set to "Printer", "Auto Print (automatic printout timing)" and "Auto Print= (automatic printout format)" are not displayed.

- **Printer (DPU-414)**

Set the software DIP switch of the printer DPU-414 as follows. For the setting procedure, refer to the DPU-414 Instruction Manual.

Align the baud rate and data format (data length and parity) with the BL-V35E's settings. (9600, 7, E, 1 shown below.)

[DIP SW setting mode]

Dip SW-1

- 1 (OFF) : Input = Serial
- 2 (ON) : Printing Speed = High
- 3 (ON) : Auto Loadings = ON
- 4 (OFF) : Auto LF = OFF
- 5 (ON) : Setting Command = Enable
- 6 (OFF) : Printing
- 7 (ON) : Density
- 8 (ON) : = 100%

Dip SW-2

- 1 (ON) : Printing Columns = 40
- 2 (ON) : User Font Back-up = ON
- 3 (ON) : Character Select = Normal
- 4 (ON) : Zero = Normal
- 5 (ON) : International
- 6 (ON) : Character
- 7 (ON) : Set
- 8 (OFF) : = U.S.A.

Dip SW-3

- 1 (OFF) : Data Length = 7 bits
- 2 (OFF) : Parity Setting = Yes
- 3 (OFF) : Parity Condition = Even
- 4 (ON) : Busy Control = H/W Busy
- 5 (OFF) : Baud
- 6 (ON) : Rate
- 7 (ON) : Select
- 8 (ON) : = 9600 bps

Note: The stop bit length of the printer DPU-414 is fixed to "1".

9.2 Automatic Printout Function

By using the automatic printout function, data can be printed out one at a time when a bar code is read in RUN mode or the **[ENTER]** key is pressed.

9.2.1 Setting the operation of the automatic printout function

When the automatic printout function is used, the printer performs the following operation. Perform each setting in communication set mode for serial port 1 (⇒ See p. 89).

■ **Automatic printout timing**

Automatic printout can be performed at the following four timing intervals.

- OFF : Disables the automatic printout function.
- OK Only : Prints out the data every time OK is output.
- NG Only : Prints out the data every time NG is output.
- ON : Prints out the data every time OK or NG is output.

■ **Automatic printout format**

The following three formats are available for automatic printout.

- No. + Data : Prints out the preset No., the output No. and the readout data.
- No. Only : Prints out the preset No. and the output No.
- Data Only : Prints out the readout data.

Output examples

- In the case of “No. + Data” format

	Preset No.
No.002(001)	Output No.
KEYENCE002	Readout data

- In the case of “No. + Data” format

* When the reference data is set and the counter function is set to ON

No.003 (003)	Count= 21	Counter value
KEYENCE003		Reference data

- In the case of “No. Only” format

No.004 (004)

- In the case of “Data Only” format

KEYENCE007

9.2.2 Automatic printout when the step verification function is used

When the step verification function is used, the printer performs the following operation.

■ Automatic printout timing

- Available timing intervals are equivalent to those available in the normal RUN mode.
- Data is printed out when reading of the second data is completed.

■ Automatic printout format

Output examples

- In the case of “No. + Data” format
Preset No. + Output No. + Readout data (reference data)

No.001(001)		Preset No. and output No. matched by reading the first data
49401387		First readout data
(Chocolate)		First reference data (only when it is set)
49401387		Second readout data
OK Count = 306		Counter value
-----		Result of verification between the first readout data and the second readout data

Note: When the preset data has been entered in advance, only the first readout data is compared to the preset data. (A parallel output is not given.) Accordingly, the preset No. (output No.), the reference data and the counter value are printed out.

- In the case of “No. Only” format
Preset No. + Output No.

No.001(001)		Preset No. and output No. matched by reading the first data
OK Count = 306		Counter value
-----		Result of verification between the first readout data and the second readout data

- In the case of “Data Only” format
Readout data (reference data)

49401387		First readout data
(Chocolate)		First reference data (only when it is set)
49401387		Second readout data
OK Count = 306		Counter value
-----		Result of verification between the first readout data and the second readout data

9.2.3 Automatic printout when the serial No. check function is used

When the serial No. check function is used, the printer performs the following operation.

■ Automatic printout timing

- Available timing intervals are equivalent to those available in the normal RUN mode.

■ Automatic printout format

Output examples

- In the case of “No. + Data” format
Result of serial No. check + Readout data

OK	Count =	1	Result of serial No. check
000000			Counter value
OK	Count =	2	Readout data
000001			
OK	Count =	3	
000002			
OK	Count =	4	
000003			
NG			
000009			
NG			
000005			
OK	Count =	5	
000004			

- In the case of “No. Only” format
Result of serial No. check

OK	Count =	1	Result of serial No. check
OK	Count =	2	Counter value
OK	Count =	3	
OK	Count =	4	
NG			
NG			
NG			
OK	Count =	5	

- In the case of “Data Only” format
Readout data

000000	Readout data
000001	
000002	
000003	
000005	
000009	
000004	

9.3 Manual Printout Function

By using the manual printout function, data can be printed out according to the specified key operation.

9.3.1 Operation of the manual printout function

■ **Manual printout type**

The following two manual printout types are available.

- **One data printout**
One readout data currently displayed on the LCD display is printed out.
- **All data printout**
All currently saved preset data is printed out.

■ **Manual printout format**

The following six formats are available for manual printout.

- Print One Data : No. + Data: Prints out the preset No., the output No. and the readout data currently displayed.
- Print One Data : No. Only: Prints out the preset No. and the output No. currently displayed.
- Print One Data : Data Only: Prints out only the readout data currently displayed.
- Print All Data : No. + Data: Prints out all preset Nos., all output Nos. and all preset data.
- Print All Data : No. Only : Prints out all preset Nos. and all output Nos.
- Print All Data: Data Only : Prints out all preset data.

Note 1: Even while the step verification function is being used, manual printout is enabled if the preset data has been entered in advance.

Note 2: When the serial No. check function is used, manual printout is disabled.

Output example

In the case of “Print All Data: No. + Data”

No.000 (NG) (preset NG)	Count=	4
No.001 (001) KEYENCE001	Count=	1
No.002 (001) KEYENCE002	Count=	1
No.003 (003) KEYENCE003 (KYENCE BL-V35E)	Count=	21
No.004 (004) KEYENCE004	Count=	2

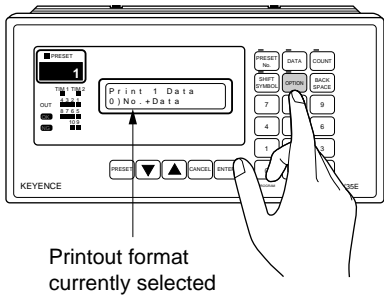
The preset No. 0 indicates that the verification result is NG.

9.3.2 Performing manual printout





Procedure

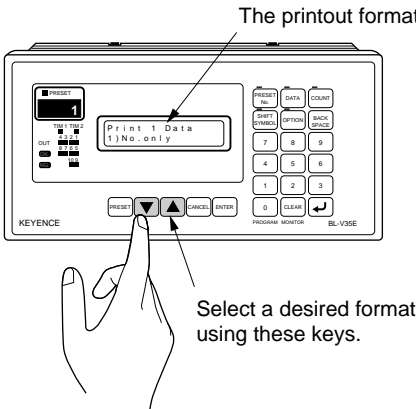
1. Press the [OPTION] key in RUN mode.

The format last selected is displayed, and the LED above the [OPTION] key illuminates.



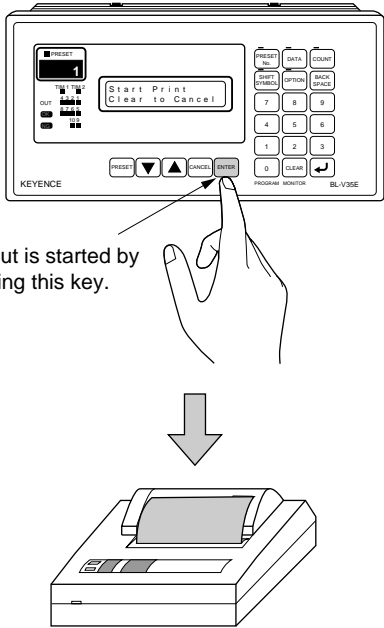
2. Select the format.

When the  or  key is pressed, the printout format is switched. Press and hold the  or  key until a desired format is displayed.

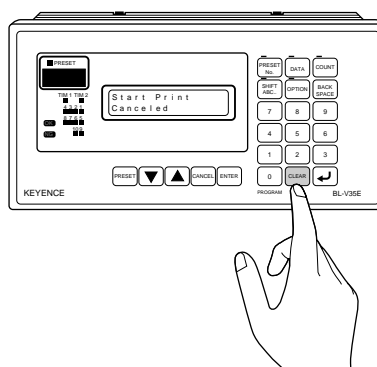


3. Press the [ENTER] key.

Printout is started.



4. To abort printout, press the [CLEAR] key.



Note: The setting contents selected using the [OPTION] key are backed up in the memory. When performing the same printout, press the [OPTION] and [ENTER] keys alternately.

Appendix



The appendix describes the outer dimensions, factory default settings and BL-V35E error screens.

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Appendix 1. Specifications

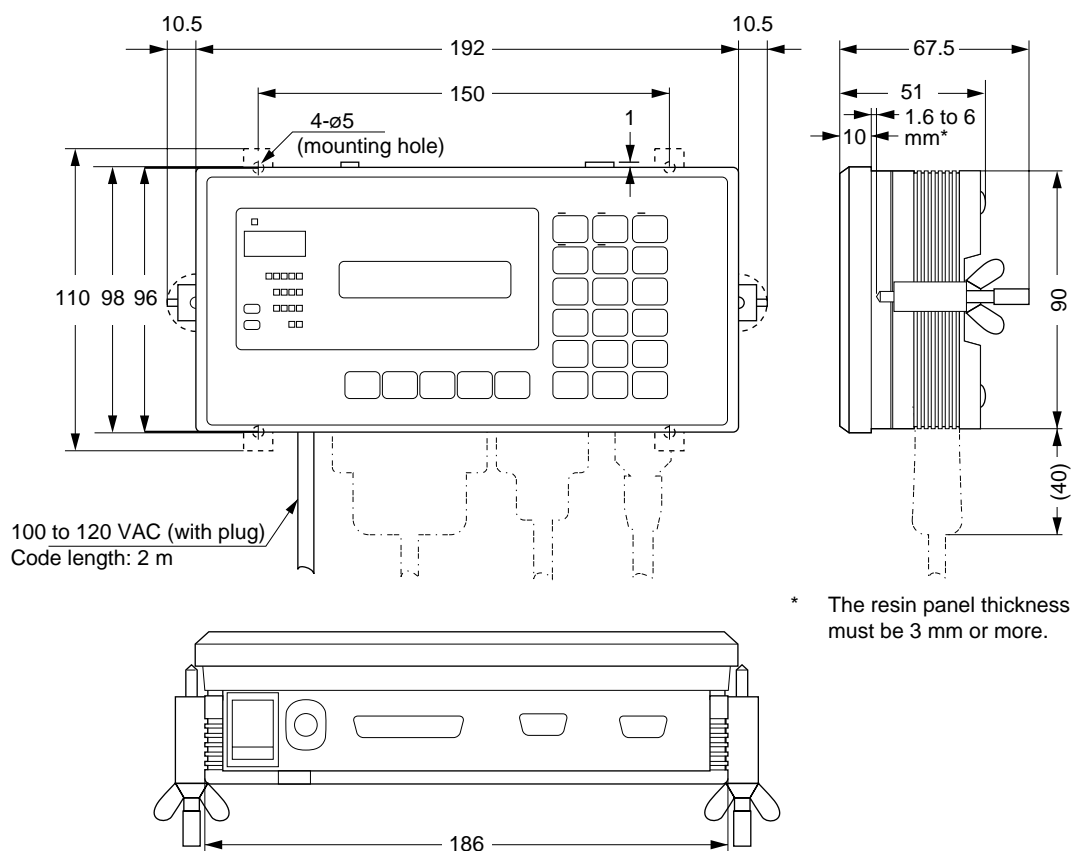
This section provides the specifications of the BL-V35E main unit.

Model		BL-V35E	
Number of saved data presets		399 maximum	
Memory backup		Lithium battery (service life: approx. 10 years at 25°C)	
Parallel interface	Input ¹ : (7 points)	No-voltage input (with/without contact)	
	Output (12 points) • OK output (verification OK) • NG output (verification NG) • OUT1 to OUT10 output (output No.)	Output format	NPN open connector output
		Rated load	30 VDC, 100 mA
		Leak current at OFF	0.1 mA or less
		Residual voltage at ON	Less than 1 V
Serial interface	• Serial port 1 (for connection of external unit ² or bar code reader) • Serial port 2 (dedicated to connection of bar code reader)	Applicable standard	In conformance to EIA RS-232C
		Synchronization method	Start-stop method (full duplex)
		Transmission code	ASCII code
		Baud rate	600, 1200, 2400, 4800, 9600, 19200, 31250 or 38400 bits
		Data bit length	7 or 8 bits
		Parity check	None, odd or even
		Stop bit length	1 or 2 bit
External power supply for bar code reader		5 V ±5%, 750 mA max.	
Environmental resistance	Ambient operating temperature	0 to 50°C	
	Ambient operating humidity	35 to 85%RH	
	Operating atmosphere	Free from dust and corrosive gas	
	Vibration resistance	10 to 55 Hz, double amplitude 1.5 mm, 2 hours in each of X, Y and Z directions	
Rating	Supply voltage	100 to 120 VAC, 50/60 Hz	
	Power consumption	20 VA	
Weight		Approx. 600 g	
Basic functions		The bar code data verifier BL-V35E stores (presets) up to 399 types of bar code data, and compares them to the bar code data read by a bar code reader connected to the BL-V35E. When the readout data matches the preset data, the BL-V35E outputs the output No. assigned to the matching preset data using a bit, binary value or BCD number from the parallel port.	

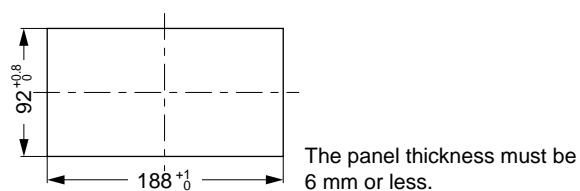
1. There are timing inputs (2 points) to bar code readers connected to serial ports 1 and 2 and inputs (5 points) to effect the operations assigned to the main keys ([PRESET], , , [CANCEL] and [ENTER]).
2. A personal computer, programmable controller (PLC) or printer (DPU-414 manufactured by SEIKO DENSHI KOGYO) can be connected.

Appendix 2. Dimensions

The outline drawing below shows the outer dimensions of the BL-V35E main unit.



Pane cut size



Appendix 3. PLC Link Program Examples

In the programs below, the readout data is written after D105 (DM105). Perform processing according to your application.

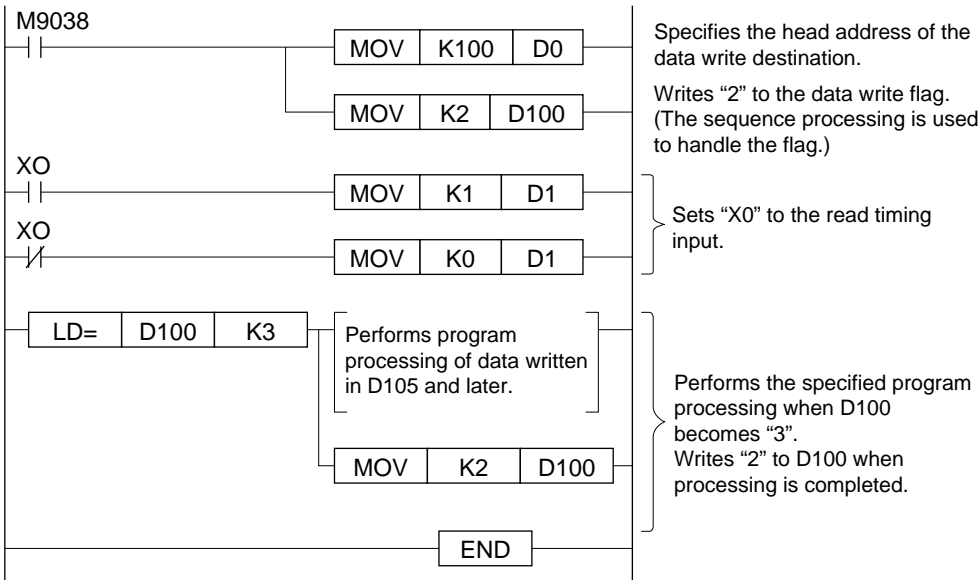
● **Settings in the BL-V35E**

- "PLC Tim Area" is set to "ON".
- "DM Address" is set to "0000".

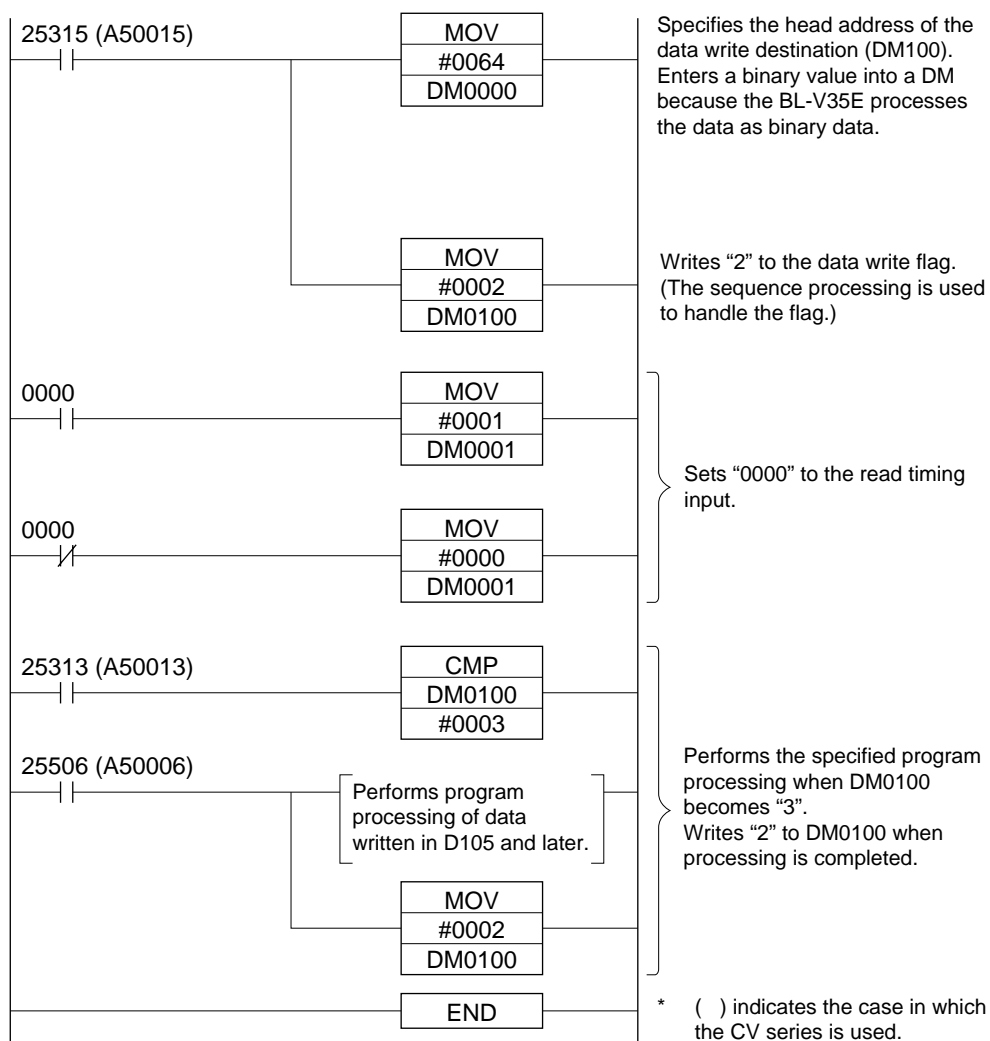
● **Handling of the data write flag: Sequence processing**

In this program example, processing using the "+02 timing input response area" to confirm whether the BL-V35E has recognized the "+01 read timing area" normally is not performed.

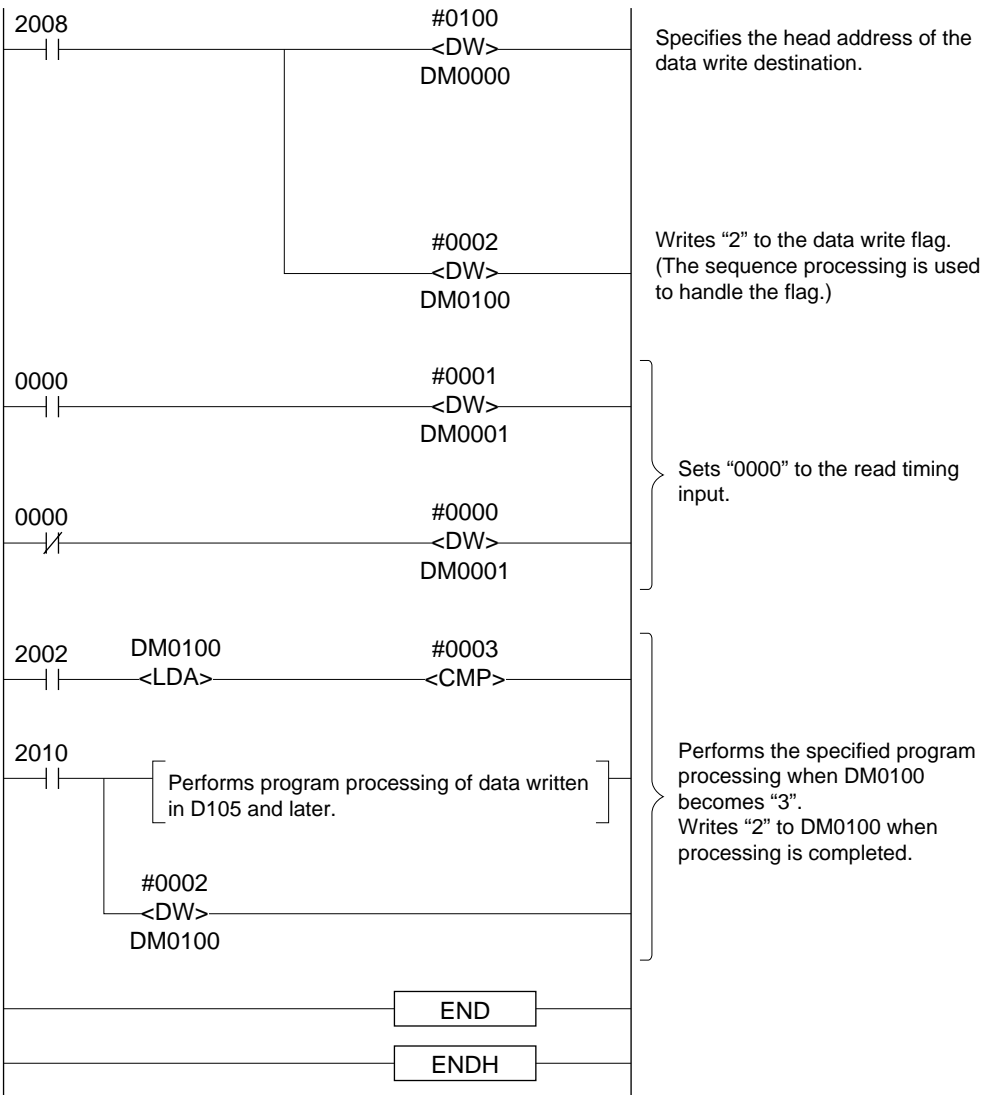
■ **In the case of the MELSEC-A series**



■ In the case of the SYSMAC-C series



■ In the case of the KV series



Appendix 4. Error Display List

This section describes BL-V35E error messages.

- This error occurs when the memory of the main RAM is lost or when incorrect data is saved.

BackUp CHECK err Clear to Init

When the **[CLEAR]** key is pressed, the error status is reset and all settings are initialized to the factory default values.

- This error occurs when the memory of the main RAM is lost or when incorrect data is saved.

Preset CHECK err Clear=AllClear

When the **[CLEAR]** key is pressed, the error status is reset and all settings are initialized to the factory default values.

- This error occurs when the memory of the main RAM is lost or when incorrect data is saved.

Ref Data Err Clear=AllClear

When the **[CLEAR]** key is pressed, the error status is reset and all settings are initialized to the factory default values.

- This error occurs when the send buffer capacity (99 pieces of data) is insufficient for the data to be stored (⇒ See p. 102).

Send Buffer Over Clear to Reset

When the **[CLEAR]** key is pressed, the error status is reset and all data stored in the send buffer is cleared.

- This error occurs when the PLC link is not performed correctly.

PLC Link Error Clear to Reset

When the **[CLEAR]** key is pressed, the error status is reset.

- This error occurs when data with more than 32 digits is received as bar code data.

Bar Code Data 32Byte Over

The error status is reset when correct data with 32 digits or less is received.

- This error occurs when the serial No. target digits are not set correctly.

Verify Serial No Setting Error

After the error message is displayed for a while, the BL-V35E automatically enters set mode.

Note: While “18 NG Output” in the option set mode is set to “1) At Error”, the NG output in the parallel interface turns ON when an error occurs (except when the message “Bar Code Data 32 Byte Over” or “Serial No Digit Setting Error” is displayed).

Appendix 5. ASCII Code Table

The table below shows ASCII codes.

			High-order 4 bits							
Hexadecimal			0	1	2	3	4	5	6	7
Binary			0000	0001	0010	0011	0100	0101	0110	0111
Low-order 4 bits	0	0000		DLE	(SP)	0	@	P	'	p
	1	0001	SOH	DC1	!	1	A	Q	a	q
	2	0010	STX	DC2	”	2	B	R	b	r
	3	0011	ETX	DC3	#	3	C	S	c	s
	4	0100	EOT	NAK	\$	4	D	T	d	t
	5	0101	ENQ	DC4	%	5	E	U	e	u
	6	0110	ACK	SYN	&	6	F	V	f	v
	7	0111	BEL	ETB	’	7	G	W	g	w
	8	1000	BS	CAN	(8	H	X	h	x
	9	1001	HT	EM)	9	I	Y	i	y
	A	1010	LF	SUB	*	:	J	Z	j	z
	B	1011	HM	ESC	+	;	K	[k	{
	C	1100	CL	→	,	<	L	\	l	
	D	1101	CR	←	–	=	M]	M	}
	E	1110	SO	↑	.	>	N	^	n	~
	F	1111	SI	↓	/	?	O	_	o	del

Appendix 6. Setting Parameter List

The table below shows the setting parameters available in the BL-V35E,

■ Communication settings for serial port 1

Port 1 Baud	()bit/s		
Port 1 Form	Data length: 7 or 8	Parity check: n, e or o	Stop bit length: 1 or 2
Connect Unit	<input type="checkbox"/> PC	Send Form	<input type="checkbox"/> No Sending <input type="checkbox"/> stx+[data]+etx <input type="checkbox"/> [data]+CR <input type="checkbox"/> [data]+CRLF <input type="checkbox"/> esc+[data]+CR <input type="checkbox"/> esc+[data]+CRLF
		Send Data	<input type="checkbox"/> Bar Code Data <input type="checkbox"/> Preset No. <input type="checkbox"/> Out No. <input type="checkbox"/> Ref Data
		Protocol	<input type="checkbox"/> No Handshaking <input type="checkbox"/> PASS/RTRY <input type="checkbox"/> ACK/NAK
		RTS/CTS	<input type="checkbox"/> OFF <input type="checkbox"/> ON
		Rcv 1 Timer	<input type="checkbox"/> Infinite ()S
		Enter Key=	<input type="checkbox"/> Out Port 1 <input type="checkbox"/> Out OFF
	<input type="checkbox"/> BL Reader	Send Form	<input type="checkbox"/> stx+[data]+etx <input type="checkbox"/> [data]+CR <input type="checkbox"/> esc+[data]+CR
		Rcv 1 Timer	<input type="checkbox"/> Infinite ()S
	<input type="checkbox"/> PLC Link	Connected PLC	<input type="checkbox"/> MELSEC-A <input type="checkbox"/> SYSMAC-C <input type="checkbox"/> KEYENCE KV
		Station No./PLC Unit No.	()
		Support Unit	<input type="checkbox"/> Data Register <input type="checkbox"/> File Register
		Block No.	()
		DM Address	()OO
		PLC Tim Area	<input type="checkbox"/> OFF <input type="checkbox"/> ON
		Enter Key=	<input type="checkbox"/> Out Port 1 <input type="checkbox"/> Out OFF
	<input type="checkbox"/> Printer	Auto Print	<input type="checkbox"/> OFF <input type="checkbox"/> OK only <input type="checkbox"/> NG only <input type="checkbox"/> ON
		Auto Print=	<input type="checkbox"/> No. + Data <input type="checkbox"/> No. only <input type="checkbox"/> Data Only
	<input type="checkbox"/> Port 2 Direct	Rcv 1 Timer	<input type="checkbox"/> Infinite ()S
		Direct Read	Port 2 Port 1, 2
		Enter Key=	<input type="checkbox"/> Out Port 1 <input type="checkbox"/> Out OFF <input type="checkbox"/> Out Port 2

■ Communication settings for serial port 2

Port 2 Baud	()bit/s
Data Form	Data length: 7 or 8 Parity check: n, e or o Stop bit length: 1 or 2
Receive Form	<input type="checkbox"/> stx+[data]+etx <input type="checkbox"/> [data]+CR <input type="checkbox"/> esc+[data]+CR
Rcv 2 Timer	()S

■ Main settings

Mode Setup	<input type="checkbox"/> Normal	<input type="checkbox"/> Out	<input type="checkbox"/> Bit <input type="checkbox"/> Binary <input type="checkbox"/> BCD	
	<input type="checkbox"/> Active			
	<input type="checkbox"/> Verify Step			
	<input type="checkbox"/> Serial No.	No. Direction	<input type="checkbox"/> Forward <input type="checkbox"/> Reverse	
		Start Digit	()	
		Max Digits	()	
		No. Change	()	
		No. Protect	<input type="checkbox"/> Reset <input type="checkbox"/> Continue <input type="checkbox"/> Repeat	
	Max Preset No.			
	AutoIncrement	<input type="checkbox"/> ON <input type="checkbox"/> OFF		
Counter	<input type="checkbox"/> ON	Counter Mode 1	<input type="checkbox"/> Reset @ OFF <input type="checkbox"/> Hold @ OFF	
		Counter Mode 2	<input type="checkbox"/> Reset @ Preset <input type="checkbox"/> Hold @ Preset	
		Counter Mode 3	<input type="checkbox"/> Reset @ Print <input type="checkbox"/> Hold @ Print	
		<input type="checkbox"/> OFF		

* The parameters "Max Preset No.", "AutoIncrement" and "Counter" are available while "Mode Setup" is not set to "Serial No."

■ Optional settings

Beep	<input type="checkbox"/> ON <input type="checkbox"/> Key Only <input type="checkbox"/> OFF			
Digit Specify	<input type="checkbox"/> OFF			
	<input type="checkbox"/> Forward	Max. Digits	()	
		Start Digit	()	
	<input type="checkbox"/> Reverse	Max. Digits	()	
		Start Digit	()	
Key (Preset)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Key (Cancel)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Key (Enter)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Input (Preset)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Input (Cancel)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Input (Enter)	<input type="checkbox"/> 0 sec	<input type="checkbox"/> 1 sec	<input type="checkbox"/> 3 sec	<input type="checkbox"/> 5 sec <input type="checkbox"/> OFF
Input Type	<input type="checkbox"/> N.O. <input type="checkbox"/> N.C.			
Input Time	()ms			
Input User	<input type="checkbox"/> IN 5	<input type="checkbox"/> IN 4	<input type="checkbox"/> IN 3	<input type="checkbox"/> IN 2 <input type="checkbox"/> IN 1
Out ON Timer	()ms			
Out Delay	()ms			
OUT1-10 User	<input type="checkbox"/> OUT10 <input type="checkbox"/> OUT9	<input type="checkbox"/> OUT8	<input type="checkbox"/> OUT7	<input type="checkbox"/> OUT6
	<input type="checkbox"/> OUT5 <input type="checkbox"/> OUT4	<input type="checkbox"/> OUT3	<input type="checkbox"/> OUT2	<input type="checkbox"/> OUT1
NG Output	<input type="checkbox"/> At Verify NG <input type="checkbox"/> At Error			
Preset Output	<input type="checkbox"/> OFF <input type="checkbox"/> ON at Update <input type="checkbox"/> ON in Preset			

Appendix 7. List of Settings at Shipment

The tables below shows the BL-V35E settings at the time of shipment.

■ Communication settings for serial port 1

Port 1 Baud	9600 bits/s		
Port 1 Form	7e1 (data length: 7 bits, parity check: even, stop bit length: 1 bit)		
Connect Unit	PC	Send Form	[data]+CR
		Send Data	Bar Code Data
		Protocol	No Handshaking
		RTS/CTS	OFF
		Rcv 1 Timer	5.0 s
		Enter Key=	ut Port 1

■ Communication settings for serial port 2

Port 2 Baud	9600 bits/s
Port 2 Form	7e1 (data length: 7 bits, parity check: even, stop bit length: 1 bit)
Receive Form	[data]+CR
Rcv 2 Timer	5.0S

■ Main settings

Mode Setup	Normal
Out	Bit
Max Preset No.	10
AutoIncrement	ON
Counter	OFF

■ Optional settings

Beep	ON
Digit Specify	OFF
Key (Preset)	0 sec
Key (Cancel)	0 sec
Key (Enter)	0 sec
Input (Preset)	0 sec
Input (Cancel)	0 sec
Input (Enter)	0 sec
Input Type	N.O.
Input Time	10 ms
Input User	00000 (No input is released.)
Out ON Timer	500 ms
Out Delay	5 ms
OUT 5-1 User	00000
OUT 10-6 User	00000 (No output is released.)
NG Output	At Verify NG
Preset Output	OFF

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