



NEC NEC LCD Technologies, Ltd.

LAMP HOLDER SET

104LHS35

SPECIFICATIONS

(7th edition)

Signature of writer

Approved by


Date


T. ITO

Oct. 31, 2005

Checked by

Date


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Oct. 31, 2005

Prepared by

Date


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Oct. 31, 2005

Published by

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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 plans to discontinue 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

104LHS35 is a lamp holder set for replacement. Adaptable LCD modules are as follows.

Adaptable LCD module
NL6448BC33-46
NL6448BC33-46D
NL6448BC33-54
NL10276BC20-04

See 'REPLACEMENT MANUAL FOR LAMP HOLDER SET', when replacing the lamp holder.

2. GENERAL SPECIFICATIONS

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

3. ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Rating	Unit	Remarks
Storage temp.	Tst	-20 to +80	°C	-
Operating temp.	Top	This rating is in accordance with absolute maximum ratings for the adaptable LCD module.		
Lamp voltage	VBLH	1,500	Vrms	Ta = 25°C
Relative humidity Note1	RH	≤ 95	%	Ta ≤ 40°C
		≤ 85	%	40°C < Ta ≤ 50°C
		≤ 70	%	50°C < Ta ≤ 55°C
		≤ 60	%	55°C < Ta ≤ 60°C
		≤ 50	%	60°C < Ta ≤ 65°C
Absolute humidity Note1	AH	≤ 80 Note2	g/m ³	Ta > 65°C

Note1: No condensation

Note2: Water amount at Ta=65°C and RH=50%

4. ELECTRICAL CHARACTERISTICS (reference)

(Ta=25°C, Note1)

Item	Symbol	min.	typ.	max.	Unit	Remarks
Lamp current	IBL	2.0	5.0	5.5	mArms	-
Lamp voltage	VBLH	-	520	-	Vrms	at IBL= 5.0mArms
Lamp starting voltage	VS	850	-	-	Vrms	Ta = 25°C
		1,100	-	-		Ta = -10°C
Oscillation frequency	FO	50	-	70	kHz	-

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

5. CONNECTIONS AND FUNCTIONS FOR INTERFACE PINS

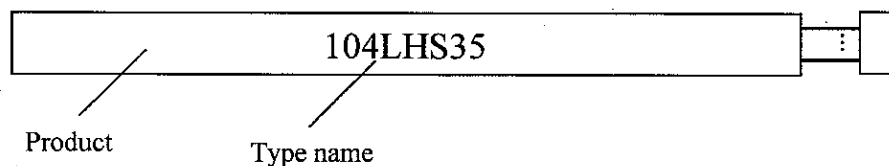
Attention: VBLH and VBLC must be connected correctly. Wrong connections will cause electric shock and also break down of the product.

CN2 plug: BHR-03VS-1 (J.S.T Mfg. Co., Ltd.)
 Adaptable socket (Inverter side): SM03 (4.0) B-BHS-1-TB (LF) (SN),
 SM03 (4.0) B-BHS-1-TB (J.S.T Mfg. Co., Ltd.)

Pin No.	Symbol	Signal	Remarks
1	VBLC	Low voltage (Cold)	Cable color: Gray
2	VBLH	High voltage (Hot)	Cable color: White
3	VBLH	High voltage (Hot)	Cable color: White

6. INDICATION OF TYPE NAME

Type name is printed in the location shown in the following figure.



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 condition that products will not suffer from a damage during transportation. The delivery conditions are as follows.

7.1 INNER PACKING BOX

2 lamp holder sets are packed in an inner packing box (See "7.6 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 only with the inner box alone, because there is a high risk of damage. Be sure to use an outer packing box which is shown below!

7.2 OUTER PACKING BOX

10 lamp holder sets are packed as the minimum in an outer packing box (See "7.6 OUTLINE FIGURE FOR PACKING"). The type name and quantity are shown on outside of outer packing box, either labeling or printing. 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 products. It is summarized to a number of products for pass/fail assessment.

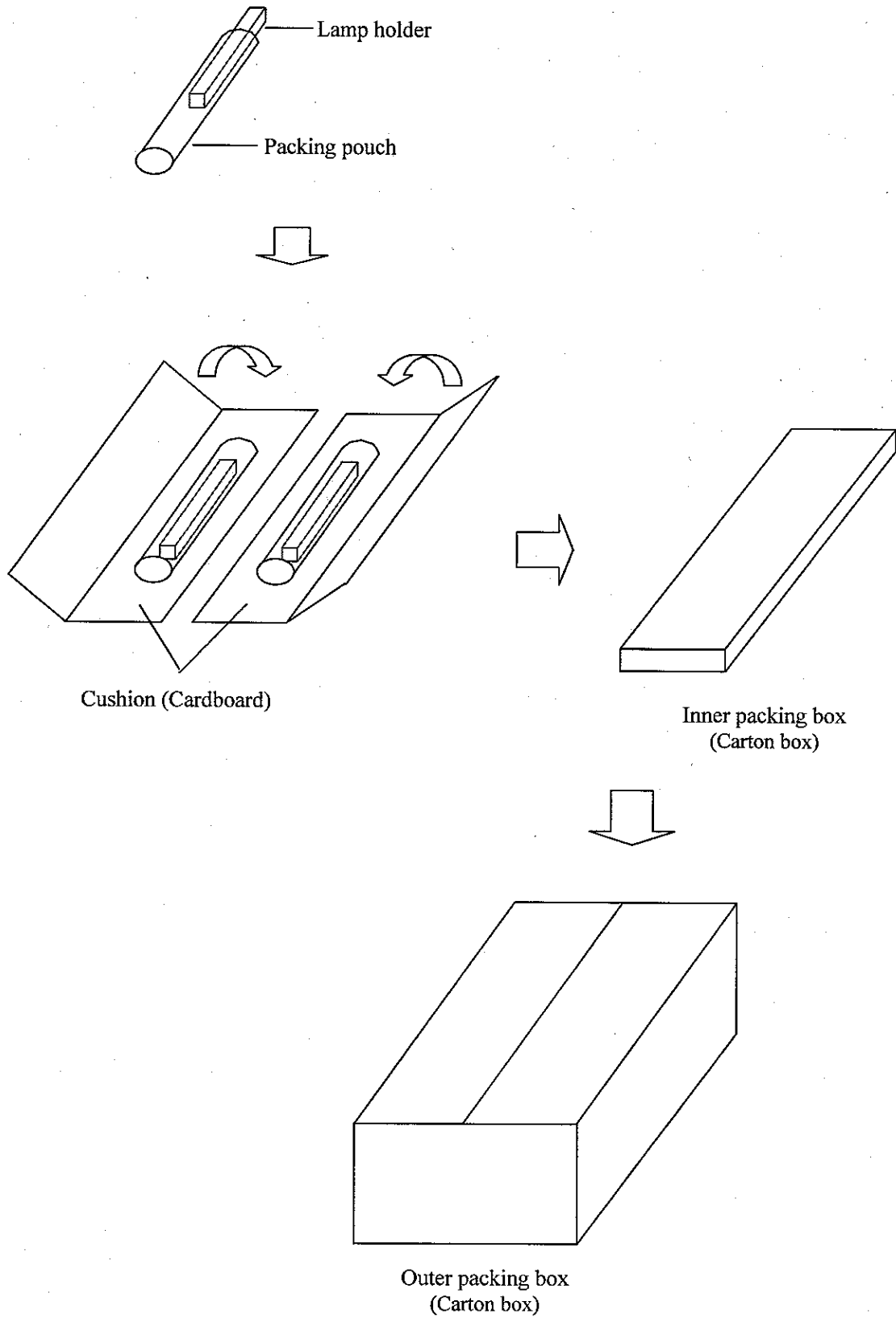
7.4 TRANSPORTATION

The product is transported by vehicle, aircraft or shipment.

7.5 SIZE AND WEIGHT FOR PACKING BOX

Parameter	Outer packing box	Unit
Size	140 (W) × 102 (H) × 355 (D) (typ.)	mm
Weight	0.6 (typ.) (with 5 inner packing boxes)	kg
Total weight	0.7 (typ.) (with 5 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 '8.2 CAUTIONS' and '8.3 ATTENTIONS', after understanding these contents!**



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 Be sure to wait some time after turning power OFF before starting replacement work. There is a danger of an electric shock because the inverter is charged at a high voltage after working.



- ③ Be sure to wait some time after turning power OFF before starting replacement work. There is a danger of burn injury, because the lamp holder and high voltage section of the inverter are hot after working.
- 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.



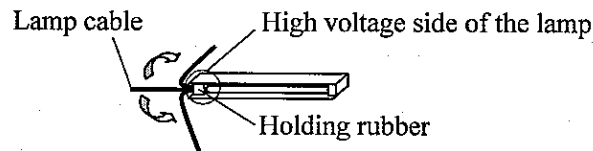
- ⑥ The fluorescent lamp in the LCD module may be damaged in some cases. Take care not to injure yourself while treating the lamp. If the lamp is damaged inside, quality problems may occur, such as un-even brightness by pieces of broken glass left inside. In this case return it to NEC for repair.

8.3 ATTENTIONS



(1) Handling the product

- ① Do not press or rub on the sensitive LCD panel surface. When cleaning the LCD panel surface, use of the cloth with ethanolic liquid such as screen cleaner for LCD is recommended.
- ② When handling the LCD module, take the measures of electrostatic discharge with such as earth band, ionic shower and so on, 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, display mura 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.



- 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.

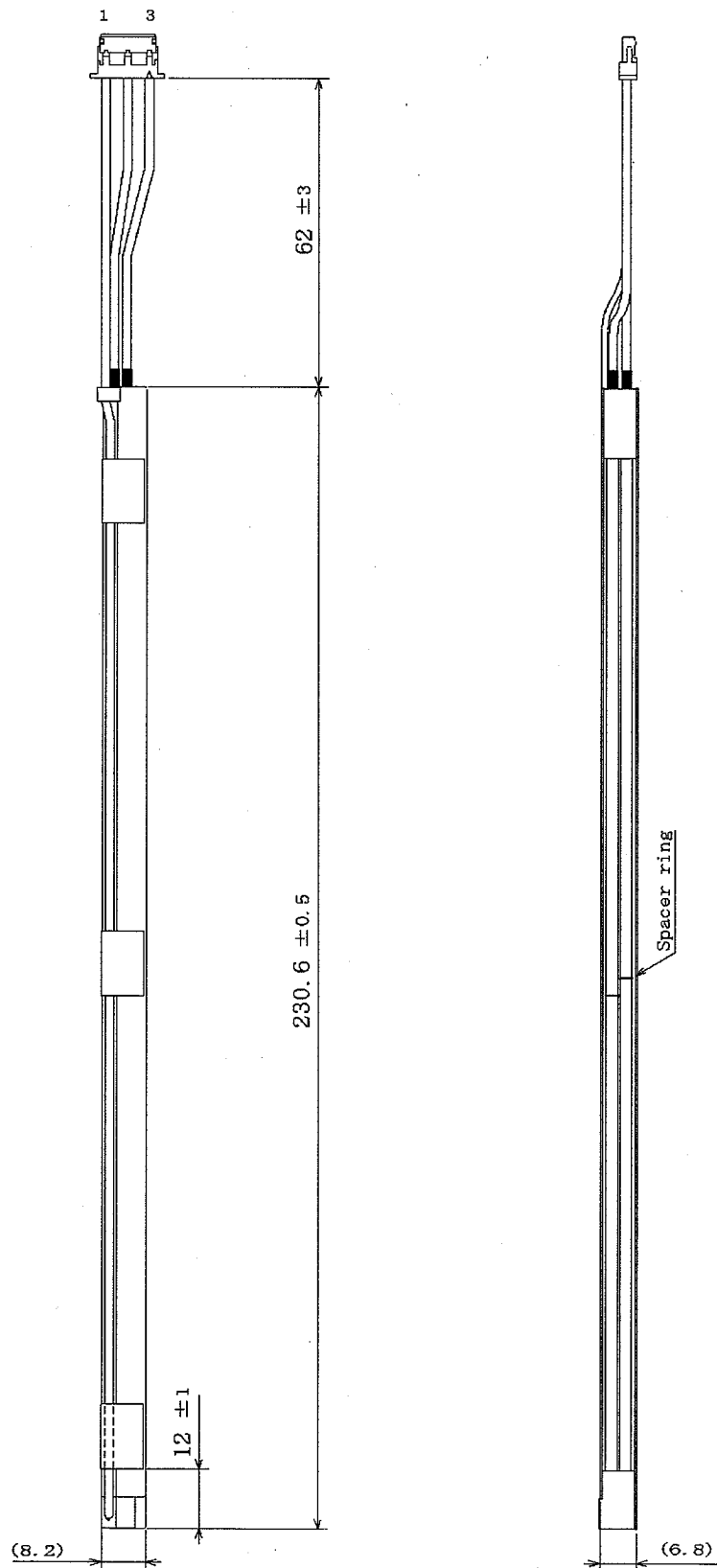
(2) Environment

- ① Do not operate or store in high temperature, high humidity, dewdrop atmosphere or corrosive gases. Keep the lamp holder set in packing box with packing pouch in room temperature to avoid dusts and sunlight, when storing the lamp holder set.
- ② In order to prevent dew condensation occurring by temperature difference, the packing box should be opened after enough time being left under the environment of an unpacking room. Evaluate the leaving time sufficiently because a situation of dew condensation occurring is changed by the environmental temperature and humidity. (Recommended leaving time: 6 hours or more with packing state)

(3) Disposal method

- ① The lamp holder set includes 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)



Note1 : Metallic frame of the lamp holder is not connected to VBLC (lamp low voltage terminal).
Note2 : The values in parentheses are reference.

REVISION HISTORY

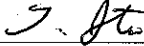


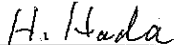
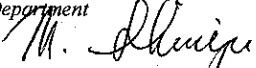
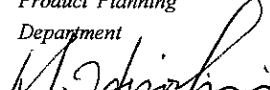
The inside of latest specifications is revised to the clerical error and the major improvement of previous edition. Only a changed part such as functions, characteristic value and so on that may affect a design of customers, are described especially below.

Edition	Prepared date	Revision contents and signature	Issued date												
1st edition	Jun. 13, 2001	<p>Revision contents</p> <p style="text-align: center;">New issue</p> <p>Writer</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><i>Approved by</i></td> <td style="text-align: center;"><i>Checked by</i></td> <td style="text-align: center;"><i>Prepared by</i></td> </tr> <tr> <td style="text-align: center;"><u>H. MORIYAMA</u></td> <td style="text-align: center;"><u>T. KUSANAGI</u></td> <td style="text-align: center;"><u>K. TAKENOUCI</u></td> </tr> </table> <p>Acknowledger</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><i>2nd Engineering Department</i></td> <td style="text-align: center;"><i>Reliability and QC Department</i></td> <td style="text-align: center;"><i>Production Control Department</i></td> </tr> <tr> <td style="text-align: center;"><u>H. KANEKO</u></td> <td style="text-align: center;"><u>M. SHIMIZU</u></td> <td style="text-align: center;"><u>T. SUGIYAMA</u></td> </tr> </table>	<i>Approved by</i>	<i>Checked by</i>	<i>Prepared by</i>	<u>H. MORIYAMA</u>	<u>T. KUSANAGI</u>	<u>K. TAKENOUCI</u>	<i>2nd Engineering Department</i>	<i>Reliability and QC Department</i>	<i>Production Control Department</i>	<u>H. KANEKO</u>	<u>M. SHIMIZU</u>	<u>T. SUGIYAMA</u>	July 6, 2001
<i>Approved by</i>	<i>Checked by</i>	<i>Prepared by</i>													
<u>H. MORIYAMA</u>	<u>T. KUSANAGI</u>	<u>K. TAKENOUCI</u>													
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<u>H. KANEKO</u>	<u>M. SHIMIZU</u>	<u>T. SUGIYAMA</u>													
2nd edition	Oct. 4, 2002	<p>Revision contents</p> <p>P1 The form is changed.</p> <p>P2 "INTRODUCTION" is added.</p> <ul style="list-style-type: none"> • "MAINTENANCE" is added. • "CHANGE CONTROL", "QUARITY ASSUARANCE" and "HANDLING OF DOUBTFUL POINTS" are shifted to P2, and contents are revised. • Title is changed.: "QUARITY ASSUARANCE" → "WARRANTY" <p>P3 "CONTENTS" is added.</p> <p>P4 DESCRIPTION</p> <ul style="list-style-type: none"> • "Adaptable LCD module" is added. <p style="text-align: center;">ABSOLUTE MAXIMUM RATINGS FOR LCD MODULE</p> <ul style="list-style-type: none"> • Expression of "Absolute humidity" is revised. • Note3 is added. <p>P6 PACKING, TRANSPORTATION AND DELIVERY</p> <ul style="list-style-type: none"> • The contents are revised. <p>P9 Quality precautions</p> <ul style="list-style-type: none"> • "(8)" is added. <p>P10 • OUTLINE DRAWINGS is changed.</p> <ul style="list-style-type: none"> • Note1 is changed. <p>Writer</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><i>Approved by</i></td> <td style="text-align: center;"><i>Checked by</i></td> <td style="text-align: center;"><i>Prepared by</i></td> </tr> <tr> <td style="text-align: center;"><u>T. ITO</u></td> <td style="text-align: center;"><u>R. KAWASHIMA</u></td> <td style="text-align: center;"><u>N. KANO</u></td> </tr> </table> <p>Acknowledger</p> <table style="width: 100%; border: none;"> <tr> <td style="text-align: center;"><i>Production engineering department</i></td> <td style="text-align: center;"><i>Reliability and QC Department</i></td> </tr> <tr> <td style="text-align: center;"><u>H. OKAMOTO</u></td> <td style="text-align: center;"><u>M. SHIMIZU</u></td> </tr> </table>	<i>Approved by</i>	<i>Checked by</i>	<i>Prepared by</i>	<u>T. ITO</u>	<u>R. KAWASHIMA</u>	<u>N. KANO</u>	<i>Production engineering department</i>	<i>Reliability and QC Department</i>	<u>H. OKAMOTO</u>	<u>M. SHIMIZU</u>	Oct. 9, 2003		
<i>Approved by</i>	<i>Checked by</i>	<i>Prepared by</i>													
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<i>Production engineering department</i>	<i>Reliability and QC Department</i>														
<u>H. OKAMOTO</u>	<u>M. SHIMIZU</u>														

REVISION HISTORY

Edition	Prepared date	Revision contents and signature	Issued date
4th edition	June 9, 2003	<p>Revision contents</p> <p>P.6 6. PACKING, TRANSPORTATION AND DELIVERY</p> <ul style="list-style-type: none"> • The product is transported by vehicle and aircraft. → The product is transported by vehicle, aircraft or shipment. (correction) • 6.5 SIZE AND WEIGHT FOR PACKING BOX (Title is added) • Total weight - Outer packing box : 3.1(typ.) kg → 0.7(typ.) kg (correction) <p>P.8 7. PRECAUTIONS (Title is changed)</p> <ul style="list-style-type: none"> • The contents are wholly revised. <p>Writer</p> <p><i>Approved by</i> <i>Checked by</i> <i>Prepared by</i></p> <p style="text-align: center;">T. ITO R. KAWASHIMA A. KUMANO</p> <hr style="width: 100%;"/> <p>Acknowledger</p> <p><i>Production Engineering Department</i> <i>Quality Assurance Department</i></p> <p style="text-align: center;">H. OKAMOTO M. SHIMIZU</p>	June 26, 2003
5th edition	July 24, 2003	<p>Revision contents</p> <p>P.4 3. ABSOLUTE MAXIMUM RATINGS</p> <ul style="list-style-type: none"> • Absolute humidity(AH) : $\leq 78 \text{ (g/m}^3\text{)} \rightarrow \leq 80 \text{ (g/m}^3\text{)}$ (changed) <p>P.5 4. ELECTRICAL CHARACTERISTICS</p> <ul style="list-style-type: none"> • (Ta=25±2 °C, Note1) → (Ta=25°C, Note1) (changed) <p>Writer</p> <p><i>Approved by</i> <i>Checked by</i> <i>Prepared by</i></p> <p style="text-align: center;">T. ITO R. KAWASHIMA A. KUMANO</p> <hr style="width: 100%;"/> <p>Acknowledger</p> <p><i>Production Engineering Department</i> <i>Quality Assurance Department</i></p> <p style="text-align: center;">H. OKAMOTO M. SHIMIZU</p>	July 31, 2003
6th edition	Oct. 20, 2003	<p>Revision contents</p> <p>P.5 6. INDICATION OF TYPE NAME is added.</p> <p>Writer</p> <p><i>Approved by</i> <i>Checked by</i> <i>Prepared by</i></p> <p style="text-align: center;">T. ITO R. KAWASHIMA A. KUMANO</p> <hr style="width: 100%;"/> <p>Acknowledger</p> <p><i>Production Engineering Department</i> <i>Quality Assurance Department</i> <i>Product Planning Department</i></p> <p style="text-align: center;">H. OKAMOTO M. SHIMIZU H. TACHIMOTO</p>	Oct. 31, 2003

REVISION HISTORY

Edition	Prepared date	Revision contents and signature	Issued date
7th edition	Oct. 31, 2005	<p>Revision contents</p> <p>CORRECTION OF DESCRIPTIVE CONTENTS</p> <p>P4 General specifications</p> <ul style="list-style-type: none"> • Delivery unit: 10 set → 10 (min.) set (correction) <p>P5 Connections and functions for interface pins</p> <ul style="list-style-type: none"> • CN2- Adaptable socket (Inverter side): SM03 (4.0) B-BHS-TB <ul style="list-style-type: none"> → SM03 (4.0) B-BHS-1-TB (LF) (SN) (addition) → SM03 (4.0) B-BHS-1-TB (correction) <p>Signature of 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>Signature of acknowledger</p> <p><i>Production Engineering Department</i>  H. HADA</p> <p><i>Quality Assurance Department</i>  M. SHIMIZU</p> <p><i>Product Planning Department</i>  M. HIROSHIMA</p>	

