

CUSTOMER NOTIFICATION

SUD-DT-03-0253-1-E (1/4)
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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-789468-NS-EM1

1. Product Version

Part number: IE-789468-NS-EM1

Control Code ^{Note}	Remark
A	I/O EVA chip μ PD78F9328 V1.2
B	I/O EVA chip μ PD78F9328 V1.3
C	I/O EVA chip μ PD78F9328 V1.31/ μ 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 product has been upgraded, a label indicating the new version is attached to the product and the x in V-UP LEVEL x on this label indicates the control code.

2. Product 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 μ PD789327 Subseries LCD emulation (1)	×	×	√
4	Bug in μ PD789467 Subseries LCD emulation	×	×	×
5	Bug in μ PD789327 Subseries LCD emulation (2)	×	×	×

×: 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 μ PD789327 Subseries LCD emulation (1)

[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_{LCD} 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 $3/3 V_{LCD} = V_{LCD}$, $1/3 V_{LCD}$, 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_{LCD} 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.

No.4 Bug in μ PD789467 Subseries LCD emulation

[Description]

LCD voltage booster control register 0 cannot be emulated with the setting "GAIN = 1: 1.0 V (specification of the LCD panel used is 3.0 V)". In addition, the reference voltage changes depending on the V_{DD} pin potential.

[Workaround]

There is no workaround.

This bug will be corrected in control code D.

No.5 Bug in μ PD789327 Subseries LCD emulation (2)

[Description]

The LCD driving voltage does not satisfy the reference voltage specification.

[Workaround]

Use the product within the voltage range shown in Table 1.

Table 1. Usable Voltage Range

Target CPU	New Board ^{Note}				Old Board ^{Note}			
	78946x		78932x		78946x		78932x	
	GAIN = 1	GAIN = 0	VAON = 1	VAON = 0	GAIN = 1	GAIN = 0	VAON = 1	VAON = 0
Usable voltage	1.8 to 4.5 V	1.8 to 3.5 V	5.5 V	2.7 to 5.5 V	1.8 to 3.5 V	1.8 to 4.5 V	×	×

<How to confirm the board version>

- Products to which a sub-board (IE-789468-NS-EM1 CN board) is connected: New
- Products in which a socket is mounted in the IC1 position: Old

When using the product with a voltage outside the above range, the reference voltage varies by ± 0.3 V or more. Consequently, the brightness of the LCD display may be degraded, or a location that should not be lit may be lit; in the worst case, the target system may be damaged.

4. Cautions

- Read value of port 2 when the target system is not connected
Port 2 of the μ PD789327 Subseries is directly connected to a 1 M Ω 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 μ PD789327 Subseries (mask ROM version) after STOP mode is released by $\overline{\text{RESET}}$ input or power-on clear is the same as that of the μ PD78F9328 (flash memory version).
 - Oscillation stabilization time: $2^{15}/f_x$ (fixed)
- POC function of μ PD789327 Subseries (1)
When the IE-789468-NS-EM1 is activated, bit 2 (POCOF1) of power-on-clear register 1 (POCF1) becomes 1, which disables use of the power-on-clear function.
[Workaround] Clear bit 2 (POCOF1) to 0 in the startup routine.
- POC function of μ PD789327 Subseries (2)
Even if a reset occurs due to power-on clear, the value of bit 2 (POCOF1) of power-on-clear register 1 (POCF1) does not change (POCOF1 remains 0).
[Workaround] There is no workaround.