

NEC NEC LCD Technologies, Ltd.

LAMP HOLDER SET

150LHS20

SPECIFICATIONS

(4th edition)

Signature of writer

Approved by

Date

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July 26, 2004

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INTRODUCTION

• WARRANTY

NEC LCD Technologies, Ltd. (hereinafter called "NEC") warrants that this product meets the product specifications set forth in this document. If this product under normal operation is found to be non-conforming to the product specifications, and such non-conformance is promptly notified to NEC within six (6) months after the delivery date, and further such non-conformance is solely attributable to NEC, NEC shall replace the non-conforming product with a conforming one, free of charge. However, this warranty does not apply to any non-conformance that can be found easily by incoming inspections or those resulting from any one of the following:

- 1) Unauthorized or improper repair, maintenance or modification
- 2) Operation or use against specifications, instructions or warnings given by NEC.
- 3) Any other causes attributable to customer

In case NEC replaces a product after the six (6) months warranty period, NEC shall be entitled to charge for such replacement. Those replaced parts shall be covered with six (6) months warranty period from the replacement day.

EXCEPT AS EXPRESSLY SET FORTH HEREIN, NEC DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, AND DISCLAIMS ANY REMEDIES.

• MAINTENANCE

The specifications of maintenance parts may be partially changed within equivalent quality or better.

If NEC is planning discontinuation for this product, NEC shall inform it to customers in six (6)-months advance from the issued date of official agreements.

• CHANGE CONTROL

For the purpose of product improvement, this product design may be changed for specifications, appearance, parts, circuits and so on. In case a design change is affected on the product specifications, NEC shall inform it to customers in advance.

• HANDLING OF DOUBTFUL POINTS

Any question arising out of, or in connection with, this SPECIFICATION or any matter not stipulated herein will be settled each time upon consultation between both parties.

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1. DESCRIPTION

150LHS20 is a lamp holder set for replacement. Adaptable LCD modules are as follows.

Adaptable LCD module
NL10276BC30-10
NL10276HC30-10E
NL10276BC30-15

See '**REPLACEMENT MANUAL FOR LAMP HOLDER SET**' when customer replaces the lamp holder.

2. GENERAL SPECIFICATIONS

Item	Specification	Unit
Lamp holder size	See 9.OUTLINE DRAWINGS.	mm
Weight	28 (typ.)	g / set
Delivery unit	10 (min.)	set

Note1: One lamp holder set consists of two lamp holders (up side and down side).

3. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit	Remarks
Storage temp.	Tst	-20 to +60	°C	-
Operating temp.	Top	This rating is in accordance with absolute maximum ratings for the adaptable LCD module.		
Lamp voltage	VBLH	2,000	Vrms	Ta = 25°C
Relative humidity Note1	RH	≤ 95	%	Ta ≤ 40°C
		≤ 85		40°C < Ta ≤ 50°C
Absolute humidity Note1	AH	≤ 70 Note2	g/m ³	Ta > 50°C

Note1: No condensation

Note2: Water amount at Ta=50°C and RH=85%

4. ELECTRICAL CHARACTERISTICS (reference)

(Ta=25°C, Note1)

Item	Symbol	min.	typ.	max.	Unit	Remarks
Lamp current	IBL	3.5	7.5	8.0	mArms	-
Lamp voltage	VBLH	-	560	-	Vrms	at IBL= 7.5mArms
Lamp starting voltage	VS	1,300	-	-	Vrms	Ta=25°C
		1,500	-	-		Ta=0°C
Oscillation frequency	FO	45	54	65	kHz	-

Note1: This lamp holder set consists of 2 lamps, and these specifications are for each lamp.

5. CONNECTIONS AND FUNCTIONS FOR INTERFACE PINS

Attention: VBLH and VBLC must be connected correctly. If customer connects wrongly, customer will be hurt and the module will be broken.

CN201 plug: BHR-03VS-1 (J.S.T Mfg. Co., Ltd.)

Adaptable socket (Inverter side): SM02 (8.0) B-BHS-1-TB (J.S.T Mfg. Co., Ltd.)

Pin No.	Symbol	Signal	Remarks
1	VBLH	High voltage (Hot)	Cable color: Pink
2	N.C.	-	Keep this terminal Open.
3	VBLC	Low voltage (Cold)	Cable color: White

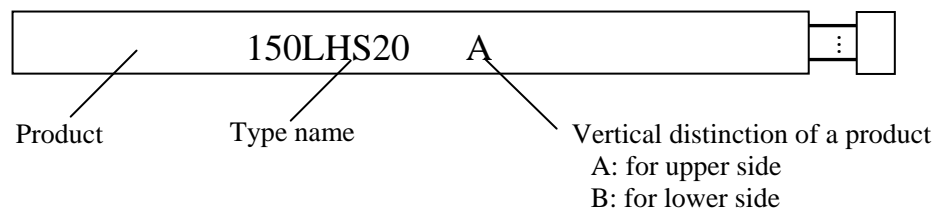
CN202 plug: BHR-03VS-1 (J.S.T Mfg. Co., Ltd.)

Adaptable socket (Inverter side): SM02 (8.0) B-BHS-1-TB (J.S.T Mfg. Co., Ltd.)

Pin No.	Symbol	Signal	Remarks
1	VBLH	High voltage (Hot)	Cable color: Pink
2	N.C.	-	Keep this terminal Open.
3	VBLC	Low voltage (Cold)	Cable color: White

6. INDICATION OF TYPE NAME

Type name is printed in the location shown in the following figure.
Vertical distinction of a product is indicated by "A" and "B".



Example for indication of type name

7. PACKING, TRANSPORTATION AND DELIVERY

NEC will pack products to deliver to customer in accordance with NEC's packing specifications, and will deliver products to customer in such a state that products will not suffer from a damage during transportation. The delivery conditions are as follows.

7.1 INNER PACKING BOX

1 lamp holder set is packed in an inner packing box (See "**6.6 OUTLINE FIGURE FOR PACKING**").

The type name and quantity are shown on outside of inner packing box, either labeling or printing.

In case of shipping the product, the product must not be transported with the inner box alone, because there is a high risk of damage. Be sure to use an outer packing box!

7.2 OUTER PACKING BOX

10 lamp holder sets are packed up with the minimum in an outer packing box (See "**6.6 OUTLINE FIGURE FOR PACKING**"). The type name and quantity are shown on outside of outer packing box, either labeling or printing. Also in case the outer packing box with products is dropped from a height of 60cm or more, there is a risk of damage to products.

7.3 INSPECTION RECORD SHEET

Inspection record sheets are included in an inner packing box with delivery products to customer. It is summarized to a number of products for pass/fail assessment.

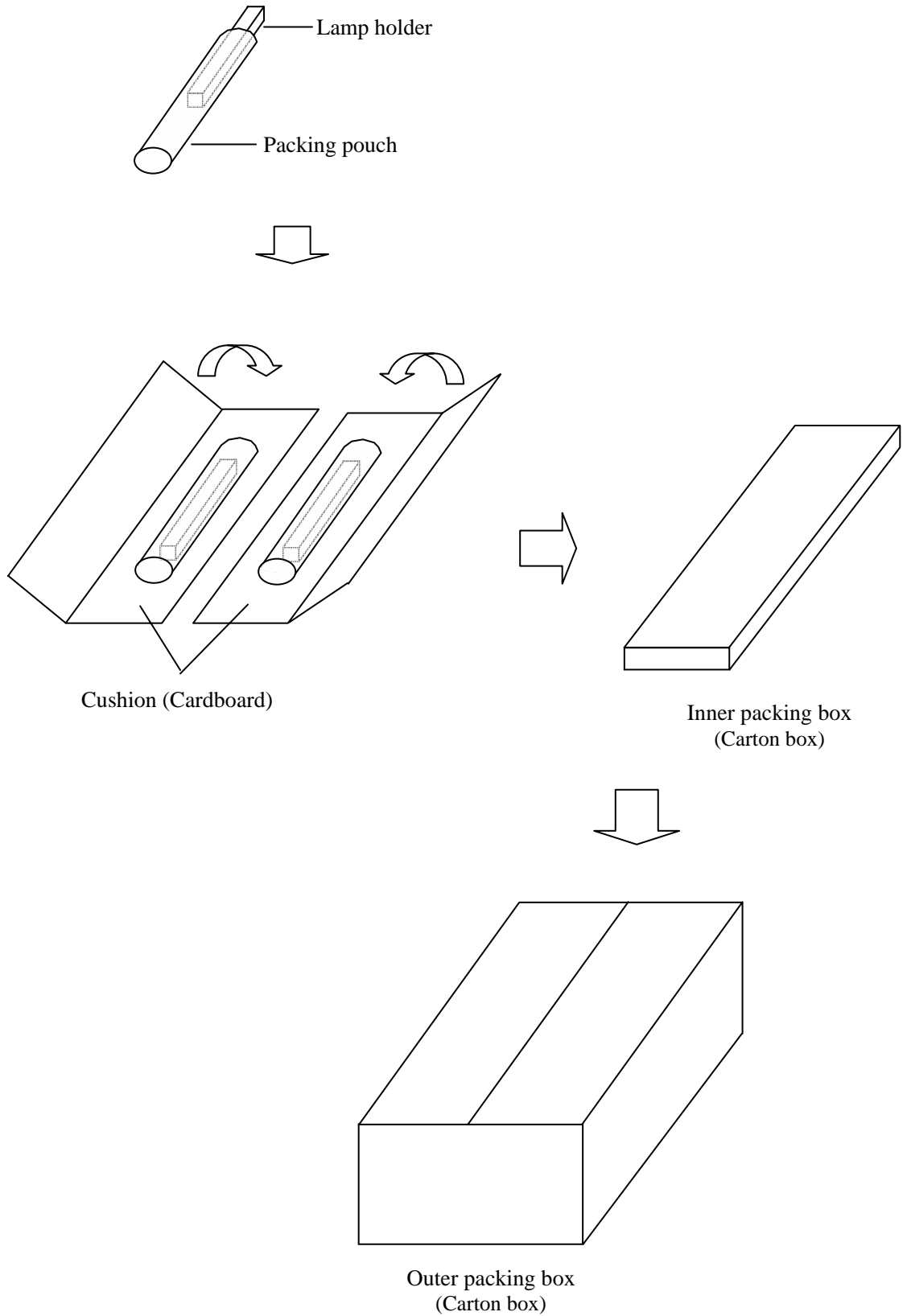
7.4 TRANSPORTATION

The product is transported by vehicle, aircraft or shipment.

7.5 SIZE AND WEIGHT FOR PACKING BOX

Parameter	Outer packing box	Unit
Size	175 (W) × 150 (H) × 425 (D) (typ.)	mm
Weight	1.2 (typ.) (with 10 inner packing boxes)	kg
Total weight	1.5 (typ.) (with 10 inner packing boxes and 10 lamp holder sets)	kg

7.6 OUTLINE FIGURE FOR PACKING



8. PRECAUTIONS

8.1 MEANING OF CAUTION SIGNS

The following caution signs have very important meaning. **Be sure to read '7.2 CAUTIONS' and '7.3 ATTENTIONS', after understanding these contents!**



CAUTION

This sign has the meaning that customer will be injured by himself, or the product will sustain a damage, if customer has wrong operations.



This sign has the meaning that customer will get an electrical shock, if customer has wrong operations.



This sign has the meaning that customer will be injured by himself, if customer has wrong operations.

8.2 CAUTIONS



- ① Do not touch HIGH VOLTAGE PART of the backlight inverter while turn on. There is a danger of an electric shock. So that, be sure to check again before starting replacement work that the power is turned OFF.
- ② Because there is a danger that the backlight inverter is charged at a high voltage after working, be sure to wait some time after turning power OFF before starting replacement work.



- ③ Because the lamp holder and high voltage section are hot after working, there is a danger of injury by burning. So that, be sure to wait some time after turning power OFF before starting replacement work.
- ④ Take care not to injure yourself while treating the metal frame of the lamp holder.
- ⑤ Do not shock and press the LCD panel and the lamp holder. There is a danger of breaking, because they are made of glass.

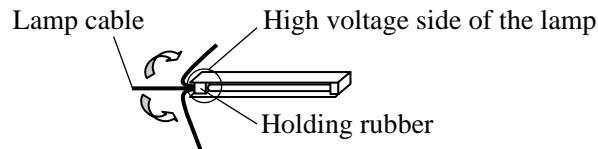


- ⑥ The fluorescent lamp in the LCD module may be damaged in some cases. Take care not to injure yourself while treating the lamp. If the lamp is damaged inside, quality problems may occur, such as un-even brightness by pieces of broken glass left inside. In this case return it to NEC for repair.

8.3 ATTENTIONS

(1) Handling the product

- ① Do not press or rub on the sensitive display surface. If customer clean on the panel surface, NEC recommends using the cloth with ethanolic liquid such as screen cleaner for LCD.
- ② Take the measures of electrostatic discharge such as earth band, ionic shower and so on, when customer deals with the LCD module, because the LCD module may be damaged by electrostatic.
- ③ Do not touch with bare hand or dirt the cold cathode fluorescent lamp in the lamp holder. If do so, brightness variations might occur.
- ④ Do not bend or unbend the lamp cable at the near part of the lamp holding rubber, to avoid the damage for high voltage side of the lamp. This damage may cause a lamp breaking and abnormal operation of high voltage circuit.



- ⑤ Properly connect the adaptable plug (backlight side) to socket (inverter side) without incomplete connection. After connecting, be careful not to hook the lamp cables because incomplete connection may occur by hooking the lamp cables. This incomplete connection may cause abnormal operation of high voltage circuit.

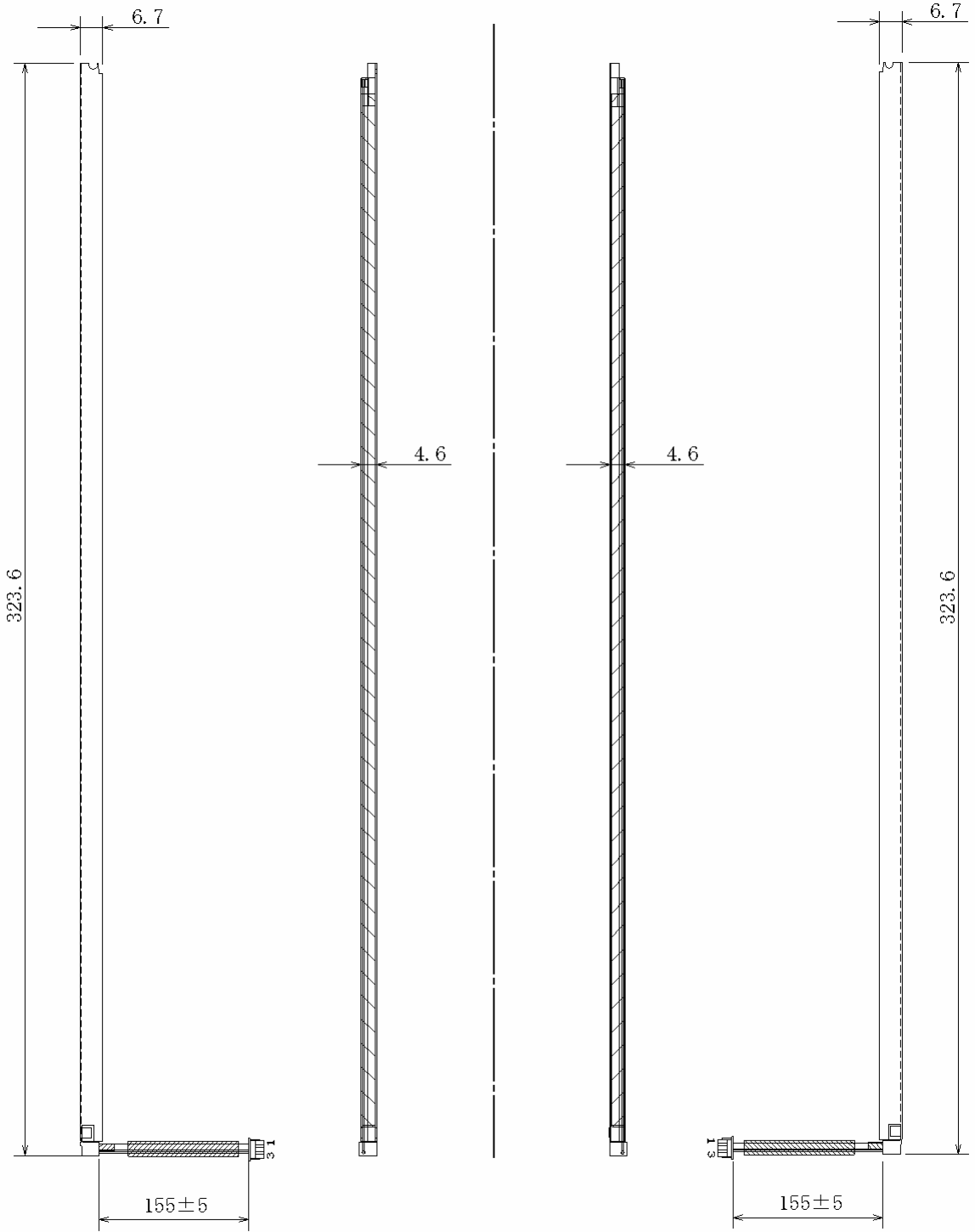
(2) Environment

- ① Do not operate or store in high temperature, high humidity, dewdrop atmosphere or corrosive gases. Keep the lamp holder set in packing pouch in room temperature, because of avoidance for dusts and sunlight, if customer stores the lamp holder set.
- ② In order to prevent dew condensation occurring by temperature difference, the product packing box should be opened after leave under the environment of an unpacking room temperature enough. Because a situation of dew condensation occurring is changed by the environmental temperature and humidity, evaluate the leaving time sufficiently. (Recommendation leaving time: 6 hour or more with packing state)

(3) Disposal method

- ① The lamp holder set contains cold cathode fluorescent lamps. Follow local ordinances or regulations for its disposal. Do not reuse the replaced lamp holder set.

9. OUTLINE DRAWINGS (reference)
 (Unit: mm)



Up side

Down side

REVISION HISTORY

The inside of latest specifications is revised to the clerical error and the major improvement of previous edition. Only a changed part such as functions, characteristic value and so on that may affect a design of customers, are described especially below.

Edition	Prepared date	Revision contents and signature	Issued date
1st edition	Feb. 25, 2003	<p>Revision contents</p> <p>New issue</p> <p>Writer</p> <p><i>Approved by</i> T. ITO</p> <p><i>Checked by</i> R. KAWASHIMA</p> <p><i>Prepared by</i> A. KUMANO</p> <p>Acknowledger</p> <p><i>Design group</i> C. SUGITANI</p> <p><i>Reliability and QC Department</i> K. ICHINOHE</p>	Mar. 11, 2003
2nd edition	June 20, 2003	<p>Revision contents</p> <p>P.4 1.DESCRPTION</p> <ul style="list-style-type: none"> • NL10276BC30-10E → NL10276HC30-10E (correction) <p>3. ABSOLUTE MAXIMUM RATINGS (Title is changed)</p> <ul style="list-style-type: none"> • Operating temp(TopF) - Rating : 0°C to +50°C (TopR) - Rating : 0°C to +55°C → (Top) : This rating is in accordance with absolute maximum ratings for the adaptable LCD module. (Expression is changed) • Lamp voltage(VBLH) : 2000 Vrms Ta=25°C is added. • Note1 and Note2 are deleted. (Note3 → Note1, Note4 → Note2) <p>P.5 5. CONNECTIONS AND FUNCTIONS FOR INTERFACE PINS</p> <ul style="list-style-type: none"> • CN201, 202-Pin No.2-Signal : Non connection → - -Remarks : - → Keep this terminal Open <p>P7,9 • Antistatic pouch → Packing pouch (correction)</p> <p>Company and organization names are changed.</p> <p>Writer</p> <p><i>Approved by</i> T. ITO</p> <p><i>Checked by</i> R. KAWASHIMA</p> <p><i>Prepared by</i> A. KUMANO</p> <p>Acknowledger</p> <p><i>Production Engineering Department</i> H. OKAMOTO</p> <p><i>Quality Assurance Department</i> K. ICHINOHE</p>	July 1, 2003

REVISION HISTORY

The inside of latest specifications is revised to the clerical error and the major improvement of previous edition. Only a changed part such as functions, characteristic value and so on that may affect a design of customers, are described especially below.

Edition	Prepared date	Revision contents and signature	Issued date
3rd edition	May 18, 2004	<p>Revision contents</p> <p>P4 Description: NL10276BC30-15 (addition)</p> <p>Writer</p> <p style="text-align: center;"><i>Approved by</i> <i>Checked by</i> <i>Prepared by</i></p> <p style="text-align: center;">_____ T. ITO _____ R. KAWASHIMA _____ N. KANO</p> <p>Acknowledger</p> <p style="text-align: center;"><i>Production Engineering Department</i> <i>Quality Assurance Department</i> <i>Product Planning Department</i></p> <p style="text-align: center;">_____ H. OKAMOTO _____ K. ICHINOHE _____ N. SATO</p>	June 14, 2004
4th edition	July 26, 2004	<p>Revision contents</p> <p>P5 6. INDICATION OF TYPE NAME (addition)</p> <p>P6 7.5 SIZE AND WEIGHT FOR PACKING BOX - Total weight: 14.6 (typ.) kg → 1.5 (typ.) kg (correction)</p> <p>Signature of writer</p> <p style="text-align: center;"><i>Approved by</i> <i>Checked by</i> <i>Prepared by</i></p> <p style="text-align: center;">_____ T. ITO _____ R. KAWASHIMA _____ N. KANO</p> <p>Signature of acknowledger</p> <p style="text-align: center;"><i>Production Engineering Department</i> <i>Quality Assurance Department</i> <i>Product Planning Department</i></p> <p style="text-align: center;">_____ H. OKAMOTO _____ K. MORITA _____ N. SATO</p>	