

CUSTOMER NOTIFICATION

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Koji Nishibayashi, Project Manager Microcomputer Tool Group Sales Engineering Div. NEC Electron Devices NEC Corporation

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**IE-789468-NS-EM1  
(Control Code: C)**

**Operating Precautions**

**Be sure to read this document before using the product.**

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# Notes on Using IE-789088-NS-EM1

## 1. Product Version

Part number: IE-789468-NS-EM1

Control Code	Remark
A	I/O EVA chip $\mu$ PD78F9328 V1.2
B	I/O EVA chip $\mu$ PD78F9328 V1.3
C	I/O EVA chip $\mu$ PD78F9328 V1.31/ $\mu$ PD78F9468 E1.3

**Note** The “control code” is the second digit from the left in the 10-digit serial number (if it has not been upgraded). If the in-circuit emulator has been upgraded, a label indicating the new version is attached to the in-circuit emulator and the x in V-UP LEVEL x on this label indicates the control code.

## 2. Production History

No.	Bugs and Changes/Additions to Specifications	Control Code		
		A	B	C
1	Bug in port 4 operation	×	√	√
2	Bug in low-voltage emulation	×	×	×
3	Bug in $\mu$ PD789327 Subseries LCD emulation	×	×	√

×: Applicable, √: Not applicable

## 3. Details of Bugs and Added Specifications

No.1 Bug in port 4 operation

[Description]

A 1 V under-shoot waveform is generated during output.

When a value is input to port 4, the input value is not read correctly and 00h is read instead.

[Workaround]

This bug has been corrected in control code B.

No.2 Bug in low-voltage emulation

[Description]

Emulation cannot be performed at a low voltage.

Emulation cannot be performed correctly in a product with a voltage range of 1.8 V to 2.5 V.

[Workaround]

There is no workaround. Use the product with a voltage between 2.5 V and 5.5 V.

This bug will be corrected in control code D.

### No. 3 Bug in $\mu$ PD789327 Subseries LCD emulation

#### [Description]

The common and segment signals are not output with a normal waveform.

- (1) The target device can output common and segment signals only by applying (connecting) a voltage to the  $V_{LC0}$  pin. The IE-789468-NS-EM1 cannot output the common and segment signals at the  $1/3 V_{LCD}$  and  $2/3 V_{LCD}$  levels. The initial status of the common signal is  $3/3 V_{LCD} = V_{LC0}$ ,  $1/3 V_{LCD}$ , or  $2/3 V_{LCD} = GND$ , and that of the segment signal is low level.
- (2) When the target device displays the LCD at 2.7 to 5.5 V, the LCD can be displayed with the setting “no internal boost ( $VAON0 = 0$ )”. In the IE-789468-NS-EM1, however, the LCD cannot be displayed unless the setting “internal boost enabled ( $VAON0 = 1$ )” is added to the program. By enabling the internal boost ( $VAON0 = 1$ ), the common and segment signals with  $1/3 V_{LCD}$  and  $2/3 V_{LCD}$  levels can be output.
- (3) When a voltage less than 4.5 V is applied (connected) to the  $V_{LC0}$  pin, the  $1/3 V_{LCD}$  level is not correctly output as common and segment signals.  $1/3 V_{LCD} = 1.5 V$ ,  $2/3 V_{LCD} = 3.0 V$

#### [Workaround]

There is no workaround.

This bug has been corrected in control code C.

## 4. Other Cautions

- Read value of port 2 when the target system is not connected  
Port 2 of the  $\mu$ PD789327 Subseries is directly connected to a 1 M $\Omega$  pull-up resistor. When the port value is read in input mode when the target system is not connected, the value read from port 2 is 07h.
- Oscillation stabilization wait time cannot be changed  
The oscillation stabilization wait time of the  $\mu$ PD789327 Subseries (mask ROM version) after STOP mode is released by  $\overline{RESET}$  input or power-on clear is the same as that of the  $\mu$ PD78F9328 (flash memory version).
- $2^{15}/f_x$  (fixed)