Integrated version of restriction notification

This document is a compilation of the restrictions of the corresponding products that have already been reported, and will be utilized in the NEC microcomputer technical document browsing service. All the restrictions as of September 26, 2001 are included.

NEC Microcomputer Technical Information

CP(K), O

μPD178078 μPD178098 μPD178098A Subseries Usage Restrictions		Document No.	SBG-T-2492-E		1/1
		Date issued	September 26, 2001		
		Issued by	Microcomputer Engineering Dept. Solution Engineering Div. NEC Electron Devices NEC Corporation		
Related documents	User's manual (U12790EJ1V0UM00) Data sheet (U12885EJ3V0DS00) Data sheet (U12920EJ1V0DS00) Data sheet (U15209EJ1V0DS00)	Notification classification	√	Usage restriction	
				Upgrade	
				Document modification	
				Other notification	

1. Affected products

   μPD178076, 178078

   μPD178096, 178098, 178096A, 178098A

   μPD178F098

2. List of restrictions

   The restriction history and detailed information is described in Attachment 1.

List of Restrictions

<Mask ROM version>

Description		UPD178076 UPD178078	UPD178096 UPD178098	UPD178096A UPD178098A
	Rank	All Ranks	All Ranks	All Ranks
Item 1	Restriction on IEbus communication among three units	–	×	√
Item 2	Restriction on IEbus mastership request flag set timing	–	Δ	Δ

<Flash memory version>

Description		UPD178F098	
	Rank	K	E and Later
Item 1	Restriction on IEbus communication among three units	×	√
Item 2	Restriction on IEbus mastership request flag set timing	Δ	Δ

Notes 1. The rank is indicated by the fifth character from the left in the lot number marked on the package.

2. The meaning of each symbol is as follows.

–: Restriction does not apply

√: Restriction already corrected

×: Restriction applies (correction is planned)

Δ: Restriction applies (correction is not planned)

Item 1: Refer to Attachments 2 and 6 for details.

Item 2: Refer to Attachment 7 for details.

Item 1. Restriction on IEbus communication among three units

[Description]

1) When the local unit issues a broadcasting mastership request while the other unit is performing an individual communication with another slave unit in the local unit group, the local unit may mistakenly receive the individual communication as a broadcasting communication (ALLTRANS = 1).
   This error occurs only when the local unit issues a broadcasting mastership request during the period between the broadcasting field and bit 8 of the slave address field in individual communication between slave units (T2 in the figure below).

2) When the local unit issues a broadcasting mastership request while receiving an individual communication, ACK is not returned in the slave address field and no start interrupt is generated.
   However, ACK is returned and a start interrupt is generated if the local unit issues a broadcasting mastership request during individual communication with a unit in the same group and whose lower address is FFH.
   This error occurs only when the local unit issues a broadcasting mastership request during the period from bits 7 to 0 in the slave address field (T3 in the figure below).

3) After the broadcasting mastership request is issued, if the local unit lost in arbitration and is specified as a slave, no error interrupt is generated even when a parity error occurs in the data field.

Table 1) Relationship Between Communication Status and Master Request Timing

	Communication Status	Master Request Timing	Start Interrupt	Error Interrupt	Remark
1	Individual communication to the local unit is received	-	Generated	-	
2	Broadcasting communication to the local G is received	-	Generated	-	
3	Arbitration loss to individual mastership request, individual communication is received	-	Generated	-	
4	Arbitration loss to individual mastership request, broadcasting communication is received	-	Generated	-	
5	Arbitration loss to broadcasting mastership request, broadcasting communication is received	-	Generated	-	**3) Parity error does not occur in data field**

	Communication Status	Master Request Timing	Start Interrupt	Error Interrupt	Remark
6	Broadcasting communication is requested during broadcasting communication with slave unit in the local G	Between D and S8	Generated	-	
		Between S7 and S0			
7	Individual communication is requested during broadcasting communication with the local unit	Between D and S8	Generated	-	
		Between S7 and S0	Generated	-	
8	Broadcasting communication is requested during individual communication with local unit	Between D and S8	Generated	Generated	NACK transmitted from control field (due to workaround ENSLVRQ = 0)
		Between S7 and S0	**2) Not generated**	Generated	NACK transmitted from slave address field
9	Individual communication is requested during individual communication with local unit	Between D and S8	Generated	-	
		Between S7 and S0		-	
10	Broadcasting communication is requested during individual communication with slave unit in the local G	Between D and S8	**1) Generated**	-	Misreception, can be avoided by implementing workaround.
		Between S7 and S0	**2) Generated if lower address = FFH; otherwise not generated.**	-	If generated, data can be made invalid by implementing workaround for 1)

[Workaround]

This restriction will be corrected. (Refer to Attachment 1 for details of the modified product.)
Workarounds by software are shown below.

Workarounds for 1):

- Disable slave reception when the broadcasting mastership request is issued (BCR = #E0H)
- If a slave request is detected (SLVRQ = 1) in the start interrupt servicing after a broadcasting mastership request is issued, clear the broadcasting mastership request flag. At this time, the subsequent data can be made invalid if the broadcasting communication flag (ALLTRANS) has been cleared to 0.

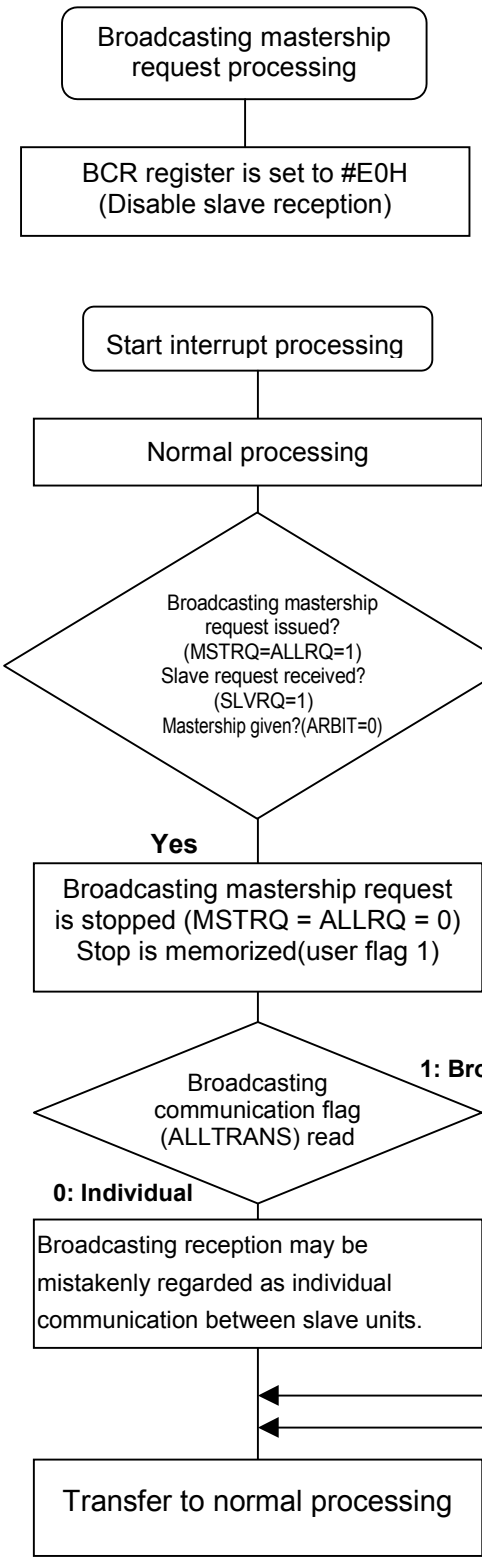
  The communication enable flag (ENIEBUS) can also be reset when the broadcasting communication flag (ALLTRANS) is 0-judged. This method, however, can be used only when a lock request or slave status request does not exist in any part of the system.

Refer to the flowchart in Attachments 5 and 6 for details.

Workaround for 2):
There is no software workaround on the local unit side.
At that time, a communication error occurs on the master side by NACK reception. A timing error occurs in the local unit because the master stops communication. Therefore, it is possible to avoid this restriction if the master side performs re-transmission processing.

Workaround for 3):
In the reception complete interrupt servicing, confirm a match between the received telegraph length data (DLR) and the number of data actually received, by checking the reception interrupt count (INTE1) generated in the period from reception start to end.

<<Workaround by software against mistakenly judging individual communication between slave units as broadcasting reception>>



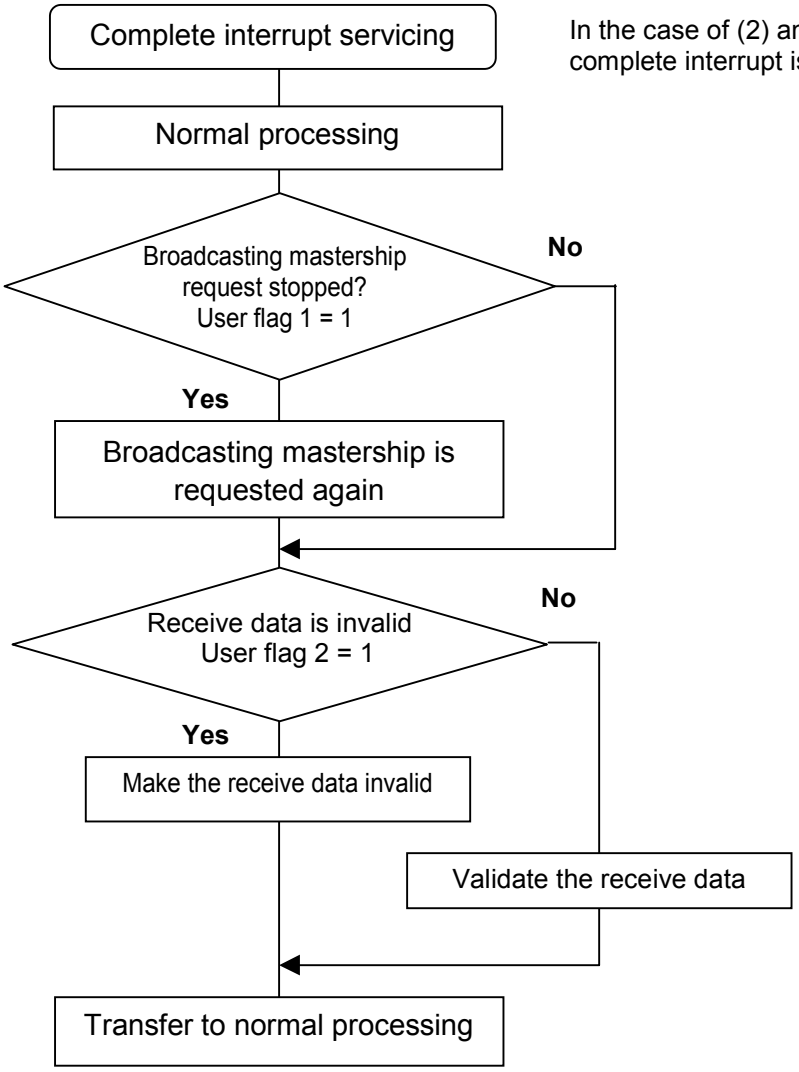
Issue a broadcasting mastership request while slave reception is disabled.
If the timing of individual communication with the local unit and issuance of broadcasting mastership request match, the individual communication to the local unit prompts re-transmission by returning NACK.

Detects a broadcasting mastership request while the other unit is communicating.
If Yes, the following communication may be performed.
(1) Individual communication to local unit
(2) Individual communication to a slave unit in the local unit group
(3) Broadcasting communication to the local unit group
* In case of (2), it is mistakenly judged as broadcasting reception.

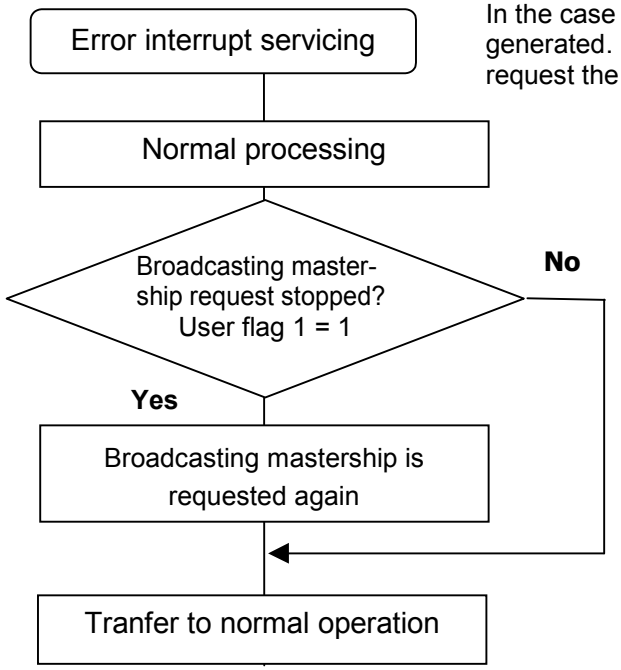
Caution
Keep the broadcasting request flag (ALLRQ) set until the communication terminates in the following cases.
- The local unit obtains mastership by a broadcasting request
- The local unit sent a broadcasting request but lost in arbitration and is treated as a slave unit.

Or, the communication enable flag (ENIEBUS) is reset

In the case of (1) above, a communication error occurs after the start interrupt (due to slave reception disable).
In the case of (2) above, communication continues but the received data should be made invalid by user flag 2 (complete interrupt servicing).



In the case of (2) and (3) above, a communication complete interrupt is generated.



In the case of (1) above, an error interrupt is generated. Initialize the communication and request the mastership again.

Item 2. Restriction on IEbus mastership request flag set timing

[Description]

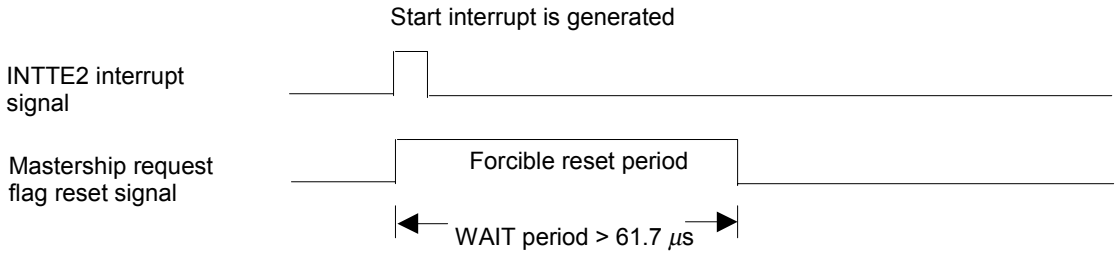
The mastership request reset signal is generated during the following period.

"From generation of start interrupt to ACK period end"

The mastership request flag (BCR0.6) will not be set (1) even if it is requested (BCR0.6 ← 1) in this period. This period is the same as the ACK width. The ACK time is defined as follows according to the IEbus specification.

Stop signal detection period 1	5.0 μs
Stop signal detection period 2	< 11.0 μs
Synchronous signal detection period	< 16.7 μs
Data signal output period	29.0 μs
Total	61.7 μs (max.)

The mastership request reset signal is generated for 61.70 μs max. Therefore, any mastership request sent in this period cannot be acknowledged.



[Workaround]

After the start interrupt is generated, insert the WAIT time in the above figure and then set (1) the mastership request flag (BCR.6) to request the mastership.

The mastership request flag will not be acknowledged even if it is set (1) in the WAIT time.