NIDEK

AUTO LENSMETER

LM-1000/1000P/1200

USB INTERFACE MANUAL

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Eye & Health Care

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1. OUTLINE OF COMMUNICATION

1.1 Outline of Communication Function

The LM-1000, LM-1000P, or LM-1200 comes standard with a USB interface that enables transmission of measured data to an external computer. This manual explains the method of receiving the measured data from the LM-1000, LM-1000P, or LM-1200 through the USB interface.

The following sections describe the specifications for the interface for communication between the LM-1000, LM-1000P, or LM-1200 and an external device such as a personal computer.

1.1.1 Basic interface specifications

Note

- Be sure to set the A.Prt S and A.Prt R/L parameters to OFF before communication.
  Failure to do so could cause a printer error.

1	Communication specifications	In accordance with the USB V1.1 specifications (B-type connector on the LM side)
2	Data format	ASCII
3	Error detection	Checksum
4	Interface cable	Standard USB cable (Shield type)
5	Activation of transmission	Operation of the print button

1.1.2 Setting the parameter related to communication

Among the parameters related to communication, set the two parameters below: The other parameters related to communication have no influence on the data exported through the USB interface.

1	CR Code	OFF, ON
2	PrismTx	OFF, ON, Display

* The underlined option shows the factory setting.

For the method of setting parameters, see “2.13 Setting Parameters” of the LM-1000, LM-1000P, LM-1200 Operator's Manual.

1 : CR Code

This is for selecting whether to attach CR (carriage return) code at the end of data to be transmitted.

Set this parameter to “ON” when the communication software on the computer needs the CR code to terminate the reception of the data character string.

OFF	The CR code is not added.
ON	The CR code is added to the output character string.

2 : Prism Tx

This parameter is for selecting whether to transmit the measured prism value.

OFF	The measured prism value is not transmitted at any time.
ON	The measured prism value that is displayed in rectangular coordinates is transmitted at all times.
Display	When the measured prism value is displayed on the screen, it will be transmitted. If not, it will not be transmitted.

1.1.3 Installation of the USB driver

The computer needs the USB driver to receive the data measured by the LM-1000, LM-1000P, or LM-1200.

Install the provided USB driver attached to the USB cable (option) to the computer.

For the USB driver installation procedure, refer to “3. INSTALLATION OF USB DRIVER” (page 37).

Purchase a program used for data reception by yourself.

2. DATA FORMAT

Data measured by the LM-1000, LM-1000P, or LM-1200 and represented in ASCII character codes are transmitted in the specified format and the specified sequence. Data that has not been obtained is not transmitted; the length of data changes with the measurement conditions: Write the program using character strings to be added for a search for desired data as below:
Data is transmitted only from the LM to the computer; the computer is not provided with a function etc. for requesting a command. Data transmission is triggered by the operation of the print button. The data that has been saved in the memory when the print button is pressed is transmitted. During the measurement, measured data that is in the memory when the print button is pressed is saved and transmitted.

2.1 Format of Entire Data

The format of the entire data to be transmitted is explained:

SOH	"DLM"	STX	NIDEK ID	Measured data	ETB	CR	EOT	CS1 - CS4	CR
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)

(1) SOH (01H)

This is referred to as “communication control character” and frequently used for data transmission etc. A single SOH character is represented as “01H” in hexadecimal character codes.

SOH represents “the start of a character string".

Data (3), (6), (7), (8), and (10) is a similar control character.

(2) “DLM”

Data that is comprised of three characters represent “Data of LM”.

(3) STX (02H)

This communication control character represents “the start of data”.

(4) NEDEK ID

Character string of the company and model names.

LM-1000P

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH

LM-1000

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	32H	30H	30H	17H	0DH

LM-1200

I	D	N	I	D	E	K	/	L	M	-	1	2	0	0	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	32H	30H	30H	17H	0DH

* In the lower line, the ASCII code of each character is represented by hexadecimals.

The first two characters, “ID”, that is referred to as an identification code of the character string represents the type of the data that follows. The identification code that is also added to the head of the measured data is used for searching for desired data. The latter ETB, a communication control character, represents “a delimiter of data”. Some software on the computer needs the CR code at the end that represents “the end of the character string”. As necessary, set the CR Code parameter.

(5) Measured data, (6) ETB, (7) CR

See “2.2. Format of each data (Page 8)”.

(8) EOT(04H)

This is a communication control character that represents “the end of the character string”. In the case of measured data, this character represents the end of data.

(9) CS1 - CS4, (10) CR

This is a checksum for error detection. The value of the checksum is the simple sum of “SOH” at the head to “EOT” in the data format except the CR code. The hexadecimal numbers in the low-order two bytes are represented by four-byte ASCII codes as a simple sum of SOH at the head of the data to “EOT (04H)”. The checksum is calculated from the data received by the computer in the same way. Normal data reception is identified by an agreement between both sums.

The LM transmits the following types of data. These types of data are output according to the lens measurement mode, whether the data has been measured or not, and the condition for the lenses (single, left or right).

○: Output if measured ×: Not output

	Measured lens mode				Lens*3		
	Single vision	Progressive power	Contact lens	Prism layout	Single	Right	Left
1) Manufacturer/model name	○	○	○	○	Once at the beginning		
2) SPH, CYL, AXIS	○	○	○	○	○	○	○
3) SE (Spherical Equivalent value)	×	×	○	×	○	○	○
4) ADD (1st/2nd addition power)	○	○*2	×	×	○	○	○
5) PRISM	○	○	○	○	○	○	○
6) Progressive Length*1	×	○	×	×	○	○	○
7) Channel Width *1	×	○	×	×	○	○	○
8) PD *1	○	○	×	×	×	○	○
9) Near Portion Inside Amount*1	×	○	×	×	×	○	○
10) Net Prism *1	○	×	×	×	×	One for both sides	

*1: LM-1200 only.

When the parameter is not set to “ON”, measurement or data output is not performed.

*2: 1st addition power only

*3: In the case of “Single (not the right- nor left-eye lens)” state, only single data is output.

When both left- and right-eye lenses are measured, the data is output in following order: “Right” “Left”.

LM-1000/LM-1000P	(In the order of 1) → Right 2) - 5) data → Left 2) - 5) data)
LM-1200	(In the order of 1) → Right 2) - 7) data → Left 2) - 7) data → (8) - 10))

*4: In the prism layout, the measured value is output for the PRISM value.

Note

- Measured data has been rounded off according to the cylinder mode, the indication form of the measured prism data, and indication step specified on the LM.

2.2 Format of each data

The number inside the parentheses indicates the number of characters transmitted.

(1) Company name / Model name

The name of the manufacturer (NIDEK) and the name of model (LM-1000/LM-1000P/LM-1200) are output.

* In the lower line, the ASCII codes are represented by hexadecimals.

• LM-1000P

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH
		Company name						Model name (LM-1000P)									

• LM-1000

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	17H	0DH
		Company name						Model name (LM-1000)								

• LM-1200

I	D	N	I	D	E	K	/	L	M	-	1	2	0	0	ETB	CR
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	32H	30H	30H	17H	0DH
		Company name						Model name (LM-1200)								

(2) SPH, CYL, AXIS

Basic measured SPH, CYL, and AXIS data are output.

Identification code	Single	" " (Space, Space)
	Right	" R" (Space, R)
	Left	" L" (Space, L)

The number of digits of each measured data to be output is fixed with the leading digit 0 remaining.

The ETB and CR codes are added to the end (when the CR Code parameter is set to ON). (The codes are added to the end of all the following types of data.)

SPH	Four digits with a fixed decimal point and a polarity sign
CYL	Four digits with a fixed decimal point and a polarity sign
AXIS	Three-digit integer

1) In the case of single data (SPH= +1.00 D, CYL= 0.00 D, AXIS= 0º)

		+	0	1	.	0	0	+	0	0	.	0	0	0	0	0	ETB	CR
20H	20H	2BH	30H	31H	2EH	30H	30H	2BH	30H	30H	2EH	30H	30H	30H	30H	30H	17H	0DH
		SPH (6 characters)						CYL (6 characters)						AXIS (3 characters)				

2) In the case of right data (SPH= -11.25 D, CYL= -9.75 D, AXIS= 90º)

	R	-	1	1	.	2	5	-	0	9	.	7	5	0	9	0	ETB	CR
20H	52H	2DH	31H	31H	2EH	32H	35H	2DH	30H	39H	2EH	37H	35H	30H	39H	30H	17H	0DH
		SPH (6 characters)						CYL (6 characters)						AXIS (3 characters)				

3) In the case of left data (SPH= 0.00 D, CYL= +1.50 D, AXIS= 180º)

	L	+	0	0	.	0	0	+	0	1	.	5	0	1	8	0	ETB	CR
20H	4CH	2BH	30H	30H	2EH	30H	30H	2BH	30H	31H	2EH	35H	30H	31H	38H	30H	17H	0DH
		SPH (6 characters)						CYL (6 characters)						AXIS (3 characters)				

(3) SE (Spherical Equivalent value, only in the contact lens measuring mode)

The measured SE value is output.

Identification code	Single	“S ”(S, Space)
	Right	“SR”
	Left	“SL”

Measured data is output by fixed four digits including a decimal point with a polarity sign and the leading digit 0 remaining.

1) In the case of single data (SE = +2.00 D)

S		+	0	2	.	0	0	ETB	CR
53H	20H	2BH	30H	32H	2EH	30H	30H	17H	0DH
		SE (6 characters)							

2) In the case of right data (SE = -10.00 D)

S	R	-	1	0	.	0	0	ETB	CR
53H	52H	2DH	31H	30H	2EH	30H	30H	17H	0DH
		SE (6 characters)							

(4) ADD

The measured addition powers are output.

If the secondary addition power has been measured, the data is sent subsequently to the primary addition power.

Identification code	Single	“A ” (A, Space)
	Right	“AR”
	Left	“AL”

Measured data is output by fixed four digits including a decimal point without a polarity sign and with the leading digit 0 remaining.

If the NEAR parameter is set to NEAR SPH, the near portion power represented by spherical value is added to the end of the addition powers.

Identification code	Single	“N ” (N, Space)
	Right	“NR”
	Left	“NL”

Measured data is output by fixed four digits including a decimal point with a polarity sign and the leading digit 0 remaining.

1) Example of the primary addition power in the single data (ADD= +2.00 D)

A		0	2	.	0	0	ETB	CR
41H	20H	30H	32H	2EH	30H	30H	17H	0DH
		ADD (5 characters)						

2) Example of the primary and secondary addition powers in the right data (ADD = +2.00 D, ADD2 = +2.50 D)

A	R	0	2	.	0	0	ETB	CR	0	2	.	5	0	ETB	CR
41H	52H	30H	32H	2EH	30H	30H	17H	0DH	30H	32H	2EH	35H	30H	17H	0DH
		ADD (5 characters)							ADD2 (5 characters)						

3) Example of the primary and secondary addition powers represented by spherical powers in the left data

(ADD = +2.00 D, ADD2 = +2.50 D)

(NSPH = -1.00 D, NSPH2 = -0.50 D)

A	L	0	2	.	0	0	ETB	CR	0	2	.	5	0	ETB	CR	→ To be continued
20H	4CH	30H	32H	2EH	30H	30H	17H	0DH	30H	32H	2EH	35H	30H	17H	0DH	
		ADD (5 characters)							ADD2 (5 characters)							

N	L	-	0	1	.	0	0	ETB	CR	-	0	0	.	5	0	ETB	CR
41H	4CH	2DH	30H	31H	2EH	30H	30H	17H	0DH	2DH	30H	30H	2EH	35H	30H	17H	0DH
		NSPH (6 characters)								NSPH2 (6 characters)							

(5) PRISM

The measured prism data is output.

The format of the output prism data varies with the PRISM parameter setting.

If the PRISM parameter is set to "BU/D BI/O":

Identification code	Single	"P " (P, Space)
	Right	"PR"
	Left	"PL"

Measured data is output by fixed four digits including a decimal point with no polarity sign and the leading digit 0 remaining.

In addition, a character representing the base direction is added to the end of the measured data.

e.g. IN 3.00, UP 2.50: 03.00 I 02.50 U

OUT 1.25, DOWN 2.00: 01.25 O 02.00 D

If the PRISM parameter is set to "P-B":

Identification code	Single	"P ""B " (P, Space)(B, Space)
	Right	"PR""BR"
	Left	"PL""BL"

Measured data is output by fixed four digits including a decimal point with no polarity sign and the leading digit 0 remaining.

PRISM	Four digits with a fixed decimal point with no polarity sign
BASE	Three-digit integer with no polarity sign

1) Example of single data when the PRISM parameter is set to "BU/D BI/O":

(PRISM = IN 3.00Δ, UP 2.50Δ)

P		0	3	.	0	0	I	ETB	CR	P		0	2	.	5	0	U	ETB	CR
50H	20H	30H	33H	2EH	30H	30H	49H	17H	0DH	50H	20H	30H	32H	2EH	30H	30H	55H	17H	0DH
		PRISM1 (6 characters)										PRISM2 (6 characters)							

2) Example of right data when the PRISM parameter is set to BU/D BI/O:

(PRISM = OUT 1.25Δ, DOWN 2.00Δ)

P	R	0	1	.	2	5	O	ETB	CR	P	R	0	2	.	0	0	D	ETB	CR
50H	52H	30H	31H	2EH	32H	35H	4FH	17H	0DH	50H	52H	30H	32H	2EH	30H	30H	44H	17H	0DH
		PRISM1 (6 characters)										PRISM2 '(6 characters)							

3) Example of left data when the PRISM parameter is set to P-B: (PRISM = 6.5Δ, BASE = 70º)

P	L	0	6	.	5	0	ETB	CR	B	L	0	7	0	ETB	CR
50H	4CH	30H	36H	2EH	35H	30H	17H	0DH	42H	4CH	30H	37H	30H	17H	0DH
		PRISM (5 characters)									BASE (3 characters)				

Data (6) to (10) is output from the LM-1200 only.

(6) Progressive Length (Only for LM-1200)

Measured data of the progressive length (V. Length) is output.

Identification code	Single	"D " (D, space)
	Right	"DR"
	Left	"DL"

Measured data of the progressive length is output by a two-digit integer with the leading digit 0 remaining.

1) Example of single data (V. Length= 12 mm)

D		1	2	ETB	CR
44H	20H	31H	32H	17H	0DH
		V. Length (2 characters)			

2) Example of right data (V. Length= 8 mm)

D	R	0	8	ETB	CR
44H	52H	30H	38H	17H	0DH
		V. Length (2 characters)			

(7) Channel Width (Only for LM-1200)

Measured data of the channel width (C. Width) and its position (Len) are output.

Identification code	Single	“W ” (W, space)
	Right	“WR”
	Left	“WL”

Measured data of the channel width/position is output by a two-digit integer with the leading digit 0 remaining.

1) Example of single data (C. Width = 6 mm/ Measurement at the position of 16 mm of the near portion from the add starting point)

W		0	6	/	1	6	ETB	CR
57H	20H	30H	36H	2FH	31H	36H	17H	0DH
		C. Width (2 characters)			Position (2 characters)			

2) Example of left data (C. Width = 5 mm/ Measurement at the position of 8 mm of the near portion from the add starting point)

W	L	0	5	/	0	8	ETB	CR
57H	4CH	30H	35H	2FH	30H	38H	17H	0DH
		C. Width (2 characters)			Position (2 characters)			

(8) PD (Only for LM-1200)

The measured PD data is output.

* This data will not be included in the output unless PD has been measured for both sides.

Identification code	“PD”

The data is sent in the order of Total PD (T. PD), Right PD (R. PD) and Left PD (L. PD).

Measured data of the PD is output by fixed three digits including a decimal point.

If T. PD is 100.0 mm or more, 99.9 is output.

Sample of PD data (T. PD= 64.0 mm, R. PD= 31.5 mm, L.PD= 32.5 mm)

P	D	6	4	.	0	3	1	.	5	3	2	.	5	ETB	CR
50H	44H	36H	34H	2EH	30H	33H	31H	2EH	35H	33H	32H	2EH	35H	17H	0DH
		T. PD (4 characters)				R. PD (4 characters)				L. PD (4 characters)					

(9) Near Portion Inside Amount (Only for progressive lens measurement mode of LM-1200)

Measured data of the near portion inside amount is output.

* Output only when both the right and left distance PDs are measured.

* The side (R or L) whose near portion inside amount has not been measured is output with "*****".

Identification code	"IS"

Measured data is output in the order of "R. INS" to "L. INS".

Measured data of the near portion inside amount is output by fixed three digits including a decimal point with a polarity sign and the leading digit 0 remaining.

Example of near portion inside amount (R. INS = 1.5 mm, L. INS = -2.5 mm)

I	S	+	0	1	.	5	-	0	2	.	5	ETB	CR
49H	53H	2BH	30H	31H	2EH	35H	2DH	30H	32H	2EH	35H	17H	0DH

R. INS (5 characters) | L. INS (5 characters)

(10) Net Prism data (Only for normal lens measurement mode of LM-1200)

This output data shows the net prism measurements.

* This data will not be included in the output unless prism has been measured for both sides.

Identification code	"NP"

The data is sent out in the order of Net Horizontal Prism, and Net Vertical Prism.

The net prism measurements are always indicated by rectangular coordinates (BASE IN/OUT, UP/DOWN). Measured data is output by four digits including a decimal point and the leading digit 0 remaining.

The base direction is shown with a letter put after the value, just as in the case of the PRISM data.

E.g. Net H. Prism = IN 3.00,	Net V. Prism = UP 2.50	03.00 I	02.50 U
Net H. Prism = OUT 1.25,	Net V. Prism = DOWN 2.00	01.25 O	02.00 D

Example of net prism data (Net H. Prism = IN 3.00, Net V. Prism = UP 2.50)

BASE IN — BASE UP

N	P	0	3	.	0	0	I	ETB	CR	N	P	0	2	.	5	0	U	ETB	CR
4EH	50H	30H	33H	2EH	30H	30H	49H	17H	0DH	4EH	50H	30H	32H	2EH	35H	30H	55H	17H	0DH

Net H. Prism (6 characters) | Net V. Prism (6 characters)

2.3 Example of Data Output

The formats of various types of measured data are explained in “2.2. Format of each data (Page 8)”; the entire format of the data to be transmitted varies with the existence or absence of various types of measured data and the designation of lenses (Left/Right).
Several concrete examples are provided below for reference:

Note

- Example outputs of (1) - (5), (8), (14) - (15) are common among LM-1000, LM-1000P, and LM-1200.
  For the LM-1000 and LM-1200, replace the model name.

(1) In the case of single data in normal measurement mode:

Measurement conditions

: Single vision lens measurement with the single state designated

: SPH = +1.00 D, CYL = 0.00 D, AXIS = 0º

: No prism measurement performed

: CR code = None

Note

- The following is an example of minimum data to be output.

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	
		Company name/Model name															

		+	0	1	.	0	0	+	0	0	.	0	0	0	0	0
20H	20H	2BH	30H	31H	2EH	30H	30H	2BH	30H	30H	2EH	30H	30H	30H	30H	30H
		Single SPH						Single CYL						Single AXIS		

ETB	0	7	F	C
04H	30H	37H	46H	43H
	Checksum			

(2) In the case of signal data in progressive power lens measurement mode:

Measurement conditions:

Progressive power lens measurement with the single state designated

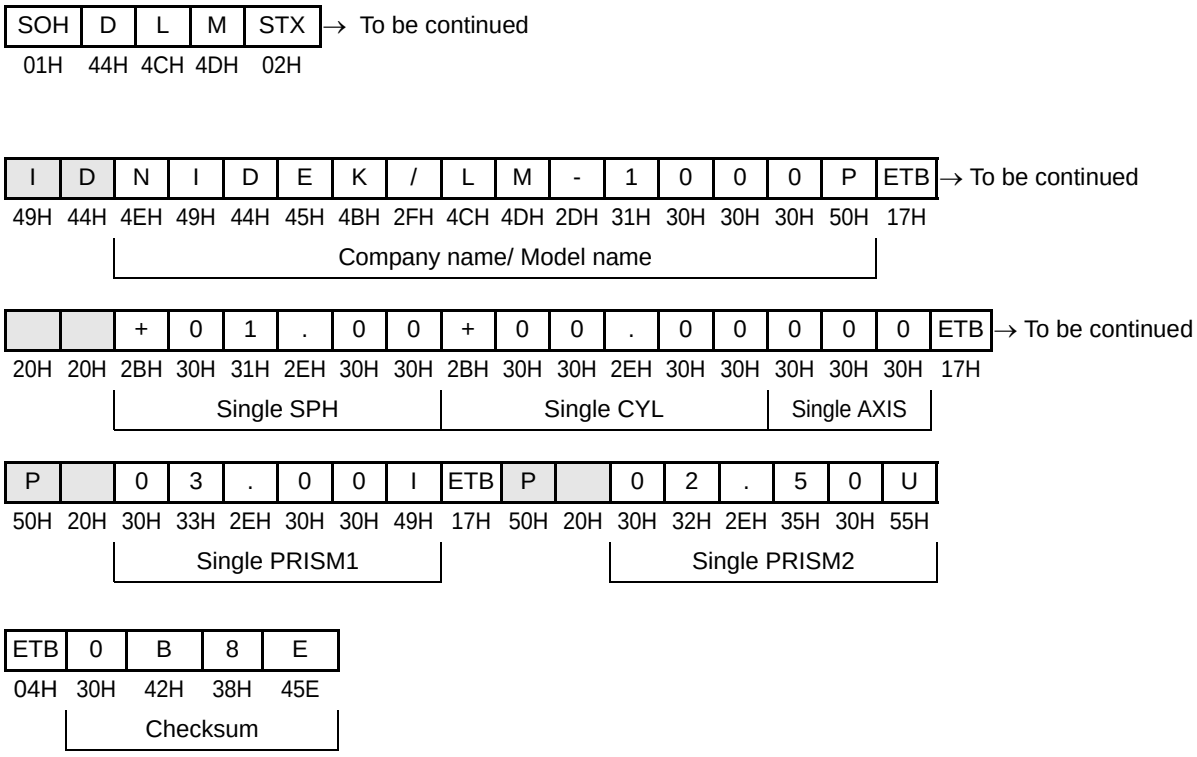
SPH = +1.00D, CYL = 0.00D, AXIS = 0º

PRISM = IN 3.00Δ. UP 2.50Δ (BU/D BI/O setting)

CR code = None

Note

- Prism data is added to the end of SPH, CYL and Axis data.



(3) In the case of single data in contact lens measurement mode:

Measurement conditions:

Contact lens measurement with the single state designated

SPH = +2.00 D, CYL = +0.50 D, AXIS = 60º, SE = +2.25 D

PRISM = 1.25Δ, BASE = 70º (P-B setting)

CR code = Added

Note

- In the contact lens measurement mode, the SE value is added to the end of SPH, CYL and AXIS data.
- The prism representation mode is different from case (2).
- The CR code is added to the end of "ETB" and "EOT".

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH	
		Company name/ Model name																

		+	0	2	.	0	0	+	0	0	.	5	0	0	6	0	ETB	CR	→ To be continued
20H	20H	2BH	30H	32H	2EH	30H	30H	2BH	30H	30H	2EH	35H	30H	30H	36H	30H	17H	0DH	
		Single SPH						Single CYL						Single AXIS					

S		+	0	2	.	2	5	ETB	CR	P		0	1	.	2	5	ETB	CR	→ To be continued
53H	20H	2BH	30H	32H	2EH	32H	35H	17H	0DH	50H	20H	30H	31H	2EH	32H	35H	17H	0DH	
		Single SE										Single PRISM							

B		0	7	0	ETB	CR	EOT	0	C	5	8	CR
42H	20H	30H	37H	30H	17H	0DH	04H	30H	43H	35H	38H	0DH
		Single BASE						Checksum				

(4) In the case of right data only in normal measurement mode

Measurement conditions:

Single vision lens measurement with the right-eye lens designated

Right: SPH = -11.25 D, CYL = -9.75 D, AXIS = 90º

Right: PRISM = OUT 1.25Δ, DOWN 2.00Δ (BU/D BI/O setting)

CR code = Added

Note

- The identification code is changed to that for the right-eye lens data.
- In the case of measurement of the left-eye lens only, the identification code change from R to L.

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH	

Company name/ Model name

	R	-	1	1	.	2	5	-	0	9	.	7	5	0	9	0	ETB	CR	→ To be continued
20H	52H	2DH	31H	31H	2EH	32H	35H	2DH	30H	39H	2EH	37H	35H	30H	39H	30H	17H	0DH	

Right SPH | Right CYL | Right AXIS

P	R	+	0	1	.	2	5	O	ETB	CR	P	R	0	2	.	0	0	D	→ To be continued
50H	52H	2BH	30H	31H	2EH	32H	35H	4FH	17H	0DH	50H	52H	30H	32H	2EH	30H	30H	44H	

Single PRISM1 | Single PRISM2

ETB	CR	EOT	0	C	8	5	CR
17H	0DH	04H	30H	43H	38H	35H	0DH

Checksum

(5) In the case of the left and right data in normal measurement mode

Measurement conditions:

Trifocal lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º

No prism measurement performed

ADD = +2.00 D, ADD2 = +3.00 D

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS =180º

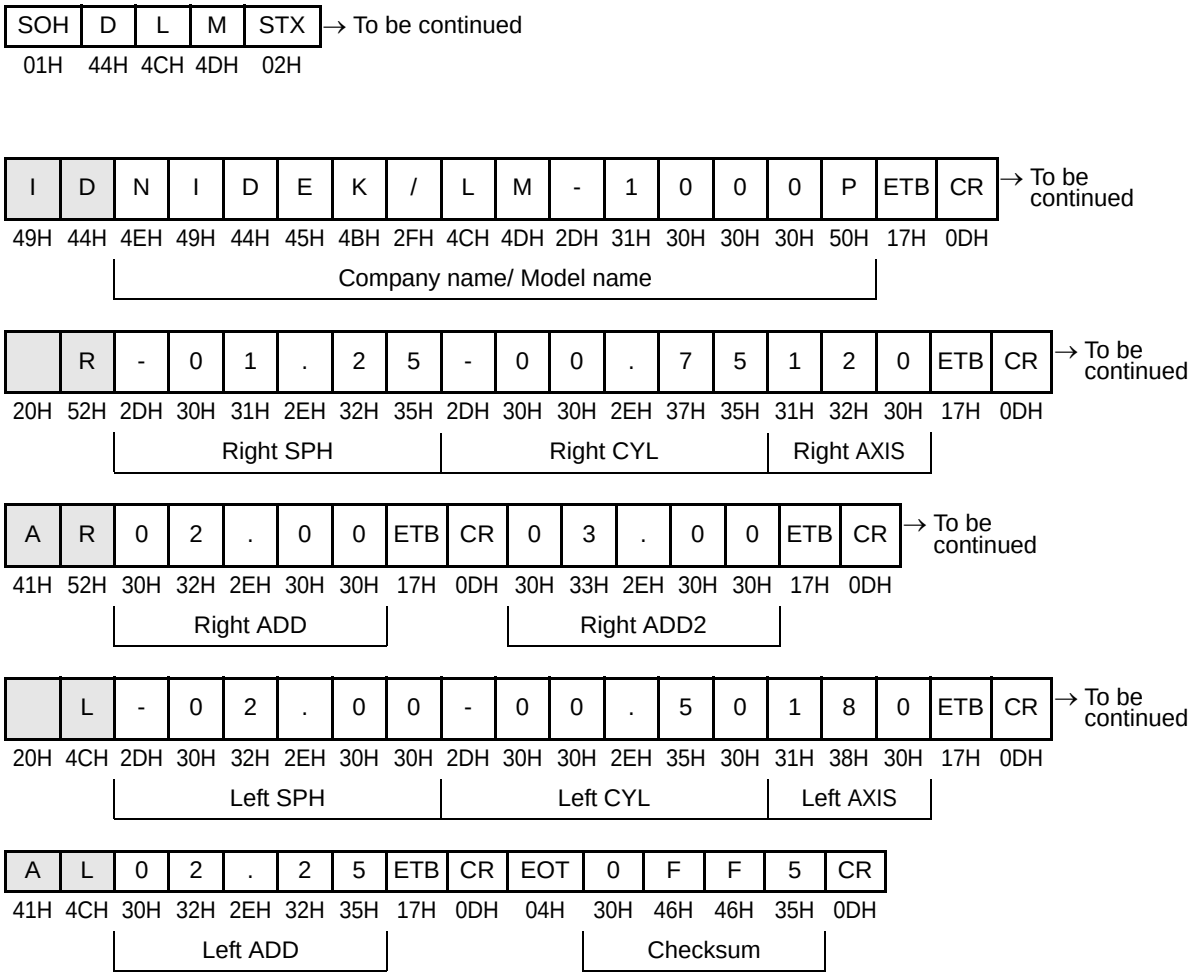
No prism measurement performed

ADD = +2.25 D, ADD2 has not been measured.

CR Code = Added

Note

- The secondary addition power of the left-eye lens has not been measured and therefore, it is not transmitted.



(6) Sample 1 of the left and right data in normal measurement mode with PD measurement (LM-1200)

Measurement conditions:

Bifocal lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL= -0.75 D, AXIS = 120º

No prism measurement performed

ADD = +2.00 D

RPD = 31.5 mm

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

No prism measurement performed

ADD = +2.25 D

LPD = 32.5 mm

Total PD = 64.0 mm

CR Code = Added

Note

- The secondary addition power has not been measured and therefore, it is not transmitted.
- PD data is added after R and L data.

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	2	0	0	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	32H	30H	30H	17H	0DH	
	Company name/ Model name																

	R	-	0	1	.	2	5	-	0	0	.	7	5	1	2	0	ETB	CR	→ To be continued
20H	52H	2DH	30H	31H	2EH	32H	35H	2DH	30H	30H	2EH	37H	35H	31H	32H	30H	17H	0DH	
	Right SPH							Right CYL						Right AXIS					

A	R	0	2	.	0	0	ETB	CR	→ To be continued
41H	52H	30H	32H	2EH	30H	30H	17H	0DH	
	Right ADD								

	L	-	0	2	.	0	0	-	0	0	.	5	0	1	8	0	ETB	CR	→ To be continued
20H	4CH	2DH	30H	32H	2EH	30H	30H	2DH	30H	30H	2EH	35H	30H	31H	38H	30H	17H	0DH	
	Left SPH							Left CYL						Left AXIS					

A	L	0	2	.	2	5	ETB	CR	→ To be continued
41H	4CH	30H	32H	2EH	32H	35H	17H	0DH	
	Left ADD								

P	D	6	4	.	0	3	1	.	5	3	2	.	5	ETB	CR	EOT	1	1	A	1	CR
50H	44H	36H	34H	2EH	30H	33H	31H	2EH	35H	33H	32H	2EH	35H	17H	0DH	04H	31H	31H	41H	31H	0DH
	Total PD					Right PD				Left PD							Checksum				

(7) Sample 2 of left and right data in normal measurement mode with PD measurement (LM-1200)

Measurement conditions:

Single vision lens measurement with the left-eye lens designated

Right: SPH = -1.25 D, CYL = 0.75 D, AXIS = 120º

No prism measurement performed

RPD = 31.5 mm

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

No prism measurement performed

No LPD measurement

Total PD is undecided.

CR code = Added

Note

- No PD outputs because LPD has not been measured.
- Net PRISM measurements will also be excluded from the output unless prism has been measured for both sides.

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	2	0	0	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	32H	30H	30H	17H	0DH	
	Company name/ Model name																

	R	-	0	1	.	2	5	-	0	0	.	7	5	1	2	0	ETB	CR	→ To be continued
20H	52H	2DH	30H	31H	2EH	32H	35H	2DH	30H	30H	2EH	37H	35H	31H	32H	30H	17H	0DH	
	Right SPH							Right CYL						Right AXIS					

	L	-	0	2	.	0	0	-	0	0	.	5	0	1	8	0	ETB	CR	→ To be continued
20H	4CH	2DH	30H	32H	2EH	30H	30H	2DH	30H	30H	2EH	35H	30H	31H	38H	30H	17H	0DH	
	Left SPH							Left CYL						Left AXIS					

EOT	0	B	6	A	CR
04H	30H	42H	36H	41H	0DH
	Checksum				

(8) In the case of the left and right data in progressive power lens measurement mode

Measurement conditions:

Progressive power lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º
PRISM = IN 2.50Δ, DOWN 2.00Δ (BU/D BI/O setting)
ADD = +2.00 D

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º
PRISM = OUT 1.25Δ, UP 2.00Δ (BU/D BI/O setting)
ADD = +2.25 D

CR code = Added

Note

- The addition power is added before the prism data.
- After the transmission of the right-eye lens data, the left-eye lens data is output.

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH	

Company name/ Model name

	R	-	0	1	.	2	5	-	0	0	.	7	5	1	2	0	ETB	CR	→ To be continued
20H	52H	2DH	30H	31H	2EH	32H	35H	2DH	30H	30H	2EH	37H	35H	31H	32H	30H	17H	0DH	

Right SPH | Right CYL | Right AXIS

A	R	0	2	.	0	0	ETB	CR	P	R	0	2	.	5	0	I	ETB	CR	→ To be continued
41H	52H	30H	32H	2EH	30H	30H	17H	0DH	50H	52H	30H	32H	2EH	35H	30H	49H	17H	0DH	

Right ADD | Right PRISM1

P	R	0	2	.	0	0	D	ETB	CR	→ To be continued
50H	52H	30H	32H	2EH	30H	30H	44H	17H	0DH	

Right PRISM2

	L	-	0	2	.	0	0	-	0	0	.	5	0	1	8	0	ETB	CR	→ To be continued
20H	4CH	2DH	30H	32H	2EH	30H	30H	2DH	30H	30H	2EH	35H	30H	31H	38H	30H	17H	0DH	

Left SPH | Left CYL | Left AXIS

A	L	0	2	.	2	5	ETB	CR	P	L	0	1	.	2	5	O	ETB	CR	→ To be continued
41H	4CH	30H	32H	2EH	32H	35H	17H	0DH	50H	4CH	30H	31H	2EH	32H	35H	4FH	17H	0DH	

Left ADD | Left PRISM1

P	L	0	2	.	0	0	U	ETB	CR	EOT	1	6	C	1	CR
50H	4CH	30H	32H	2EH	30H	30H	55H	17H	0DH	04H	31H	36H	43H	31H	0DH

Left PRISM2 | Checksum

(9) In the case of the left and right data in progressive lens measurement mode with PD measurement and near portion inside amount measurement (LM-1200)

Measurement conditions:

Contact lens measurement with the left- and right-eye lenses designated

: R : SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º

No prism measurement performed

ADD = +2.00 D

RPD = 31.5 mm

RINS = 1.5 mm

: L : SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

No prism measurement performed

ADD = +2.25 D

LPD = 32.5 mm

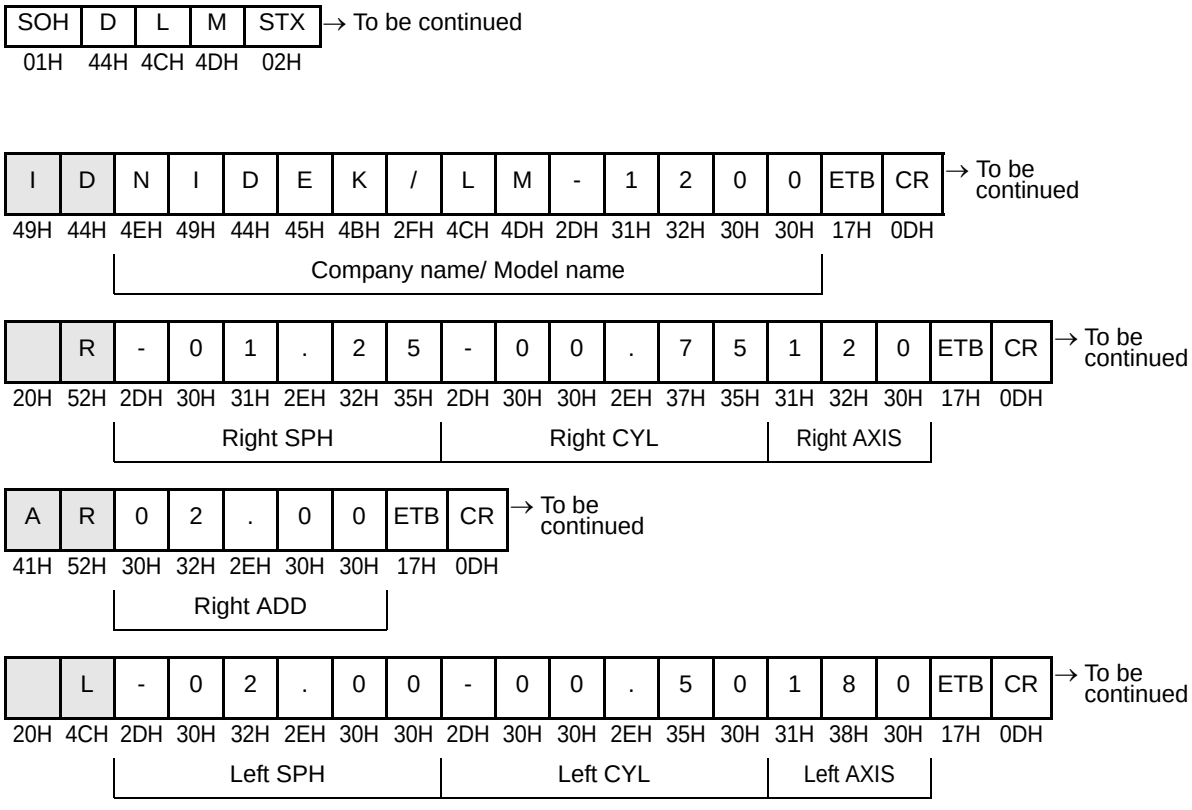
No LINS measurement

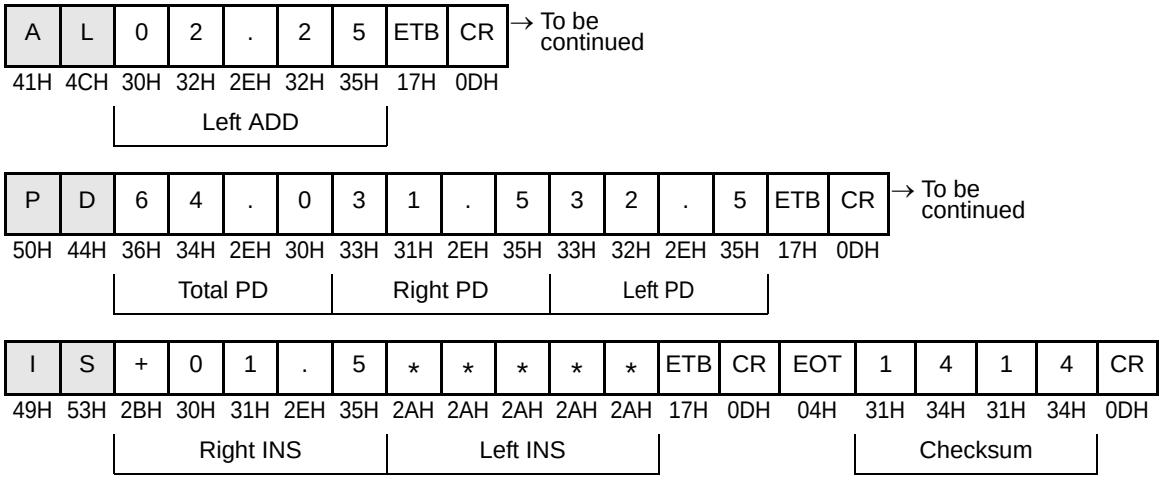
Total PD = 64.0 mm

CR code is used

Note

- PD data is added after R and L data.
- Since the near portion inside amount of the left eye is not measured, "*****" is output.




A L 0 2 . 2 5 ETB CR → To be continued
41H 4CH 30H 32H 2EH 32H 35H 17H 0DH
Left ADD
P D 6 4 . 0 3 1 . 5 3 2 . 5 ETB CR → To be continued
50H 44H 36H 34H 2EH 30H 33H 31H 2EH 35H 33H 32H 2EH 35H 17H 0DH
Total PD
Right PD
Left PD
I S + 0 1 . 5 * * * * * ETB CR EOT 1 4 1 4 CR
49H 53H 2BH 30H 31H 2EH 35H 2AH 2AH 2AH 2AH 2AH 17H 0DH 04H 31H 34H 31H 34H 0DH
Right INS
Left INS
Checksum

(10) In the case of the maximum data size in normal measurement mode (LM-1000/1000P)

Measurement conditions:

Trifocal lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º

PRISM = IN 2.25Δ, DOWN 2.00Δ (BU/D BI/O setting)

ADD = +2.00 D, ADD2 = +3.00 D

Representation form of near portion power = NEAR SPH

NSPH = +0.75D, NSPH2 = +1.75 D

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

PRISM = OUT 1.25Δ, UP 2.00Δ (BU/D BI/O setting)

ADD = +2.25 D, ADD2 = +3.50 D

Representation form of near portion power = NEAR SPH

NSPH = +0.25 D, NSPH2 = +1.50 D

CR code = Added

Note

- This is an example of LM-1000P of the maximum data size (175 characters) in an ordinary lens measurement mode.
- When the NEAR parameter is set to NEAR SPH, both the addition powers (ADD) and near spherical data (NSPH) are output.

1 5 (Number of characters)

SOH	D	L	M	STX	→ To be continued
01H	44H	4CH	4DH	02H	

10 15 20

I	D	N	I	D	E	K	/	L	M	-	1	0	0	0	P	ETB	CR	→ To be continued
49H	44H	4EH	49H	44H	45H	4BH	2FH	4CH	4DH	2DH	31H	30H	30H	30H	50H	17H	0DH	

Company name/ Model name

25 30 35 40

	R	-	0	1	.	2	5	-	0	0	.	7	5	1	2	0	ETB	CR	→ To be continued
20H	52H	2DH	30H	31H	2EH	32H	35H	2DH	30H	30H	2EH	37H	35H	31H	32H	30H	17H	0DH	

Right SPH | Right CYL | Right AXIS

45 50 55

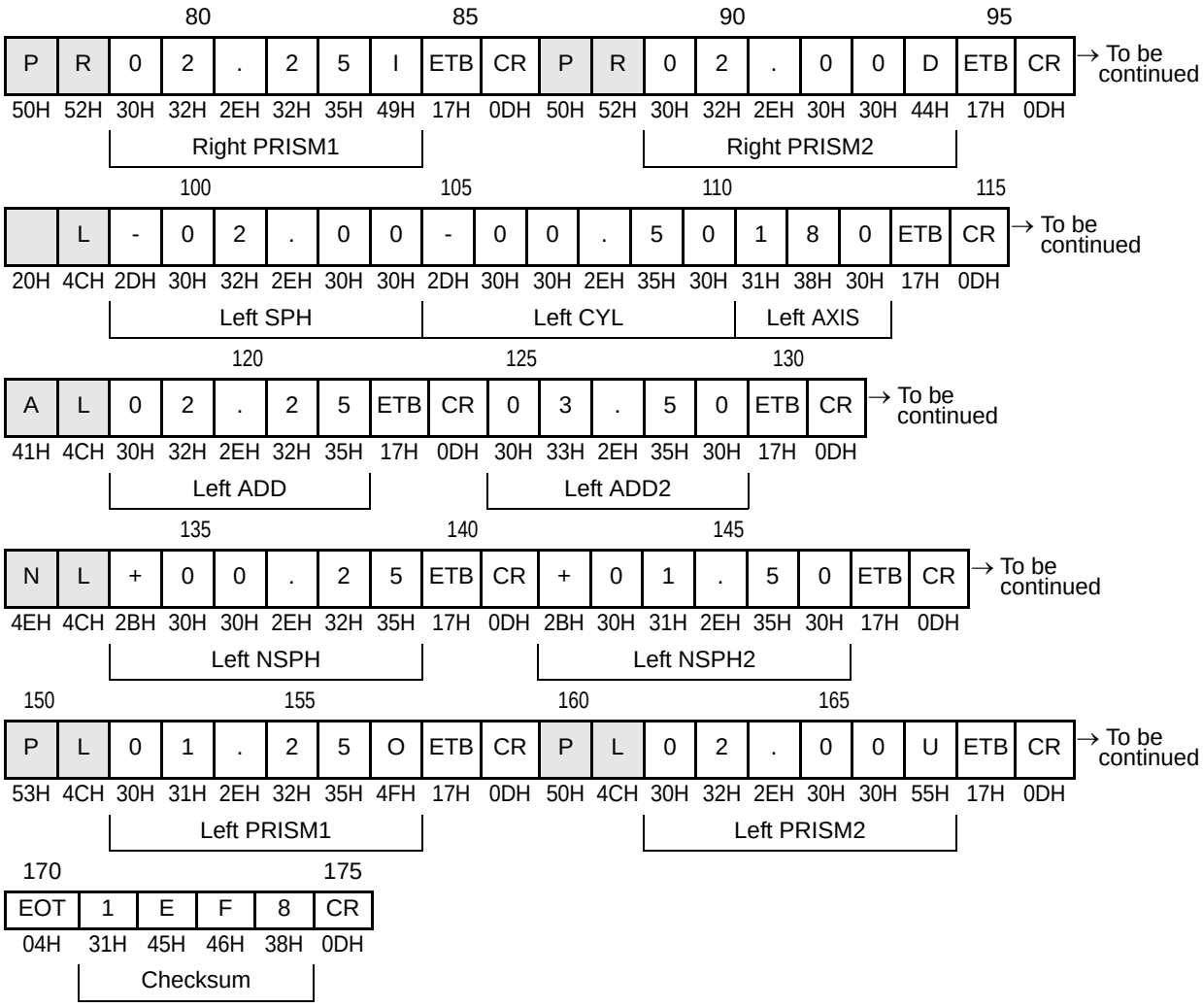
A	R	0	2	.	0	0	ETB	CR	0	3	.	0	0	ETB	CR	→ To be continued
41H	52H	30H	32H	2EH	30H	30H	17H	0DH	30H	33H	2EH	30H	30H	17H	0DH	

Right ADD | Right ADD2

60 65 70 75

N	R	+	0	0	.	7	5	ETB	CR	+	0	1	.	7	5	ETB	CR	→ To be continued
4EH	52H	2BH	30H	30H	2EH	37H	35H	17H	0DH	2BH	30H	31H	2EH	37H	35H	17H	0DH	

Right NSPH | Right NSPH2


80
85
90
95
P R 0 2 . 2 5 I ETB CR P R 0 2 . 0 0 D ETB CR → To be continued
50H 52H 30H 32H 2EH 32H 35H 49H 17H 0DH 50H 52H 30H 32H 2EH 30H 30H 44H 17H 0DH
Right PRISM1
Right PRISM2
100
105
110
115
L - 0 2 . 0 0 - 0 0 . 5 0 1 8 0 ETB CR → To be continued
20H 4CH 2DH 30H 32H 2EH 30H 30H 2DH 30H 30H 2EH 35H 30H 31H 38H 30H 17H 0DH
Left SPH
Left CYL
Left AXIS
120
125
130
A L 0 2 . 2 5 ETB CR 0 3 . 5 0 ETB CR → To be continued
41H 4CH 30H 32H 2EH 32H 35H 17H 0DH 30H 33H 2EH 35H 30H 17H 0DH
Left ADD
Left ADD2
135
140
145
N L + 0 0 . 2 5 ETB CR + 0 1 . 5 0 ETB CR → To be continued
4EH 4CH 2BH 30H 30H 2EH 32H 35H 17H 0DH 2BH 30H 31H 2EH 35H 30H 17H 0DH
Left NSPH
Left NSPH2
150
155
160
165
P L 0 1 . 2 5 O ETB CR P L 0 2 . 0 0 U ETB CR → To be continued
53H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH 50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH
Left PRISM1
Left PRISM2
170
175
EOT 1 E F 8 CR
04H 31H 45H 46H 38H 0DH
Checksum

(11) In the case of the maximum data size in normal measurement mode (LM-1200)

Measurement conditions:

Trifocal lens measurement with the left- and right-eye lenses designated

Right: SPH=-1.25 D, CYL=-0.75 D, AXIS=120º

PRISM = IN 2.25Δ, DOWN 2.00Δ (BU/D BI/O setting)

ADD=+2.00 D, ADD2=+3.00 D

Representation form of near portion power = NEAR SPH NSPH = +0.75D, NSPH2 = +1.75 D

RPD= 31.5 mm

Left: SPH=-2.00 D, CYL=-0.50 D, AXIS=180º

PRISM=OUT 1.25Δ, UP 2.00Δ (Rectangular)

ADD=+2.25 D, ADD2=+3.50 D

Representation form of near portion power = NEAR SPH NSPH = +0.25D, NSPH2 = +1.50 D

LPD= 32.5 mm

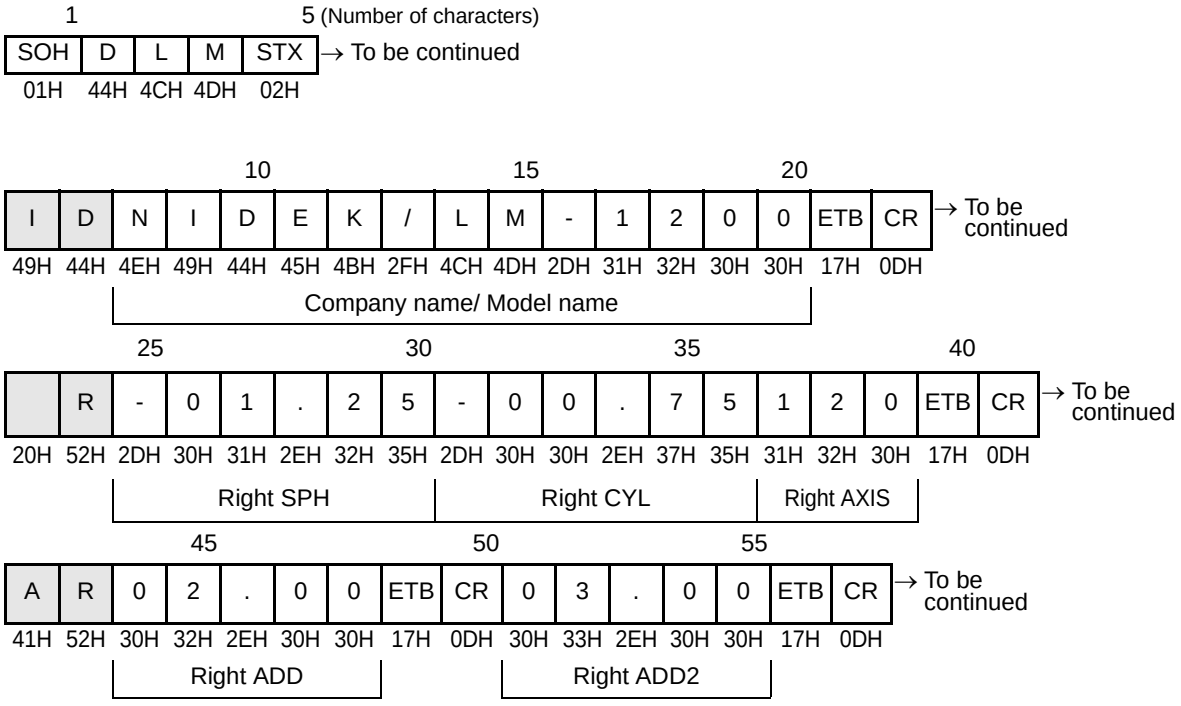
Total PD= 64.0 mm

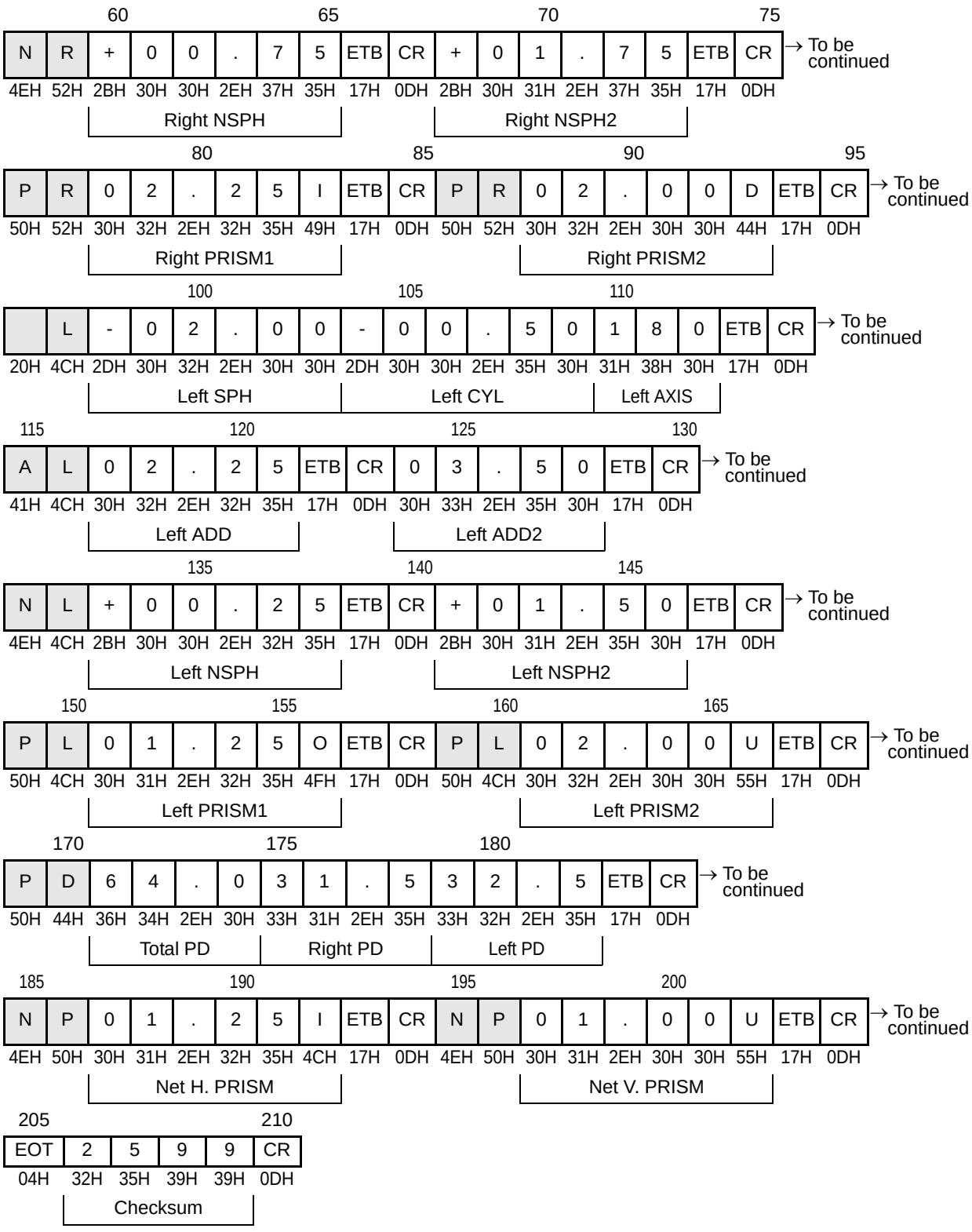
Net Prism Net H. Prism = IN 1.25Δ Net V. Prism = UP 1.00Δ

CR code = Added

Note

- This is an example of LM-1200 of the maximum data size (210 characters) in ordinary lens measurement mode.
- When the NEAR parameter is set to NEAR SPH, both the addition powers (ADD) and near spherical data (NSPH) are output.
- When the Net PRISM parameter is set to "ON", differences between right and left prism values are included in the output as the Net PRISM value.




60 65 70 75
N R + 0 0 . 7 5 ETB CR + 0 1 . 7 5 ETB CR → To be continued
4EH 52H 2BH 30H 30H 2EH 37H 35H 17H 0DH 2BH 30H 31H 2EH 37H 35H 17H 0DH
Right NSPH
Right NSPH2
80 85 90 95
P R 0 2 . 2 5 I ETB CR P R 0 2 . 0 0 D ETB CR → To be continued
50H 52H 30H 32H 2EH 32H 35H 49H 17H 0DH 50H 52H 30H 32H 2EH 30H 30H 44H 17H 0DH
Right PRISM1
Right PRISM2
100 105 110
L - 0 2 . 0 0 - 0 0 . 5 0 1 8 0 ETB CR → To be continued
20H 4CH 2DH 30H 32H 2EH 30H 30H 2DH 30H 30H 2EH 35H 30H 31H 38H 30H 17H 0DH
Left SPH
Left CYL
Left AXIS
115 120 125 130
A L 0 2 . 2 5 ETB CR 0 3 . 5 0 ETB CR → To be continued
41H 4CH 30H 32H 2EH 32H 35H 17H 0DH 30H 33H 2EH 35H 30H 17H 0DH
Left ADD
Left ADD2
135 140 145
N L + 0 0 . 2 5 ETB CR + 0 1 . 5 0 ETB CR → To be continued
4EH 4CH 2BH 30H 30H 2EH 32H 35H 17H 0DH 2BH 30H 31H 2EH 35H 30H 17H 0DH
Left NSPH
Left NSPH2
150 155 160 165
P L 0 1 . 2 5 O ETB CR P L 0 2 . 0 0 U ETB CR → To be continued
50H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH 50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH
Left PRISM1
Left PRISM2
170 175 180
P D 6 4 . 0 3 1 . 5 3 2 . 5 ETB CR → To be continued
50H 44H 36H 34H 2EH 30H 33H 31H 2EH 35H 33H 32H 2EH 35H 17H 0DH
Total PD
Right PD
Left PD
185 190 195 200
N P 0 1 . 2 5 I ETB CR N P 0 1 . 0 0 U ETB CR → To be continued
4EH 50H 30H 31H 2EH 32H 35H 4CH 17H 0DH 4EH 50H 30H 31H 2EH 30H 30H 55H 17H 0DH
Net H. PRISM
Net V. PRISM
205 210
EOT 2 5 9 9 CR
04H 32H 35H 39H 39H 0DH
Checksum

(12)In the case of the maximum data size in progressive power lens measurement mode (LM-1000/1000P)

Measurement conditions:

Progressive power lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º

PRISM = IN 2.25Δ, DOWN 2.00Δ (BU/D BI/O setting)

ADD = +2.00 D

Representation form of near portion power = NEAR SPH NSPH = +0.75 D

Left: SPH = -2.00 D, CYL = -0.50D, AXIS = 180º

PRISM = OUT 1.25Δ, UP 2.00Δ (BU/D BI/O setting)

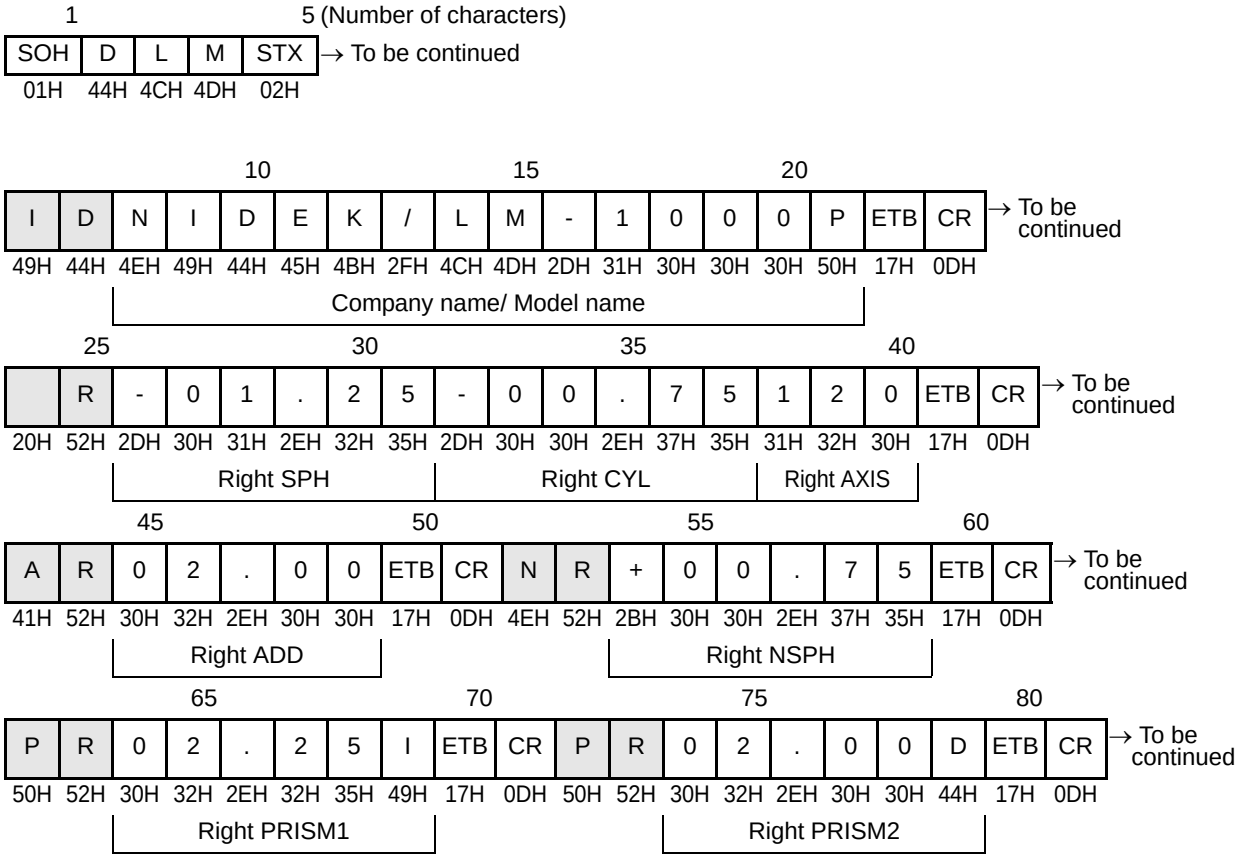
ADD = +2.25 D

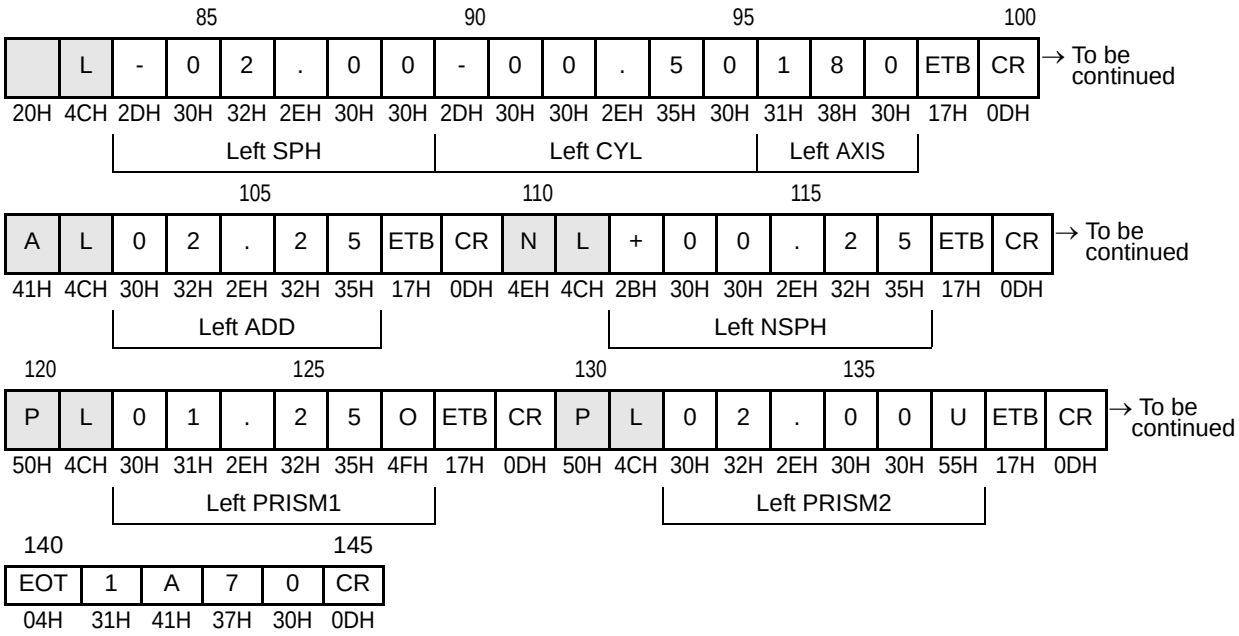
Representation form of near portion power = NEAR SPH NSPH = +0.25 D

CR code = Added

Note

- This is an example of the maximum data size (145 characters) in the progressive power lens measurement mode.
- When the NEAR parameter is set to NEAR SPH, both the addition powers (ADD) and near spherical data (NSPH) are output.




85
90
95
100
L - 0 2 . 0 0 - 0 0 . 5 0 1 8 0 ETB CR
→ To be continued
20H 4CH 2DH 30H 32H 2EH 30H 30H 2DH 30H 30H 2EH 35H 30H 31H 38H 30H 17H 0DH
Left SPH
Left CYL
Left AXIS
105
110
115
A L 0 2 . 2 5 ETB CR N L + 0 0 . 2 5 ETB CR
→ To be continued
41H 4CH 30H 32H 2EH 32H 35H 17H 0DH 4EH 4CH 2BH 30H 30H 2EH 32H 35H 17H 0DH
Left ADD
Left NSPH
120
125
130
135
P L 0 1 . 2 5 O ETB CR P L 0 2 . 0 0 U ETB CR
→ To be continued
50H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH 50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH
Left PRISM1
Left PRISM2
140
145
EOT 1 A 7 0 CR
04H 31H 41H 37H 30H 0DH

(13)In the case of the maximum data size in progressive power lens measurement mode (LM-1200)

Measurement conditions:

Progressive power lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL= -0.75 D, AXIS = 120º

PRISM = IN 2.50Δ, DOWN 2.00Δ (BU/D BI/O setting)

ADD = +2.00 D

Representation form of near portion power = NEAR SPH NSPH = +0.75 D

Progressive Length = 16 mm

Channel Width = 8 mm / Position = 15 mm

RPD = 31.5 mm

RINS = 1.5 mm

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

PRISM = OUT 1.25Δ, UP 2.00Δ (BU/D BI/O setting)

ADD = +2.25 D

Representation form of near portion power = NEAR SPH NSPH = +0.25 D

Progressive Length = 17 mm

Channel Width = 10 mm / Position = 18 mm

LPD = 32.5 mm

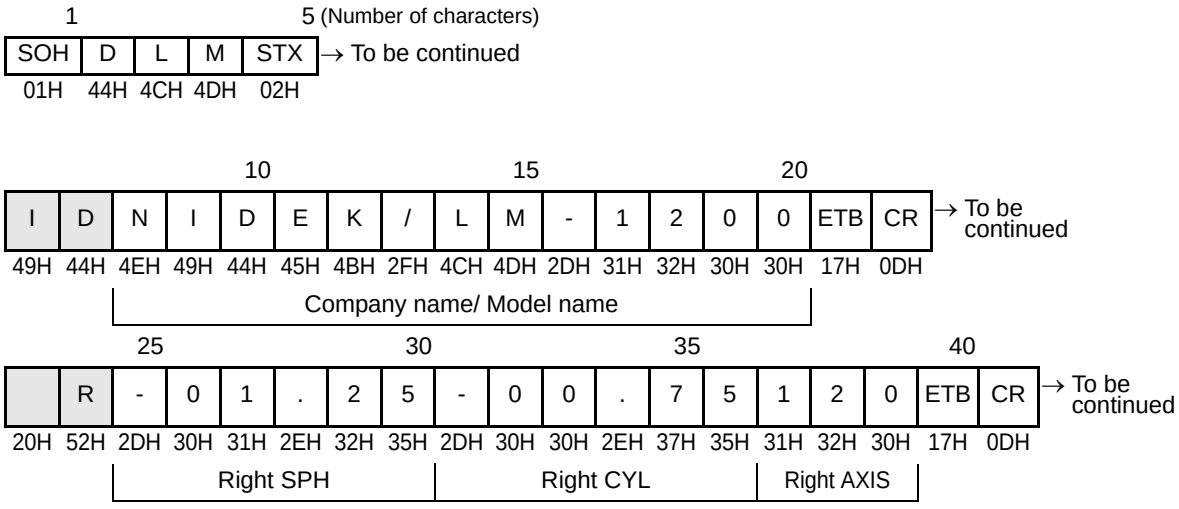
LINS =2.0 mm

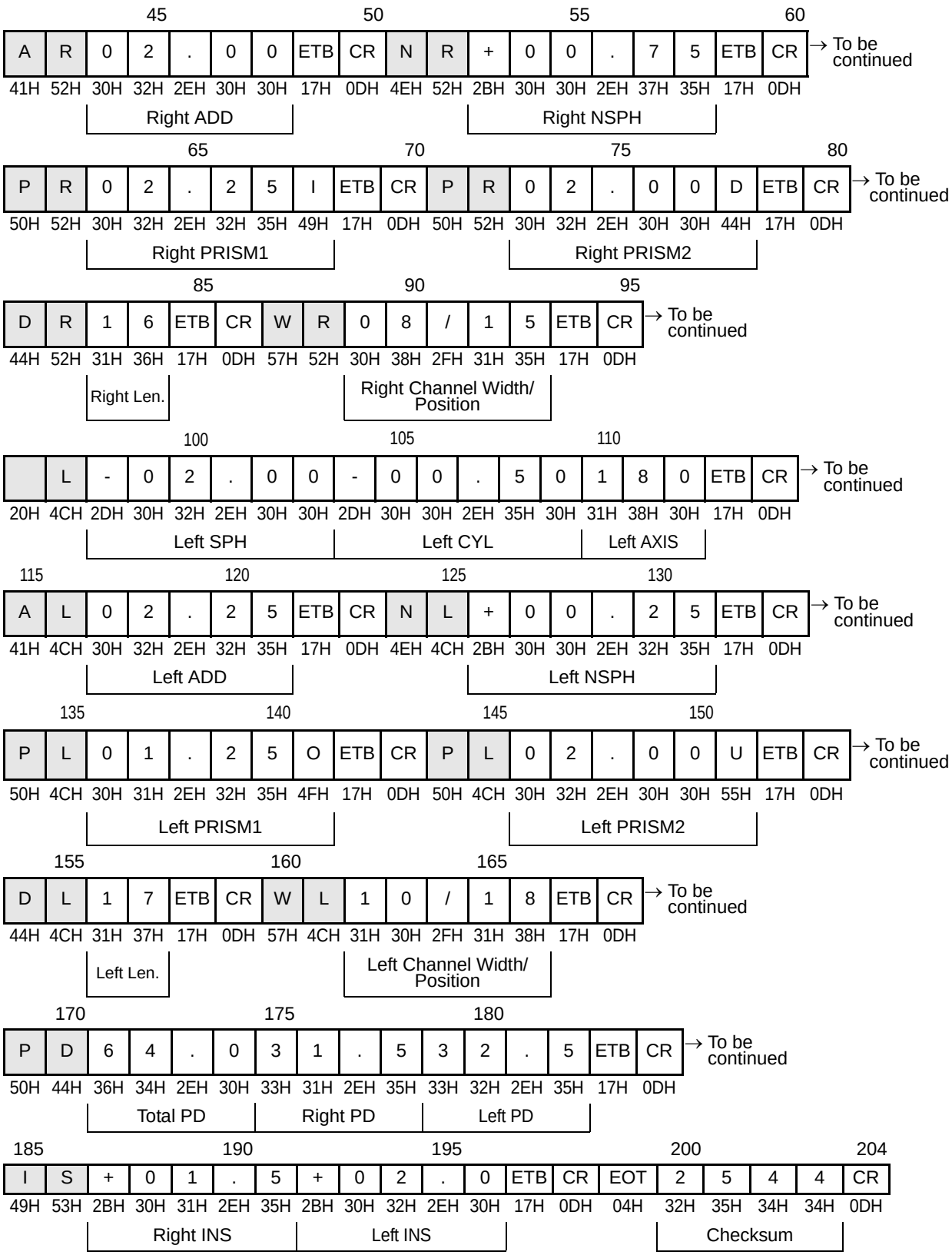
Total PD = 64.0 mm

CR code = Added

Note

- This is an example of the LM-1200 of the maximum data size (204 characters) in the progressive power lens measurement mode.
- When the NEAR parameter is set to NEAR SPH, both the addition powers (ADD) and near spherical data (NSPH) are output.
- When the function of the progressive length measurement and/or the channel width measurement is set, the measured result of the progressive length and/or channel width is output.




45 50 55 60
A R 0 2 . 0 0 ETB CR N R + 0 0 . 7 5 ETB CR → To be continued
41H 52H 30H 32H 2EH 30H 30H 17H 0DH 4EH 52H 2BH 30H 30H 2EH 37H 35H 17H 0DH
Right ADD
Right NSPH
65 70 75 80
P R 0 2 . 2 5 I ETB CR P R 0 2 . 0 0 D ETB CR → To be continued
50H 52H 30H 32H 2EH 32H 35H 49H 17H 0DH 50H 52H 30H 32H 2EH 30H 30H 44H 17H 0DH
Right PRISM1
Right PRISM2
85 90 95
D R 1 6 ETB CR W R 0 8 / 1 5 ETB CR → To be continued
44H 52H 31H 36H 17H 0DH 57H 52H 30H 38H 2FH 31H 35H 17H 0DH
Right Len.
Right Channel Width/ Position
100 105 110
L - 0 2 . 0 0 - 0 0 . 5 0 1 8 0 ETB CR → To be continued
20H 4CH 2DH 30H 32H 2EH 30H 30H 2DH 30H 30H 2EH 35H 30H 31H 38H 30H 17H 0DH
Left SPH
Left CYL
Left AXIS
115 120 125 130
A L 0 2 . 2 5 ETB CR N L + 0 0 . 2 5 ETB CR → To be continued
41H 4CH 30H 32H 2EH 32H 35H 17H 0DH 4EH 4CH 2BH 30H 30H 2EH 32H 35H 17H 0DH
Left ADD
Left NSPH
135 140 145 150
P L 0 1 . 2 5 O ETB CR P L 0 2 . 0 0 U ETB CR → To be continued
50H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH 50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH
Left PRISM1
Left PRISM2
155 160 165
D L 1 7 ETB CR W L 1 0 / 1 8 ETB CR → To be continued
44H 4CH 31H 37H 17H 0DH 57H 4CH 31H 30H 2FH 31H 38H 17H 0DH
Left Len.
Left Channel Width/ Position
170 175 180
P D 6 4 . 0 3 1 . 5 3 2 . 5 ETB CR → To be continued
50H 44H 36H 34H 2EH 30H 33H 31H 2EH 35H 33H 32H 2EH 35H 17H 0DH
Total PD
Right PD
Left PD
185 190 195 200 204
I S + 0 1 . 5 + 0 2 . 0 ETB CR EOT 2 5 4 4 CR
49H 53H 2BH 30H 31H 2EH 35H 2BH 30H 32H 2EH 30H 17H 0DH 04H 32H 35H 34H 34H 0DH
Right INS
Left INS
Checksum

(14)In the case of the maximum data size in contact lens measurement mode

Measurement conditions:

Contact lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120 , SE = -1.50 D

PRISM = IN 2.50Δ, DOWN 2.00Δ (BU/D BI/O setting)

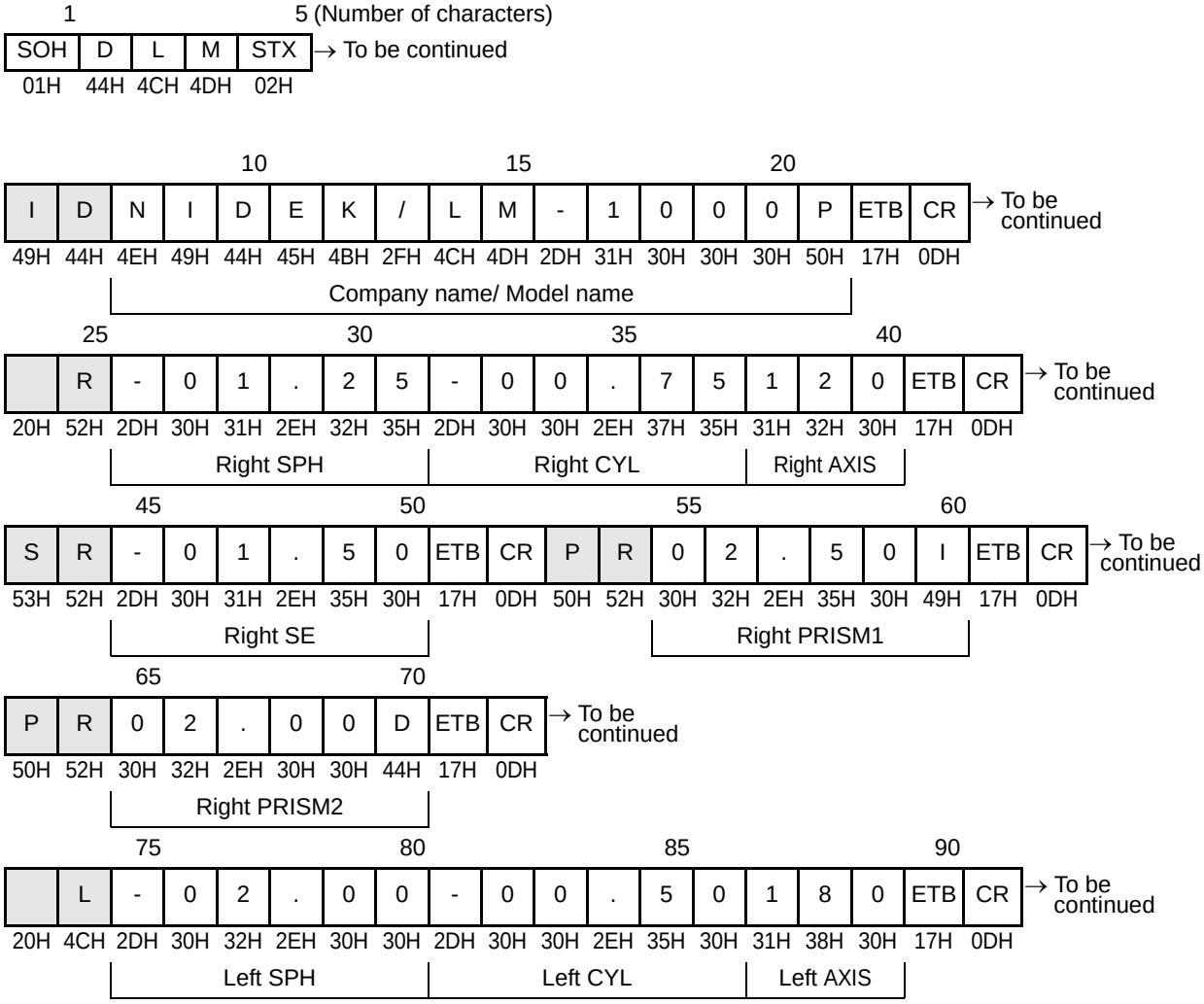
Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180 , SE = -2.25 D

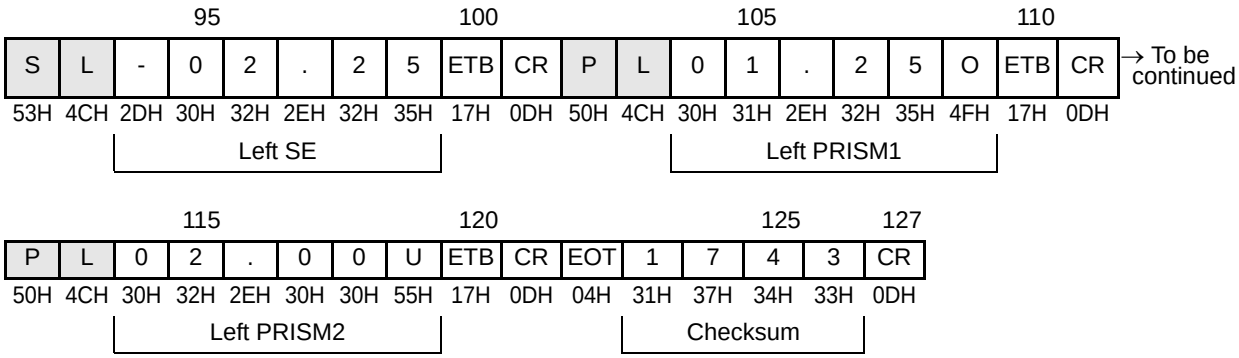
PRISM = OUT 1.25Δ, UP 2.00Δ (BU/D BI/O setting)

CR code = Added

Note

- This is an example of the maximum data size (127 characters) in contact lens measurement mode.
- The SE value is output.
- The addition power and PD are not measured.




95
100
105
110
S L - 0 2 . 2 5 ETB CR P L 0 1 . 2 5 O ETB CR
→ To be continued
53H 4CH 2DH 30H 32H 2EH 32H 35H 17H 0DH 50H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH
Left SE
Left PRISM1
115
120
125
127
P L 0 2 . 0 0 U ETB CR EOT 1 7 4 3 CR
50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH 04H 31H 37H 34H 33H 0DH
Left PRISM2
Checksum

(15)In the case of the maximum data size in prism layout measurement mode

Measurement conditions:

Single vision lens measurement with the left- and right-eye lenses designated

Right: SPH = -1.25 D, CYL = -0.75 D, AXIS = 120º

PRISM = IN 2.50Δ, DOWN 2.00Δ (BASE IN/OUT UP/DOWN setting)

RPD = 31.5 mm

Left: SPH = -2.00 D, CYL = -0.50 D, AXIS = 180º

PRISM = OUT 1.25Δ, UP 2.00Δ (BASE IN/OUT UP/DOWN setting)

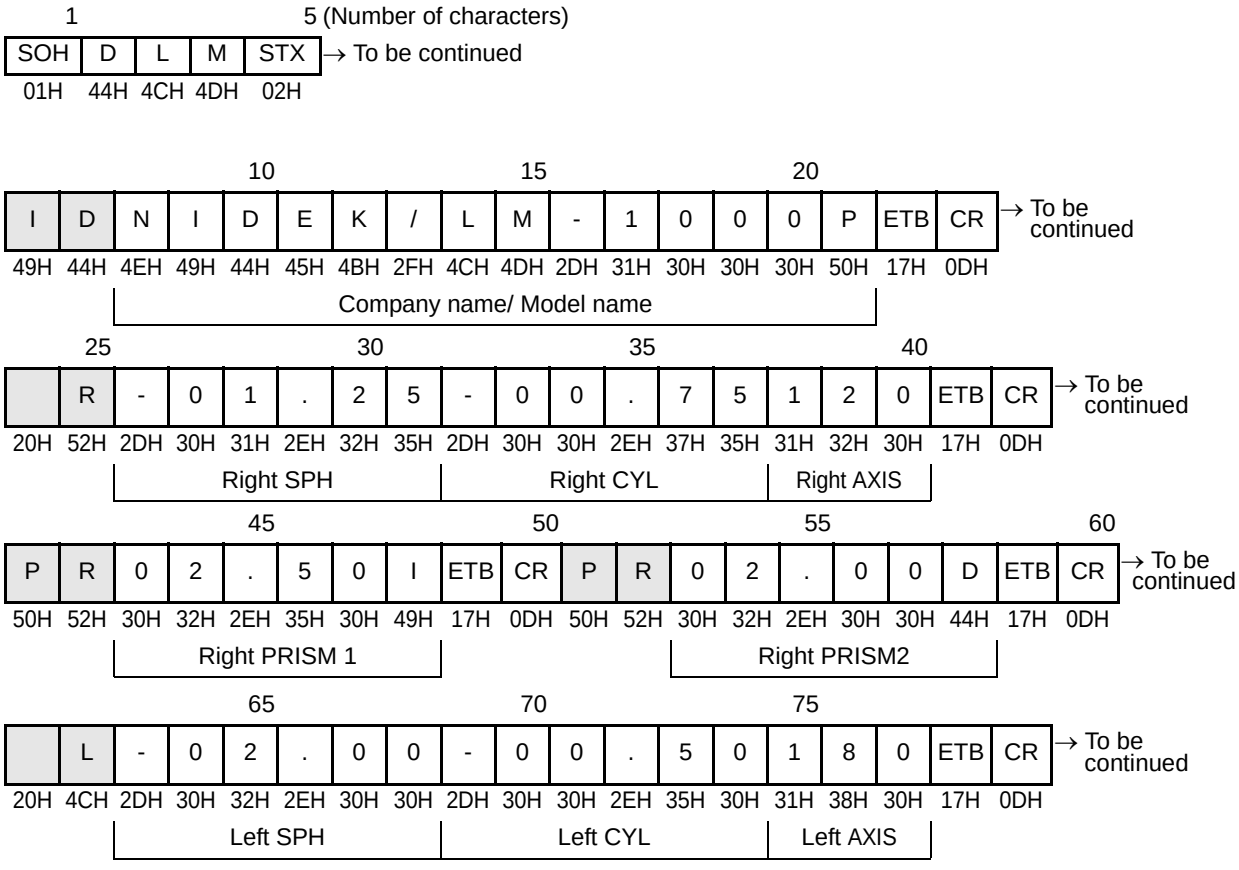
LPD = 32.5 mm

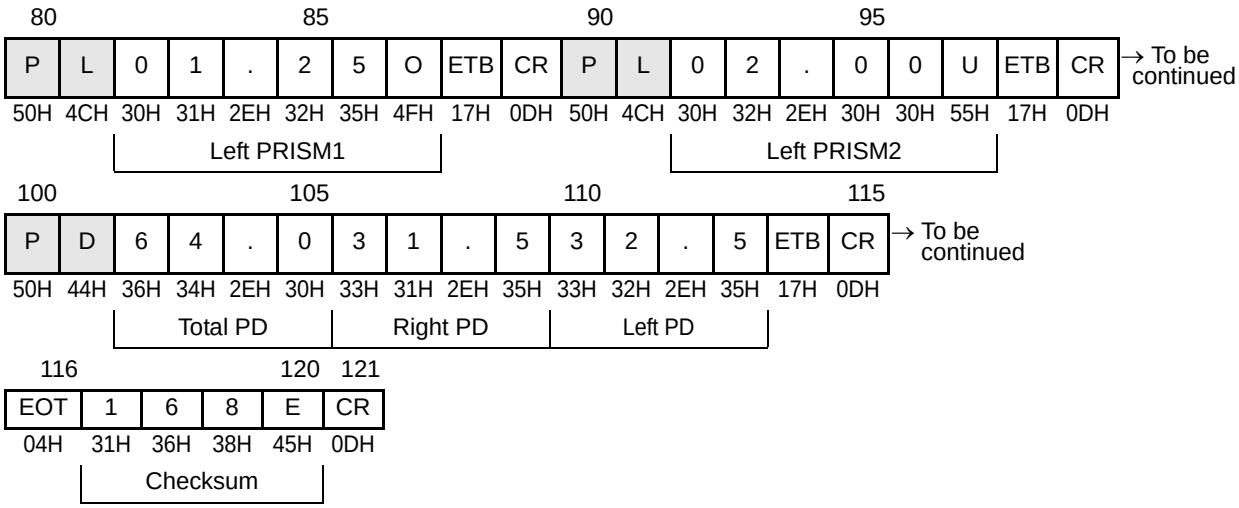
Total PD = 64.0 mm

CR code = Added

Note

- This is an example of the maximum data size (121 characters) in prism layout measurement mode.
- PRISM is the measured prism power.




80
85
90
95
P L 0 1 . 2 5 O ETB CR P L 0 2 . 0 0 U ETB CR
→ To be continued
50H 4CH 30H 31H 2EH 32H 35H 4FH 17H 0DH 50H 4CH 30H 32H 2EH 30H 30H 55H 17H 0DH
Left PRISM1
Left PRISM2
100
105
110
115
P D 6 4 . 0 3 1 . 5 3 2 . 5 ETB CR
→ To be continued
50H 44H 36H 34H 2EH 30H 33H 31H 2EH 35H 33H 32H 2EH 35H 17H 0DH
Total PD
Right PD
Left PD
116
120
121
EOT 1 6 8 E CR
04H 31H 36H 38H 45H 0DH
Checksum

3. INSTALLATION OF USB DRIVER

Have the optional USB cable (31001-E076, provided with the USB driver) handy. The procedure varies with the OS of the computer.

3.1 Installation Procedure (Windows 7)

Follow the procedure below for computer running Windows 7.

* Log in as an administrator. Some procedures might not be displayed due to security setting.

1 Connect the LM-1000, LM-1000P, or LM-1200 and computer with the USB cable.

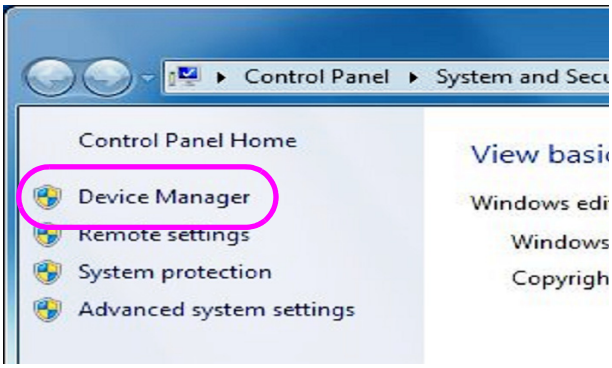
2 Turn on the LM-1000, LM-1000P, or LM-1200.

The operating system recognizes unknown devices.

3 Open the Property in My Computer.

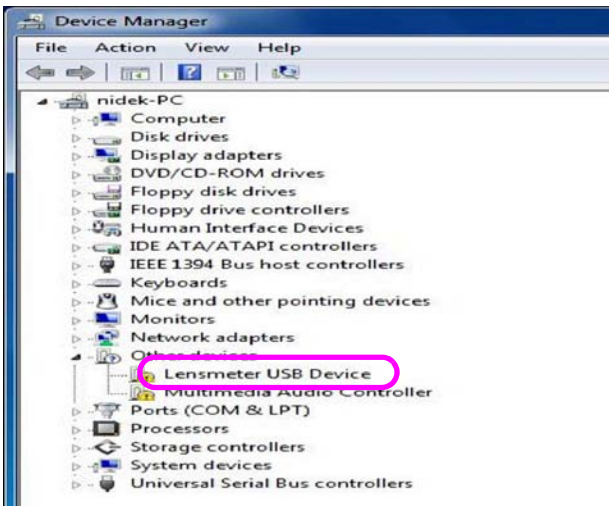
4 Open the “Device Manager”

The new dialog is displayed.



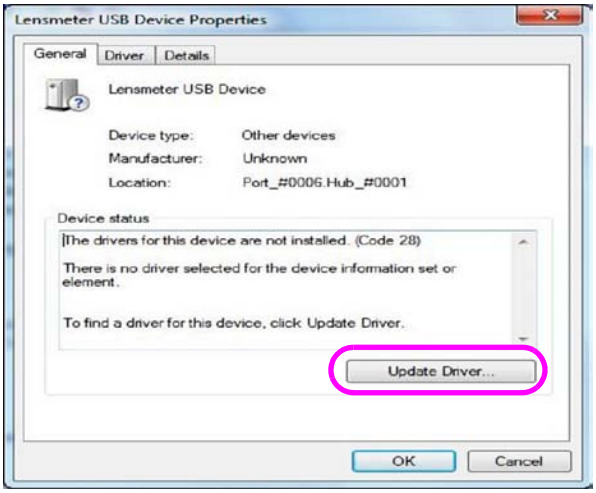
5 Open the added “Lensmeter USB Devices”

The new dialog is displayed.



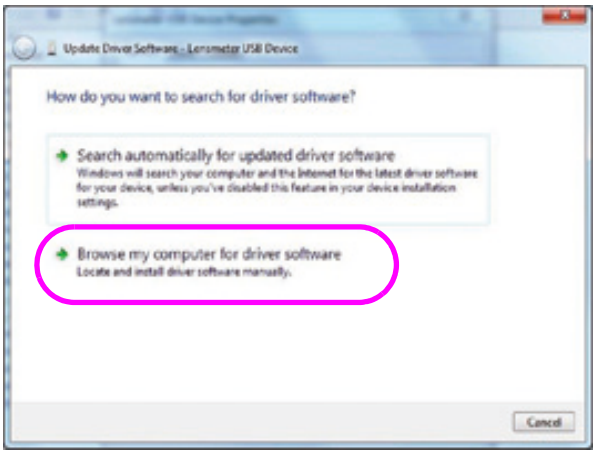
6 Press the “Update Driver” button.

The new dialog is displayed.



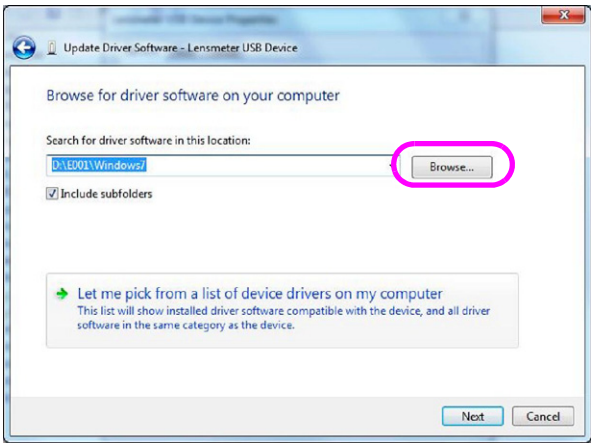
7 Choose the “Browse my computer for driver software”.

The new dialog opens.



8 Press the “Browse” button.

The Browse for Folder dialog opens.



9 Designate the location of the “FTDIBUS.INF” file and press the OK button.

Ordinarily, designate the E001\Windows7 folder in the distributed media.

The Browse for Folder dialog closes.

10 Press the Next button.

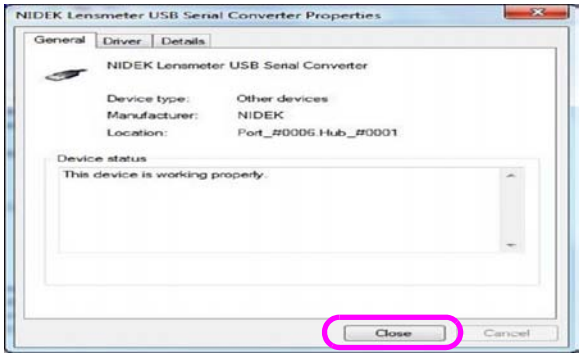
The Windows 7 Security dialog opens.

11 Choose the “Install this driver software anyway”.

The new dialog is displayed.

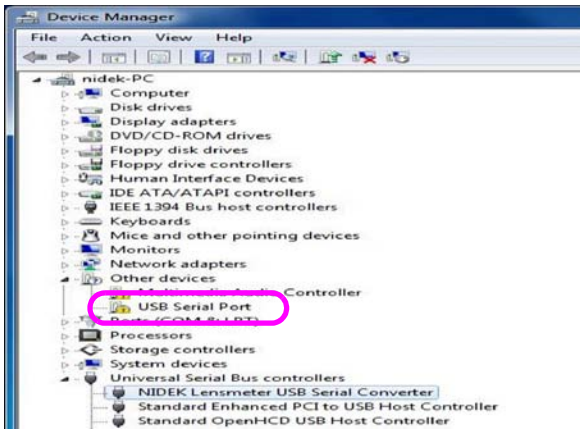
12 Press the Close button.

13 Press the Close button.



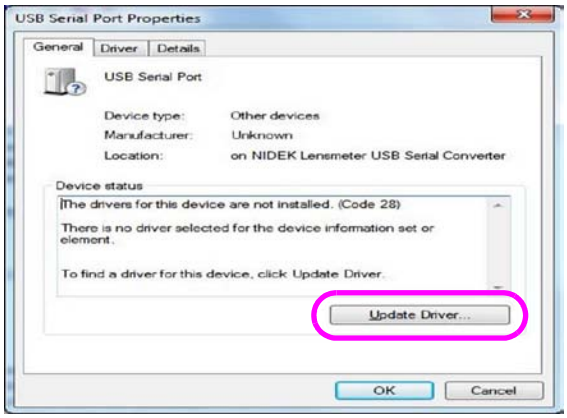
14 Open the “USB Serial Port”.

The new dialog is displayed.

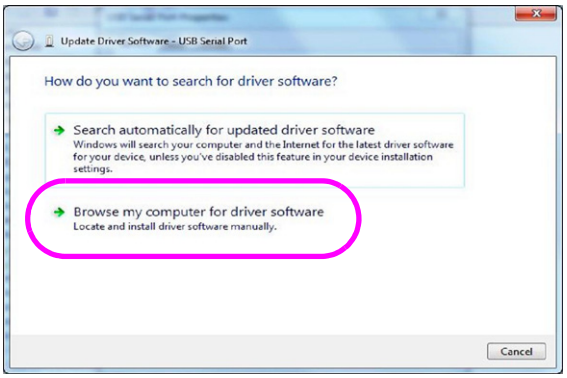


15 Press the “Update Driver” button.

The new dialog is displayed.

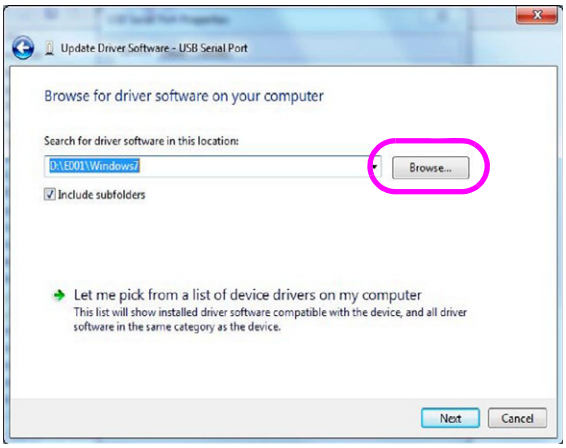


16 Choose the “Browse my computer for driver software”.



17 Press the “Browse” button.

The Browse for Folder dialog opens.



18 Designate the location of the “FTDIPORT.INF” file and press the OK button.

Ordinarily, designate the E001\Windows7 folder in the distributed media.

The Browse for Folder dialog closes.

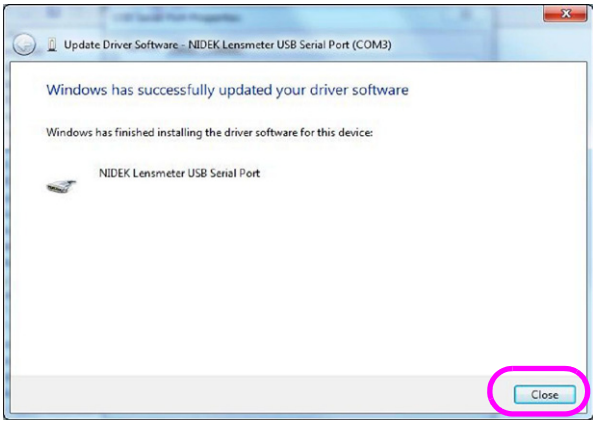
19 Press the Next button.

The Windows Security dialog opens.

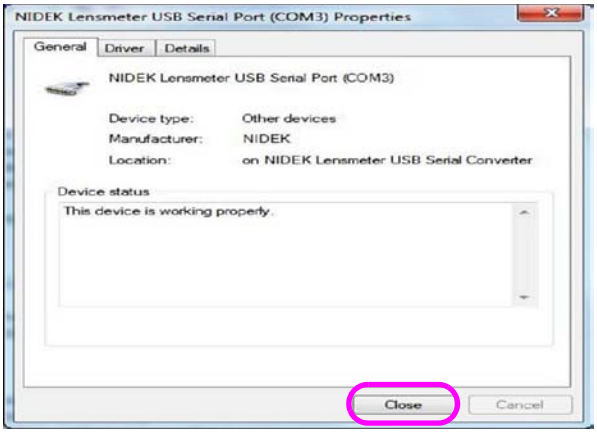
20 Choose the “Install this driver software anyway”.

The new dialog is displayed.

21 Press the Close button.



22 Press the Close button.



23 Turn off the LM-1000, LM-1000P, or LM-1200.

The installation of the USB driver has been completed.

3.2 Installation Procedure (Windows XP)

Follow the procedure below for computer running Windows XP.

1 Connect the LM-1000, LM-1000P, or LM-1200 and computer with the USB cable.

2 Turn on the LM-1000, LM-1000P, or LM-1200.

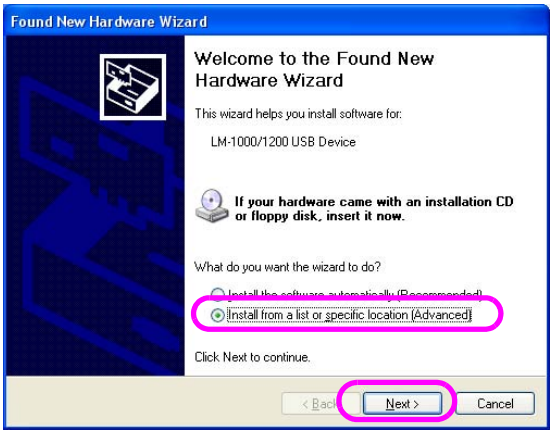
The plug & play operating system recognizes the LM-1000/1200 USB Device. The Welcome to the Found New Hardware Wizard dialog is displayed.

3 Press the “No, not this time” radio button and press the Next > button.

The new dialog is displayed.

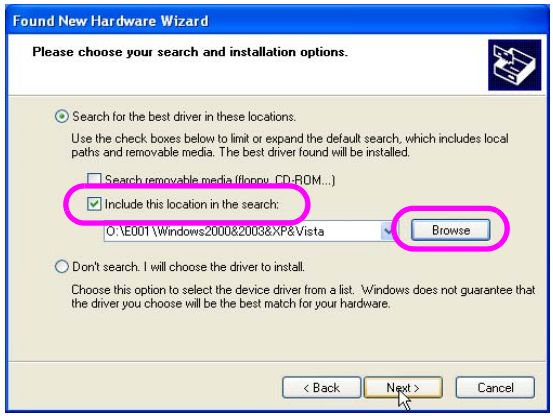
4 Choose the “Install from a list or specific location (Advanced)” radio button and press the Next > button.

The “Please choose your search and installation options” dialog is displayed.



5 Choose the “Search for the best driver in these locations.” radio button, choose the “Include this location in the search” check box, and then press the Browse button.

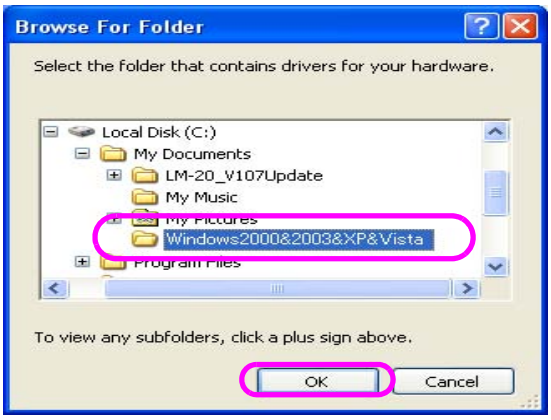
The Browse for Folder dialog opens.



6 Designate the location of the “FTDIBUS.INF” file and press the OK button.

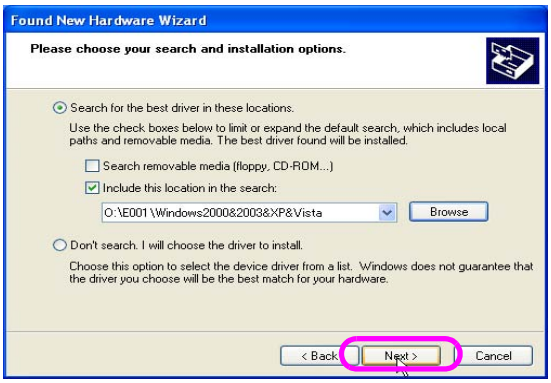
Ordinarily, designate the E001\Windows2000&2003&XP&Vista folder in the distributed media.

The browse for Folder dialog opens.



7 Press the Next > button.

The Hardware Installation dialog opens.



8 Press the Continue Anyway button.

The “Completing the Found New Hardware Wizard” dialog is displayed.

9 Press the Finish button.

10 The plug & play operating system subsequently recognizes the USB Serial Port.

The “Welcome to the Found New Hardware Wizard” dialog is displayed.

11 Select the “No, not this time” radio button and then press the Next > button.

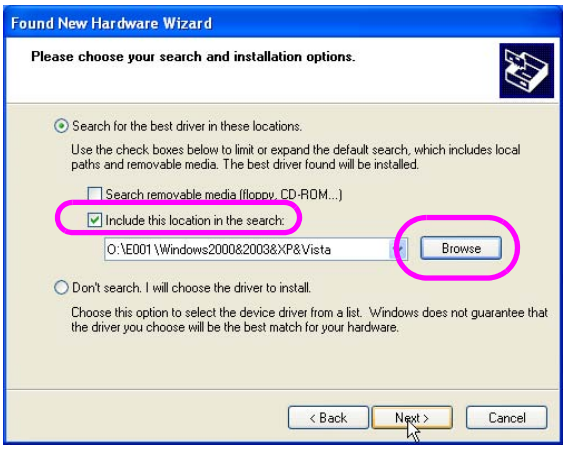
The new dialog is displayed.

12 Select the “Install from a list or specific location (Advanced)” radio button and click the Next > button.

The Please choose your search and installation options dialog is displayed.

13 Choose the “Search for the best driver in these locations” radio button, then choose the “Include this location in the search” check box, and press the Browse button.

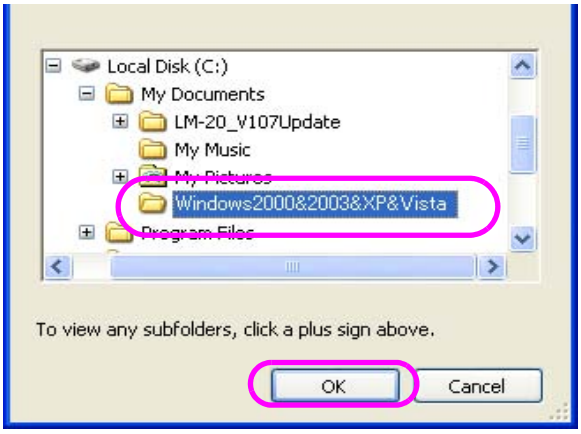
The Browse For Folder dialog opens.



14 Designate the location of the “FTDI-PORT.INF” file and press the OK button.

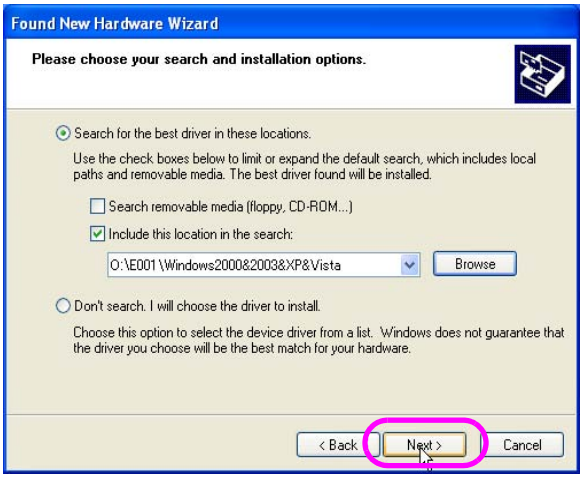
Ordinarily, designate the E001\Windows2000&2003&XP&Vista folder in the distributed media.

The Browse For Folder dialog closes.



15 Press the Next > button.

The Hardware Installation dialog opens.



16 Press the Continue Anyway button.

The Found New Hardware Wizard dialog is displayed.

17 Press the Finish button.

18 After using the Safety Remove Hardware function, remove the USB cable.

19 Turn off the LM-1000, LM-1000P, or LM-1200.

The installation of the USB driver has been completed.

3.3 Installation Procedure (Windows 2000)

Follow the procedure below for computer running Windows 2000.

1 Connect the LM-1000, LM-1000P, or LM-1200 and computer with the USB cable.

2 Turn on the LM-1000, LM-1000P, or LM-1200.

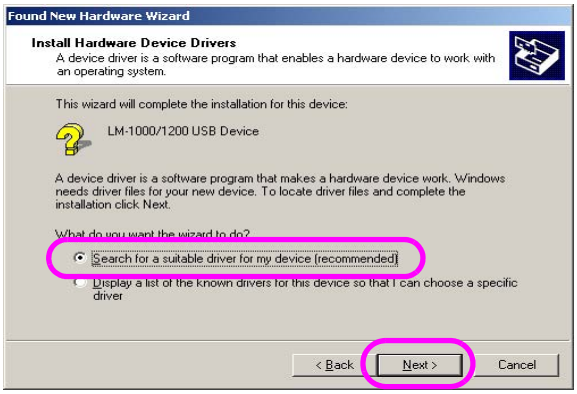
The plug & play operating system recognizes the LM-1000/1200 USB Device. The “Welcome to the Found New Hardware Wizard” dialog is displayed.

3 Click the Next button >.

The Install Hardware Device Drivers dialog is displayed.

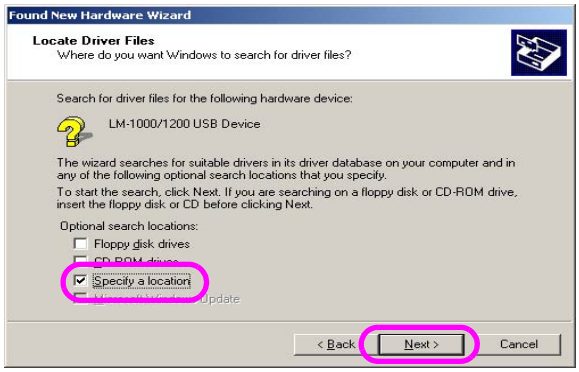
4 Choose the “Search for a suitable driver for my device (recommended)” radio button and press the Next > button.

The Locate Driver Files dialog is displayed.



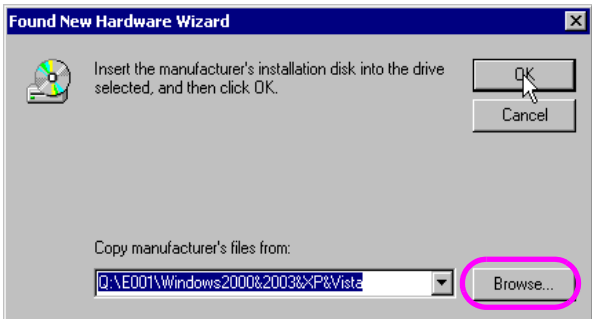
5 Only check the Specify a location check box and press the Next > button.

The dialog for designating a file is displayed.



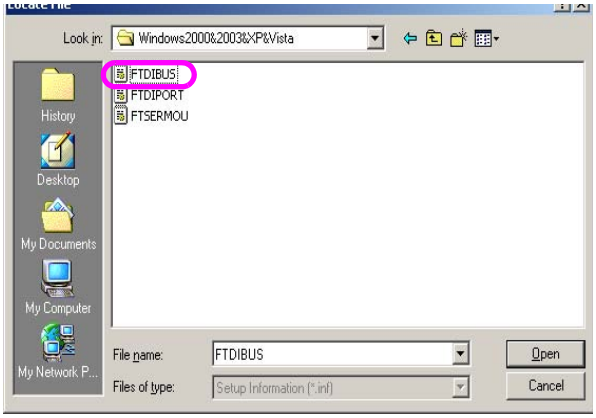
6 Press the Browse button.

The Locate File dialog is displayed.



7 Designate “FTDIBUS.INF” file in the Look in box.

Ordinarily, designate the E001\Windows2000&2003&XP&Vista folder in the distributed media.

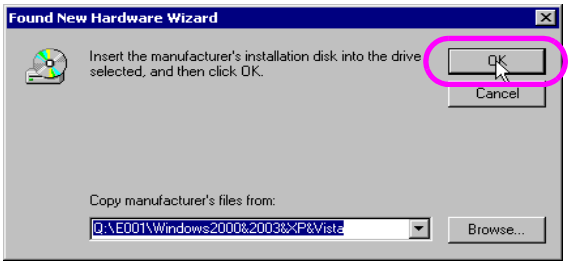


8 Select the “FTDIBUS.INF” file and press the Open button.

The dialog for designating a file is activated.

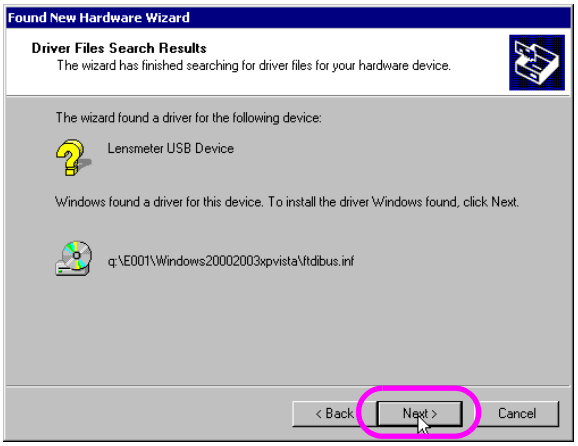
9 Press the OK button.

The Driver Files Search Results dialog is activated.



10 Press the Next button.

The Completing the Found New Hardware Wizard dialog is displayed.



11 Press the Finish button.

The plug & play operating system subsequently recognizes the USB Serial Port.

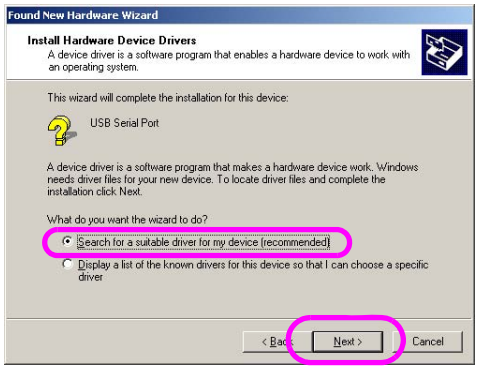
The “Welcome to the Found New Hardware Wizard” dialog is displayed.

12 Press the Next > button.

The Install Hardware Device Drivers dialog is displayed.

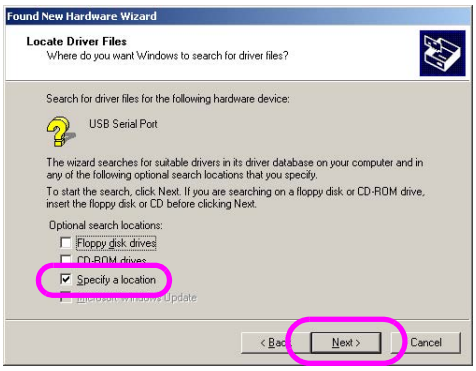
13 Choose the “Search for a suitable driver for my device (recommended)” radio button and press the Next > button.

The Locate Driver Files dialog is displayed.



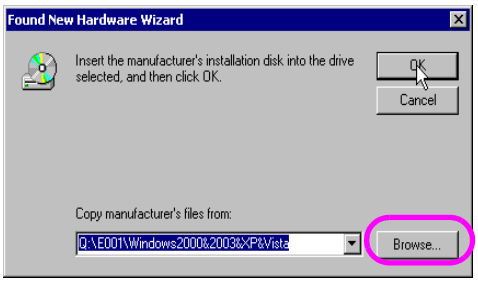
14 Only check the “Specify a location” check box and press the Next button >.

The dialog for designating a file is displayed.



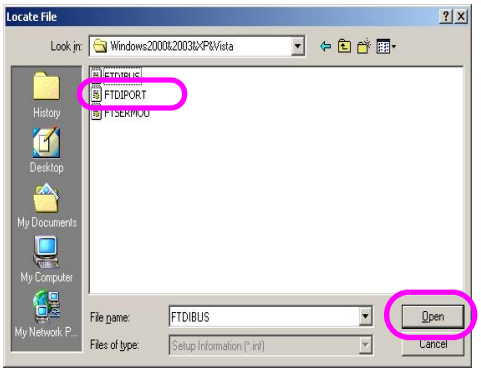
15 Press the Browse button.

The Locate File dialog is displayed.



16 Designate the folder including the “FTDIPORT.INF” file in the Look in box.

Ordinarily, designate the E001\Windows2000&2003&XP&Vista folder in the distributed media.

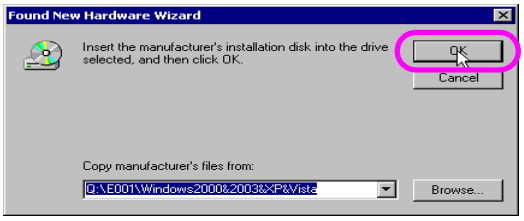


17 Select the “FTDIPORT.INF” file and press the Open button.

The dialog for designating a file is activated.

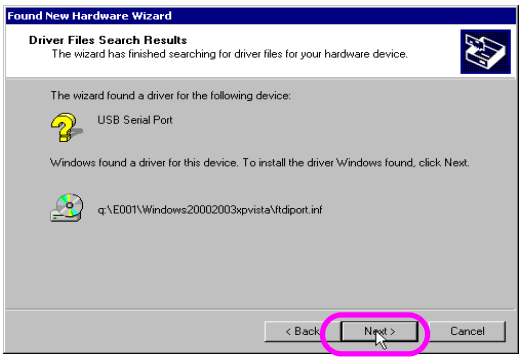
18 Press the OK button.

The Driver Files Search Results dialog is activated.



19 Press the Next > button.

The Completing the Found New Hardware Wizard dialog is displayed.



20 Press the Finish button.

21 After using the Safely Remove Hardware function, remove the USB cable.

22 Turn off the LM-1000, LM-1000P, or LM-1200.

The installation of the USB driver has been completed.

3.4 Installation Procedure (Windows 98)

Follow the procedure below for computer running Windows 98.

1 Connect the LM-1000, LM-1000P, or LM-1200 and computer with the USB cable.

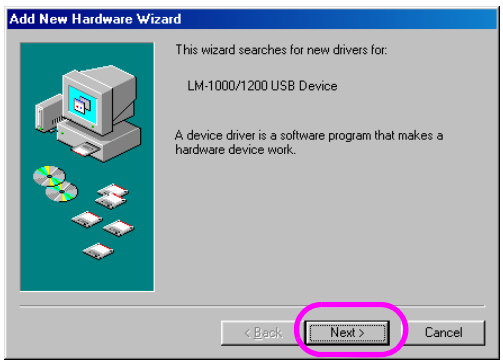
2 Turn on the LM-1000, LM-1000P, or LM-1200.

The plug & play operating system recognizes the LM-1000/1200 USB Device.

The Add New Hardware Wizard dialog is displayed.

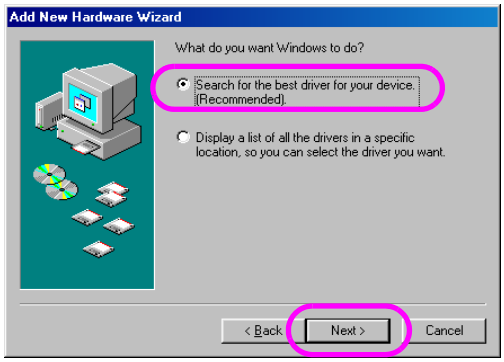
3 Press the Next > button.

The new dialog is displayed.



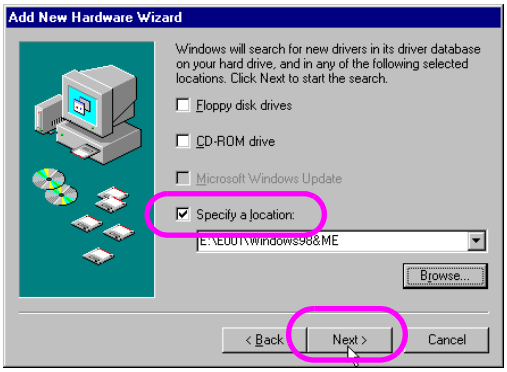
4 Choose the “Search for the best driver for your device. (Recommended).” radio button and press the Next > button.

The new dialog is displayed.



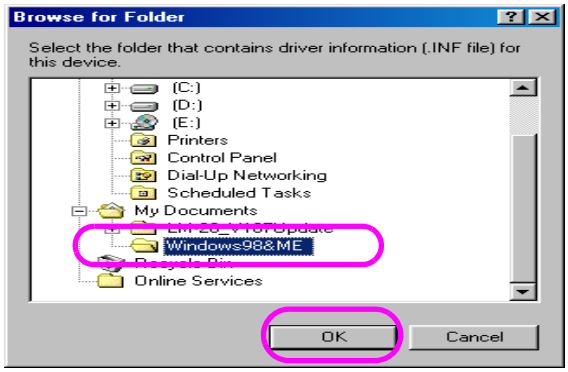
5 Only check the “Specify a location” check box and press the Browse button.

The Browse for Folder dialog opens.



6 Select the folder including the "FTDIBUS.INF" file.

Ordinarily, designate the E001\Windows98&ME folder in the distributed media.



7 Press the OK button.

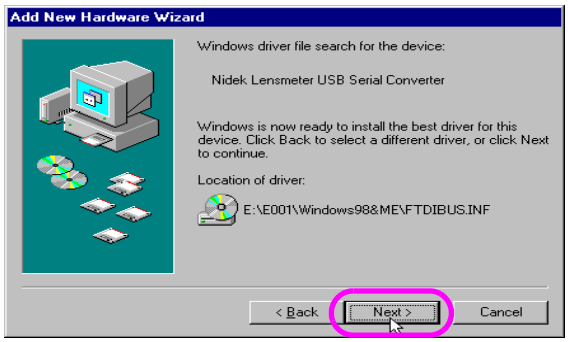
The Browse for Folder dialog closes.

8 Press the Next > button.

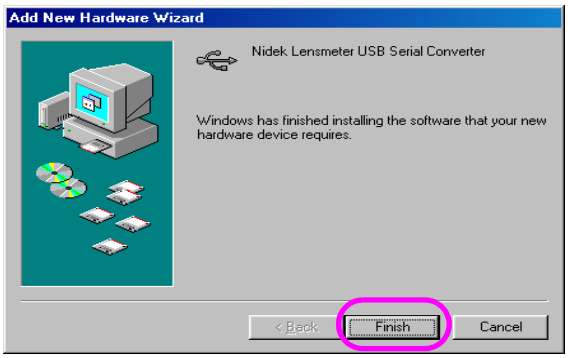
The new dialog is displayed.

9 Press the Next > button

The new dialog is displayed.



10 Press the Finish button.



11 After using the Safely Remove Hardware function, remove the USB cable.

12 Turn off the LM-1000, LM-1000P, or LM-1200.

The installation of the USB driver has been completed.

3.5 Installation Procedure (Windows ME)

Follow the procedure below for computer running Windows ME.

1 Connect the LM-1000, LM-1000P, or LM-1200 and computer with the USB cable.

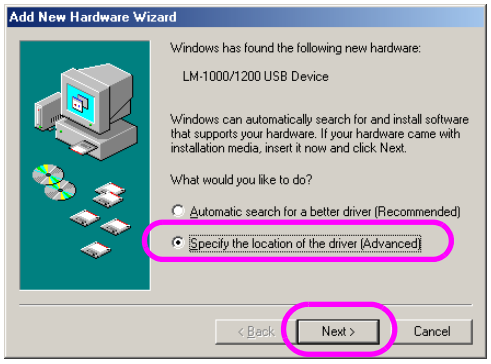
2 Turn on the LM-1000, LM-1000P, or LM-1200.

The plug & play operating system recognizes the LM-1000/1200 USB Device.

The Add New Hardware Wizard dialog is displayed.

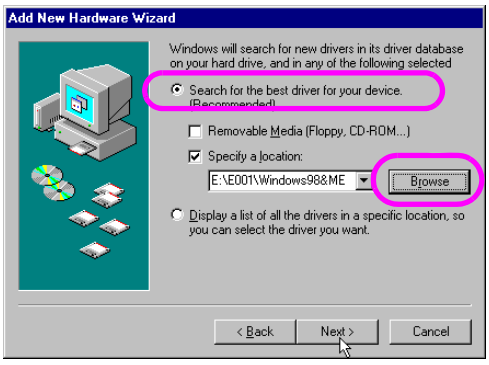
3 Choose the "Specify the location of the driver (Advanced)" radio button and press the Next > button.

The new dialog is displayed.



4 Choose the "Search for the best driver for your device (Recommended)" radio button, only check the "Specify a location:" check box, and press the Browse button.

The Browse for Folder dialog opens.

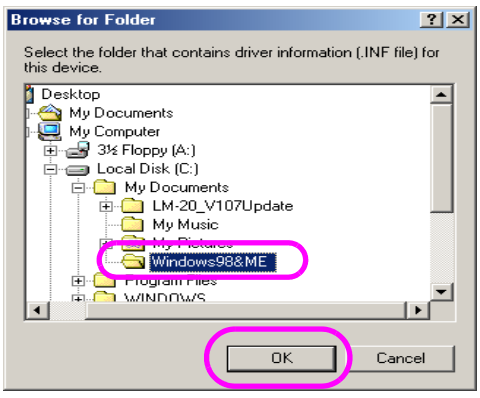


5 Select the folder including the "FTDIBUS.INF" file.

Ordinarily designate the E001\Windows98&ME folder in the distributed media.

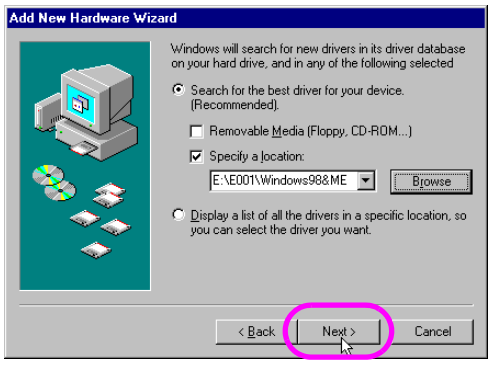
6 Press the OK button.

The Browse for Folder dialog closes.



7 Press the Next button >.

The new dialog is displayed.



8 Press the Next > button.

The new dialog is displayed.

9 Press the Finish button.

10 After using the Safely Remove Hardware function, remove the USB cable.

11 Turn off the LM-1000, LM-1000P, or LM-1200.

The installation of the USB driver has been completed.