Microcomputer Technical Information

CP(K), O

ID850 V850 Integrated Debugger Usage Restrictions		Document No.	ZBG-CD-06-0062		1/1
		Date issued	July 13, 2006		
		Issued by	Development Tool Group Multipurpose Microcomputer Systems Division 4th Systems Operations Unit NEC Electronics Corporation		
Related documents	ID850 Ver. 3.00 Operation User's Manual: U173587EJ1	Notification classification	√	Usage restriction	
				Upgrade	
				Document modification	
				Other notification	

1. Affected product

Product Name	Generic Name	Outline	Affected Version
ID703000	ID850	V850 integrated debugger	V3.10

2. New items

Restriction No. 17 and cautions No. 87 and No. 88 have been added. See the attachment for details.

3. Workarounds

See the attachment for details.

4. Modification schedule

Restriction No. 17 will be corrected in the next revision (release schedule is undetermined).

5. List of restrictions and cautions

See the attachment.

6. Document revision history

ID850, V850 Integrated Debugger - Usage Restrictions

Document Number	Issued on	Description
ZBG-CD-06-0062	July 13, 2006	Newly created.

List of ID850 Restrictions

This section describes the restrictions of ID850 V3.10. **[XXX]** in the following table indicates the device to which the restriction applies.

No.	Description
1	Even if an area that is not the target memory is set to I/O protected, an error message is not displayed. [Workaround] There is no workaround.
2	When setting an I/O protected area, if an area is set that is not aligned with the access size, the protect function is not effective. [Workaround] There is no workaround.
3	The setting of the radix display of the item in the nest of a variable with nest cannot be correctly downloaded from a file on the Watch window. [Workaround] There is no workaround.
4	If the data in the Local Variable window is moved by the cursor while emulation is being executed, the display changes to "**". [Workaround] There is no workaround.
5	Non-map area and IOR area cannot be avoided in memory search. [Workaround] Specify a search range avoiding these areas.
6	If the cursor is placed in the ASCII display area of the Memory window and then control is shifted to another window, the cursor will inadvertently return to the data display area. [Workaround] There is no workaround.
7	The tracer is not displayed unless tracer and coverage is stopped during program execution. [Workaround] Stop the program first.
8	An event does not occur even if the status of the event used is changed from Execution to R/W (or vice versa). [Workaround] Disable the event condition after changing it and then re-enable it, or delete the event condition.
9	Timer stop/start on the Run menu does not work. [Workaround] There is no workaround.
10	**[IE-703002-MC]** If the halt instruction is Stepped, the debugger hangs up for a while (for 30 seconds). [Workaround] There is no workaround.
11	If one line contains too many instructions (more than 1,000 assembler instructions) in source line step, the processing may be aborted even in the middle of step execution. [Workaround] There is no workaround.
12	In the external ROM/flash memory relink function supported by the compiler, it is not possible to perform step-in to a function on the flash memory side from the boot side. [Workaround] Cause a break in the function on the flash memory side by setting a breakpoint in that function.

<table>
<tr><th>No.</th><th>Description</th></tr>
<tr><td>13</td><td>Debugging of programs that use program code copied to the internal or external RAM after being passed through a ROMization processor is not supported. There is no problem in the ROMization of data.
[Workaround]
Do not pass programs through a ROMization processor when compiling.</td></tr>
<tr><td>14</td><td>A variable other than global cannot be specified for an access break in the Watch or Source window.
[Workaround] There is no workaround.</td></tr>
<tr><td>15</td><td>The standby and suspend functions of Windows and the Switch User function in Windows XP are not supported.
[Workaround] There is no workaround.</td></tr>
<tr><td>16</td><td>When function abc_func() is called from main processing and interrupt servicing like that shown below, and if a step in for function abc_func() is performed from the line of (1) and the step execution is continuously performed, the execution normally returns to processing 2, but returns to processing 5.
[Workaround]
Change the window view to the mixed display mode in the Source window, and then perform step execution in instruction mode.

****
* Generic processing
****
void abc_func(void)
{
abc_func_sub();
}

void abc_func_sub(void)
{
:
}
****
* Main processing
****
void main(void)
{
Processing 1
abc_func(); <---(1)
Processing 2
}
****
* Interrupt servicing
****
__multi_interrupt void int_timer(void)
{
Processing 3
Processing 4
abc_func();
Processing 5
}</td></tr>
<tr><td>17</td><td>If function names or variable names are distinguished with a prefixed underscore, the debugger may recognize them incorrectly. As a result, symbol conversion or breakpoint setting may become invalid.
Example When two function names _reset and __reset are used
[Workaround] There is no workaround.</td></tr>
</table>

List of ID850 Cautions

The cautions when using ID850 V3.10 are described below. **[XXX]** in the following table indicates the device to which the restriction applies.

No.	Description
1	**[V854]** Single Chip Mode 2 of the V854 is not supported because of the restrictions of the EVA chip.
2	**[V850/SBx]** The operation is not guaranteed if internal ROM/RAM size is changed in products with internal RAM greater than 20 KB. Use internal ROM/RAM with the default size.
3	**[IE-V850E-MC(-A), IE-703102-MC IE-V850ES-G1, IE-V850ESK1-ET]** The DBPC and DBPSW registers cannot be manipulated in the register window because of the device specifications.
4	The access event break is delayed because of the specifications of the EVA chip (the specified address is passed before execution stops).
5	If break and snap conditions occur at the same time, snap is recorded in the trace data even if a break occurs before execution. [Remark] This caution is not applicable to the IE-V850ESK1-ET.
6	**[IE-703102-MC]** IOR illegal break does not occur during execution.
7	**[IE-V850E-MC(-A), IE-703102-MC, IE-V850ES-G1, IE-V850ESK1-ET]** Safe break does not occur during step execution because of the specification of the EVA chip.
8	**[IE-V850E-MC(-A), IE-703102-MC, IE-V850ES-G1, IE-V850ESK1-ET]** If the emulation memory of ROM mapping is written, protect break occurs but the contents are rewritten because of the specification of the EVA chip.
9	**[Device with CAN controller]** A non-map break is generated when the programmable IOR area is accessed from the program. Map the programmable IOR area in the emulation memory or the target (target mapping can be performed when the target is connected).
10	The debugger cannot change the Way 0 state if Way 0 of the instruction cache is locked. Because of this, even if the instruction code of the area cached to Way 0 is changed (downloaded or online assembled), the program cached to Way 0 before the change will be executed upon program execution. Moreover, even if a software breakpoint has been set in the area cached to Way 0, it will not be detected during program execution. Therefore, do not perform these operations while Way 0 is locked.
11	If an instruction that writes to an IOR used for write protection, such as PRCMD or PHCMD, is Step-executed, or if Go is executed from such an instruction, immediately after this, an instruction that writes to the write-protected IOR will not be able to write to the IOR even if executed, due to the effect on the internal processing of the corresponding instruction cache of the debugger. Therefore, do not perform these operations for instructions that write to PRCMD or PHCMD.
12	In the emulator, the VPP bit of the FLPMC register is R/W enabled. Also note that VPP bit data can be overwritten during 8-bit access regardless of the status of the VPP pin. However, overwrite protection via the PHCMD register (or PRCMD register, depending on the product) is performed in the same way as in the real chip.

No.	Description
13	Note that in the emulator, even if the VPP bit is 0, or the VPPDIS bit is 1, flash self-programming will be executed as usual.
14	It takes at least 0.3 second to execute one flash self-programming interface command. If writing to the entire flash memory area is performed with a small memory size, it takes a long time to complete writing because the write command is executed numerous times. It is therefore recommended to use a large memory size (e.g. 1,024 bytes) when writing to the flash memory area.
15	Maskable and non-maskable interrupts are not executed during command execution (about 0.3 seconds).
16	Set the CPU operation clock during command execution to at least 8 MHz. (Ensure that the frequency of the divided CPU operation clock is not below 8 MHz.) If a command is executed by a clock with a frequency lower than 8 MHz, the user program may inadvertently break during command execution.
17	When the IE-703002-MC is used, an IOR illegal access is not detected when flash self-programming mode is ON.
18	When the IE-703002-MC is used, non-mapping access in 0xF00000 to 0xFFFFFF (highest megabyte) is not detected when flash self-programming mode is ON. Note, however, that if emulation memory or target memory is mapped in this area, non-mapping access is only not detected in 0xFF0000 to 0xFFFFFF (highest 64 KB).
19	Project files for older versions (ID850 V2.00 or earlier) cannot be opened.
20	Disassembled program cannot be edited when both C and disassembled program are displayed together in the source text window. Edit in the Assemble window.
21	Lines cannot be deleted and radices cannot be changed by selecting multiple lines on the Watch window. Select one line at a time.
22	The maximum number of lines that can be displayed in the Watch window is 10000.
23	Lines cannot be scrolled up/down by selecting multiple lines in the Peripheral IOR Select dialog box. Select one line at a time.
24	When a download or project file load is performed, the hardware breakpoints or events may shift in the middle of an instruction. Delete the hardware breakpoints or events and then re-set them.
25	When a software breakpoint has been set in a module file with no debug information and a download or project file load is performed, the software breakpoint will be deleted. Re-set the breakpoint.
26	If the project file is saved after the CPU has been reset, the reset value of the MM* register is saved and therefore, downloading may fail when the project is opened next time. * The IOR register which requires the setting to access the external memory space differs depending on the model used. [Remark] The Peripheral I/O register setting can be performed before downloading by using “Hook”, which is described in **APPENDIX A EXPANSION WINDOW** in the "ID850 Integrated Debugger Ver. 3.00 Operation User's Manual” or the online help.
27	The device selected at the debugger activation cannot be changed after activation. Even if the project file of a device different from the target device is downloaded, the device specified by the project file is not used.
28	If one line in a window contains more than 400 characters (ANK characters), the 400th character and those that follow cannot be displayed.
	The number of lines that can be specified for a C source file (one file) is 65,536.

No.	Description
30	The maximum length of the character string that can be searched for in the Source window is 150 (ANK characters).
31	The IORs with the same address but different names cannot be distinguished in the disassemble display.
32	If the Assemble window is scrolled up (toward the direction in which the addresses are decremented), illegal mnemonics may be displayed.
33	The maximum length of the character string that can be searched for in the Assemble window is 150 (ANK).
34	Arrays with five dimensions or more are not supported.
35	If the PC is not in the body (other than prologue/epilogue) of the current function, the information on local variables in the function cannot be obtained.
36	The maximum length of the character string that can be searched for in the Memory window is 150 (ANK characters).
37	Because the coverage data is not initialized when the debugger is started, initialize the coverage data before coverage measurement. [Remark] This caution is not applicable to the IE-V850ESK1-ET.
38	The maximum value of a time tag in the Trace window is 65,535. At this value, the time tag overflows (especially when the total value of the time tag is displayed). The division ratio of the counter used can be changed when the time tag is displayed in the Trace window of the Extended Option dialog box.
39	The trace time tag value is considerably high during step execution.
40	Qualify trace cannot be created using the event link condition (integrated event).
41	The specification of trace delay differs between the ID850 and SM850. **[ID850]** The event that causes a delay is the event set by "Trace End". In this case, a delay frame is generated only when "Conditional Trace" is executed. To identify a frame that has caused a delay (delay trigger frame), "T" is displayed in the point mark display area. In addition, "D" is displayed in the trace mode display area to identify a delay frame.  tttt dddd dddd dddd dddd tttt: Delay trigger frame, dddd: Delay frame **[SM850]** The event that causes a delay is the event set by "Delay Trigger". In this case, a delay frame is generated only when "Unconditional Trace" is executed. To identify a frame that has caused a delay, "D" is displayed in the point mark display area. In addition, "A" is displayed in the trace mode display area to identify a delay frame.  T tttt D dddd A dddd A dddd A dddd A dddd

No.	Description
42	**[IE-V850E-MC, IE-V850E-MC-A]** Normally, trace data for 6-/8-byte instructions outputs two discontinuous frames. During qualify or section trace, however, only a single frame is output. In this case, the disassemble display cannot identify the instruction, and displays "****".
43	An event link cannot be used for snap.
44	If a software break is specified for external memory (excluding ROM), confirm that the value of the MM register* indicates the external extension mode immediately before the program is executed. When the software break command is issued, a dedicated software break instruction is overwritten to the address where the software break is specified to execute the break. If access is disabled, the software break is not performed even though B mark is displayed on the screen because the address cannot be overwritten. * The IOR register which requires the setting to access the external memory space differs depending on the model used.
45	Use the stub function in the break mode after execution. Otherwise, the stub function is repeatedly executed. In addition, because the stub function is restored by jmp [r31], the contents of the r31 (lp) register before the stub function was called are not restored.
46	The Run-Break value in the Timer dialog box is not guaranteed if the number of timer/event conditions created and validated equals the number of conditions* that can be used with the Run-Break value. * The number of timer/event conditions that can be used with the Run-Break value: IE-V850E-MC, IE-V850E-MC-A, IE-V850ES-G1: Three Other than above: One
47	A function that has been expanded in-line cannot be stepped in. Because the original function code is created separately from the part that has been expanded in-line, it is possible to set an event there, but the event does not occur because the original code is not executed (whether in-line expansion has been performed can be checked setting the mixed display mode in the Source window).
48	Assembler instructions enclosed by '*#pragma asm*' and '*#pragma endasm*' can be executed on a step-by-step basis in the source mode. The instructions written in a '*_asm()*' statement cannot be executed.
49	If step execution is performed in the source mode, it is judged whether an interrupt is serviced, based on the NP, EP, and DP flags of the PSW register. If the above flags or registers have been changed because nesting is used, return execution and stack display may not be correctly executed.
50	If return execution is performed when a function is recursively called (stack is generated by the recursive processing), the PC moves to the position where the processing of the function called last (leaf function) ended. Even if this symptom appears, the subsequent operation is performed normally. **Example** If the same function is called five times because of recursive processing 1:main() 2:fnuc01() Function is called. Execution exits from function. 3:func01() ↓ (*) ↑ 4:func01() 5:func01() 6:func01() If return execution (that generates the stack) is performed when functions are called in the order of 2, 3, 4, 5, and 6 (*), the address moves the position at which processing 6 is completed. If return execution (which deletes the stack) is performed when execution exits from functions 6, 5, 4, 3, and 2, in that order, execution correctly returns to the main function, from 5 to 4, from 3 to 2, and so on.

No.	Description
51	Step or break can be executed in an include file with a C source if functions are written in the include file. Step in or breakpoints cannot be set in an *#include* statement.
52	When simultaneous execution of two instructions is coded in the program, care must be exercised for step execution or breaks that occur due to the breakpoint. See examples 1 to 3 below. **Example 1.** Two instructions are stepped from address A, where one instruction should be stepped. Address A: MOV r1, r2 Address A+2: XOR r1, r2 **Example 2.** When a hardware breakpoint for “break before execution” is set at address A+2 and “Go” is executed from address A, a break does not occur at address A+2. Address A: MOV r1, r2 Address A+2: XOR r1, r2 ← Setting of break before execution **Example 3.** When a hardware breakpoint for “break after execution” or a software breakpoint is set at address A+2 and “Go” is executed from address A, a break occurs at address A+2. Address A: MOV r1, r2 Address A+2: XOR r1, r2 ← Setting of hardware break after execution or software break
53	The Search menu of each window is dimmed during program execution.
54	**[IE-V850E-MC, IE-V850E-MC-A, IE-V850ES-G1]** The multiplication of the clock cannot be set with the emulator when connected to the IE-V850E-MC, IE-V850E-MC-A, or IE-V850ES-G1. Therefore, set the CKC register on the debugger. With the default settings, operation speed is slower.
55	An event is reserved when support of flash self-programming mode is set to ON. Because of this, when break/trace/timer etc. are enabled, they all become disabled immediately.
56	The following events are reserved when support of flash self-programming mode is set to ON. Because of this, the number of usable events decreases by the number of these reserved events. • Access event (1) • Execution event (1) • Event link (1)
57	One event link is reserved when support of flash self-programming mode is set to ON, so the number of section timers that can be used decreases by 1. Also, if the number of usable event links is used up by that reserved event link and section timer, a section trace can no longer be performed. This is because a section timer or section trace uses one event link internally.
58	Execution of the user program is temporarily stopped internally in order to emulate the flash self-programming interface. Execution of the user program is subsequently resumed, but if a section trace was being performed, the trace starts again from the beginning. This also occurs if the tracer was stopped by a trace full-stop.
59	Execution of the user program is temporarily stopped internally in order to emulate the flash self-programming interface. When execution of the user program resumes, the results of the Run-Break timer measured until the program was stopped are cleared, and the Run-Break timer starts again from the beginning.

No.	Description
60	Perform VPP check-related debugging after first changing the VPP bit data to 1 using a register command in the debugger's IOR or Console window. (Note that the IOR bit name "VPP" may not be registered, depending on the device file. In this case, change the value of "FLPMC".)
61	The ID850 becomes difficult to operate while the flash self-programming interface is being emulated. Difficulties include mouse or keyboard operations hanging up temporarily or slow window updating. The enabled/disabled switching of the RUN/TRC/TIM/COV display on the status bar or the buttons and menus on the toolbar also slows down.
62	The value of "VPP" may not be able to be changed in the IOR or Watch window immediately after Flash Sel Mode is switched ON in the Extended Option dialog box. In this case, execute a Refresh in the window and then change the value. (Note that the IOR bit name "VPP" may not be registered, depending on the device file.)
63	Specify the *-force* option before changing the VPP value using a register command in the Console window. (Note that the IOR bit name "VPP" may not be registered, depending on the device file.)
64	Flash self-programming in a mode in which the internal ROM is allocated from the address 0x100000 is not supported. Use the mode in which the internal ROM is allocated from the address 0x0.
65	A fail-safe break may not occur because the capacity of the internal ROM or internal RAM differs between the EVA chip and real chip. For example, even if the internal RAM size is set to 10K in the Configuration dialog box when the IE-V850E-MC(-A) is used, 12K is set in the actually mounted EVA chip. Therefore, even if the range 0xFFFE800 to 0xFFFEFFF is accessed, no illegal access error will occur.
66	**[IE-703002-MC]** It is not possible to shift to IDLE mode or STOP mode by step execution. Instead, use Go execution. The specifications prescribe that IDLE mode or STOP mode is released when step execution is performed.
67	In the conditional statement of an *if-else* statement, a line that should not be executed may be passed. When such a case occurs, select the mixed display mode in the Source window and confirm that the else statement has not been executed.
68	An NMI and other interrupts are not acknowledged during step execution.
69	Line assemble in the Assemble window does not optimize instructions, as is performed in the CA850 assembler.
70	Coverage clear and coverage search cannot be aborted. [Remark] This caution is not applicable to the IE-V850ESK1-ET.
71	If a selected range is changed in the Coverage-Condition Setting dialog box, the coverage data before change is cleared. [Remark] This caution is not applicable to the IE-V850ESK1-ET.
72	Event Status can be accessed for read or write on the event dialog box, and not for fetch.
73	The PC indicates the address after halt if a break occurs in the HALT status.
74	Before performing real-time execution, step execution is first performed on an instruction located at the PC. This causes an error in the time measurement result in the timer. In addition, when the program operation is checked using the oscilloscope or logic analyzer, the measured timing may differ between when Go is executed at a certain location and Go is executed one instruction before that location.
75	When NMI2 is input in a device with NMI2 (at present, only the SOC device applies), the NMI2 interrupt routine of the user program is executed even if a break is taking effect. Do not input NMI2 during a break period.

No.	Description
76	When the IE-V850E-MC or IE-V850E-MC-A is used with the instruction cache set, if a software breakpoint is set to the emulation ROM, emulation RAM, or target memory area during user program execution, the breakpoint pauses the program more than several μs.
77	A fail-safe break cannot be detected at the moment a software breakpoint is set to the emulation ROM area during user program execution.
78	If an event break or software break occurs when a software breakpoint has been set during user program execution, the break does not take effect.
79	A fail-safe break cannot be detected at the moment data is overwritten when DMM is performed on the emulation ROM area during user program execution.
80	If an event break or software break occurs when data is overwritten by DMM, the break does not take effect.
81	**[IE-703002-MC]** The internal RAM area cannot be fetched due to the restriction in the emulator. If a program is executed on the internal RAM area, the program stops. Map the 64 KB area including internal RAM area to the emulation ROM or the emulation RAM in the Configuration dialog box.
82	When using the AZ850, clear the [Add Up Timetag] check box in the Extended Option dialog box of the ID850; otherwise, the time is not displayed correctly.
83	**[V850ES/KF1, V850ES/KG1, V850ES/KJ1]** Since the operating clock is degraded to approx. 500 kHz after a CPU reset, users may feel the speed for downloading a load module, initialization, copy, and comparison of the memory is degraded. These operations can be accelerated by setting the Peripheral I/O register. Set the Hook window of the expansion window as shown below. (See **APPENDIX A EXPANSION WINDOW** in the ID850 user's manual.) (1) Accelerating download Set as shown below on the [BeforeDownload] tab. register prcmd 0x0 register pcc 0x0 register pllctl 0x3 Note, however, that these settings forcibly change the values so that the clock speed of the Peripheral I/O register PCC and PLLCTL becomes the maximum. (2) Accelerating initialization, copy, and comparison of the memory Set as shown below on the [AfterCpuReset] tab. register prcmd 0x0 register pcc 0x0 register pllctl 0x3 Note, however, that these settings forcibly change the values so that the clock speed of the Peripheral I/O register PCC and PLLCTL becomes the maximum.
84	When the function to assign external variables to a register is used in CA850 V2.60 or later, the value of the assigned variable cannot be referenced or set in the Watch window. Reference or set the variable in the Register window or register the relevant register in the Watch window before referencing or setting the variable.

No.	Description
85	The speed of loading and saving a project file may extremely be degraded if anti-virus software is installed and active in the PC. Exclude the ".PRI" file from scanning in the anti-virus software.
86	If a misaligned address in the RRM area is accessed during RUN, the values at higher addresses are displayed incorrectly. The correct values are displayed when a break occurs.
87	If a static variable is registered to the Watch window and falls outside of the scope, the variable will be recognized as a label and displayed in the format specified in the Watch Default area in the Debugger Option dialog box. [Workaround] Register static variables in the format of *file-name#variable-name*.
88	If a write instruction for the PRCMD or PHCMD register, which is performed immediately before an instruction, is performed one by one with I/O registers that require a specific sequence, or if an instruction is executed from such instructions, the write instruction is not performed normally.