



CYPRESS FLASH MCU Programmer for FR User's Manual

CYPRESS FLASH
MCU Programmer for FR
Specifications
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Ver	date	page	contents
2.30	2006/3/8	P2,P13,P19, P21,P25,P31	MB91F223,MB91F346,MB91FV319R add
2.31	2006/6/23	P6,P10,P23, P24, 25,P32	MB91F213,MB91F464AA,MB91F465KA, MB91F467RA,MB91F479 add
2.32	2006/09/12	P2,P10,P25, P29,P30	MB91F475,MB91F478,MB91F211 add
2.33	2006/11/8	P2,P26,P30, P31	MB91F463NA add
2.34	2006/12/07	P2,P26,P30	MB91F249/S add
2.40	2007/03/19	a binding	Software version number is changed.
2.41	2007/05/30	P2,P18,P27 P31,P32	MB91F487, MB91F313
2.50	2007/09/07	P2,P25,P29 P30,P34,P35 P46	MB91F467BA, MB91F639, MB91F647 add Windows NT4.0 SP6 is Deleted
2.60	2008/02/05	P29、P30	The example of connection is corrected.
2.70	2008/02/20	P29、P30 P39 P2,16,26,31, 35,36	The explanation of SIN0 is added. Internal specific S decoder specification is added. MB91F467MA,MB91F273,MB91F482,MB91F662,MB91F6 37 add
2.80	2008/06/27	P2,P25,P30, P32,P36,P37 P38,P42,P48	add 467BA/CA/DA,610,644 OS:Windows 2000 SP3, Windows XP SP2 COM PORT 1-20
2.90	2008/09/12	P2,P11,P23 P24,P25,P26 P32,P35,P36 P38,P51	MB91F224 add MB91F460 Suffix change correct 610 Caution change
2.91	2008/12/17		MB91F469G add MB91F777 add
2.92	2009/03/02		MB91F725 add
2.93	2009/06/09		Suffix change from MB91F463N to MB91F463NA add MB91F463NC correspond to Intel-Hex format add Check Sum function
2.94	2009/12/18		MB91F463C,MB91F775,MB91F787 add Chapter9; The described information were updated. Additionally, the appearance of the mark is corrected.
2.95	2010/9/27		MB91F486 add MB91F625,627 add MB91F635A,637A,639A add MB91F644A,647A add MB91F599 add MB91F668,669 add

2.96	2010/12/17		MB91F575/S add MB91F577/S add
2.97	2012/6/25		MB91F522B/D/F/J/K/L add MB91F523B/D/F/J/K/L add MB91F524B/D/F/J/K/L add MB91F525B/D/F/J/K/L add MB91F526B/D/F/J/K/L add MB91F585LA/LB/LC/LD add MB91F586LA/LB/LC/LD add MB91F587LA/LB/LC/LD add MB91F591B/BS/BH/BHS add MB91F592B/BS/BH/BHS add MB91F594B/BS/BH/BHS add MB91F599B/BS/BH/BHS add MB91F583MG/MH/MJ/MK add MB91F583SG/SH/SJ/SK add MB91F584MG/MH/MJ/MK add MB91F584SG/SH/SJ/SK add MB91F585MG/MH/MJ/MK add MB91F585SG/SH/SJ/SK add
2.98	2012/8/3		The explanation of SIN,SOT is added (MB91520).
2.99	2013/4/11		The sector select function is added for MB91570,590 series. <ul style="list-style-type: none"> • MB91F575/S,MB91F577/S • MB91F591B/BS/BH/BHS,MB91F592B/BS/BH/BHS, MB91F594B/BS/BH/BHS,MB91F599B/BS/BH/BHS
3.00	2013/4/24		MB91F552 add
3.01	2013/07/18		The sector select function is added for MB91520,580, 580M/S series. <ul style="list-style-type: none"> • MB91F522B/D/F/J/K/L,MB91F523B/D/F/J/K/L, MB91F524B/D/F/J/K/L,MB91F525B/D/F/J/K/L, MB91F526B/D/F/J/K/L • MB91F585LA/LB/LC/LD,MB91F586LA/LB/LC/LD, MB91F587LA/LB/LC/LD • MB91F583MG/MH/MJ/MK,MB91F583SG/SH/SJ/SK, MB91F584MG/MH/MJ/MK,MB91F584SG/SH/SJ/SK, MB91F585MG/MH/MJ/MK,MB91F585SG/SH/SJ/SK MCUs is added (with sector select function) <ul style="list-style-type: none"> • MB91F527R/U/M/Y,MB91F528R/U/M/Y • MB91F596B/BS/BH/BHS,MB91F597B/BS/BH/BHS, MB91F59AC/CS/CH/CHS,MB91F59BC/CS/CH/CHS OS: Windows2000 is deleted, Windows7 is added.
3.02	2013/10/17		MCUs is added (with sector select function) <ul style="list-style-type: none"> • MB91F578C/CS/CH/CHS,MB91F579C/CS/CH/CHS Power supply voltage in Example of Connection is modified form 3.3V to 5.0V. <ul style="list-style-type: none"> • MB91570 series、 MB91590 series
3.03	2013/12/13		The name and logo of company are changed from FUJITSU to SPANSION.

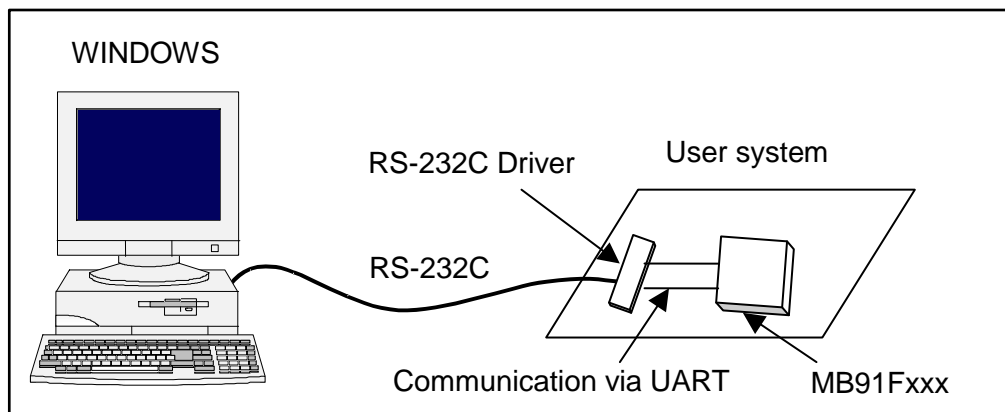
3.04	2015/03/12	P8,P40,P58	<p>MB91580M/S Suffix change</p> <p>MB91F583MG/MH/MJ/MK->MB91F583AMG/MH/MJ/MK</p> <p>MB91F583SG/SH/SJ/SK ->MB91F583ASG/SH/SJ/SK</p> <p>MB91F584MG/MH/MJ/MK->MB91F584AMG/MH/MJ/MK</p> <p>MB91F584SG/SH/SJ/SK ->MB91F584ASG/SH/SJ/SK</p> <p>MB91F585MG/MH/MJ/MK->MB91F585AMG/MH/MJ/MK</p> <p>MB91F585SG/SH/SJ/SK ->MB91F585ASG/SH/SJ/SK</p>
3.05	2015/12/25		<p>The name and logo of company are changed from SPANSI ON to CYPRESS</p>

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1. CONFIGURATION DIAGRAM



Using RS-232C cable connected to the personal computer (Windows PC), flash memory data in the microcontroller mounted in the user system can be reprogrammed. Note that the user system must have an RS-232C driver for communication with the microcontroller UART.

2. COMPATIBLE MICROCONTROLLERS

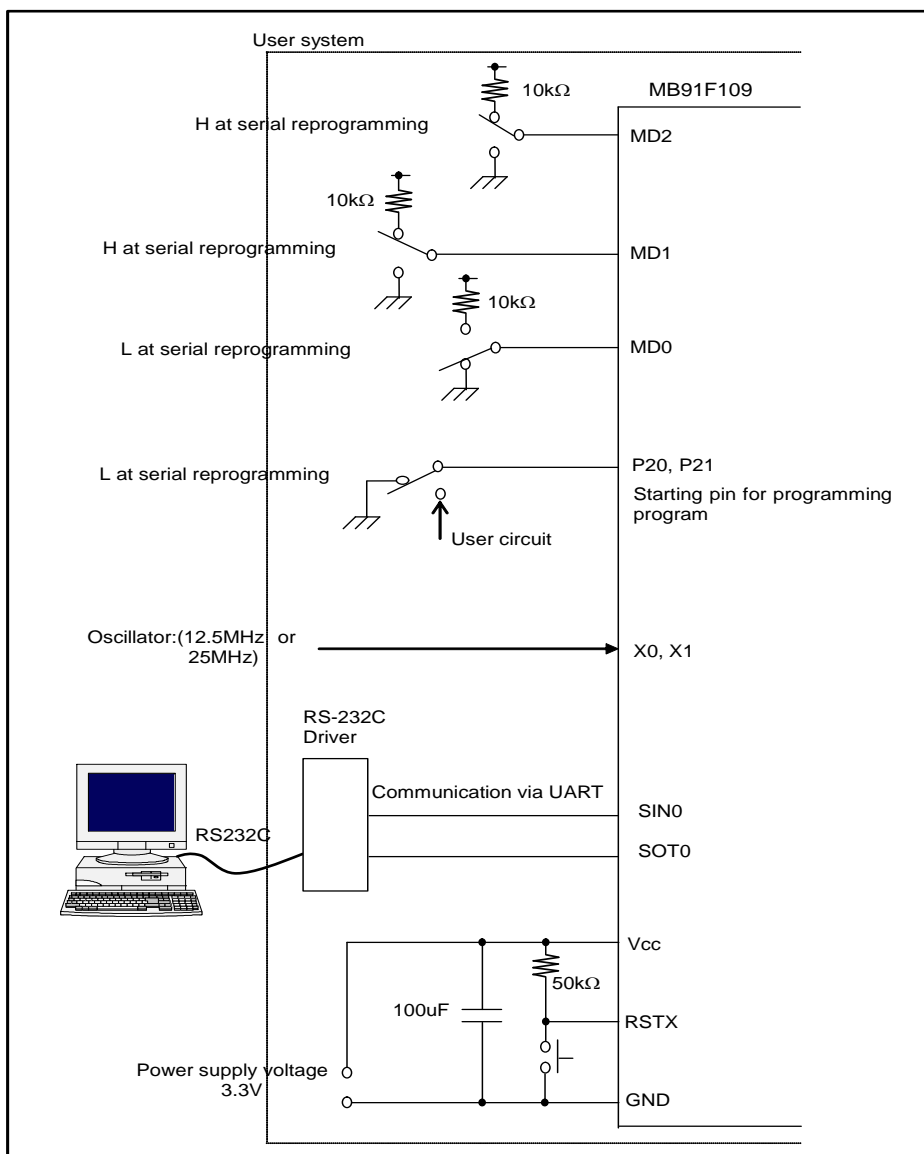
This software is compatible with the following microcontrollers.

MB91F109	MB91F127	MB91F128
MB91F133	MB91F155	MB91F158
MB91F211	MB91F213	MB91F223
MB91F224	MB91F233	MB91F248
MB91F249/S	MB91F264	MB91F267
MB91F272	MB91F273	
MB91FV310	MB91F312	MB91F313
MB91F314	MB91F318R	MB91FV319A
MB91FV319R	MB91F345	MB91F346
MB91F353	MB91F355	MB91F356B
MB91F362	MB91F365	MB91F366
MB91F367	MB91F368	MB91F369
MB91F463NA/NC	MB91F463C	MB91F464A
MB91F464H	MB91F465B	MB91F465C
MB91F465D	MB91F465K	MB91F465P
MB91F465X	MB91F467B	MB91F467C
MB91F467D	MB91F467R	MB91F467S
MB91F467T	MB91F467M	MB91F469G
MB91F475	MB91F478	MB91F479
MB91F482	MB91F486	MB91F487
MB91F492		
MB91F522B/D/F/J/K/L	MB91F523B/D/F/J/K/L	
MB91F524B/D/F/J/K/L	MB91F525B/D/F/J/K/L	
MB91F526B/D/F/J/K/L	MB91F527R/U/M/Y	
MB91F528R/U/M/Y	MB91F552	
MB91F575/S	MB91F577/S	
MB91F578C/CS/CH/CHS	MB91F579C/CS/CH/CHS	
MB91F583AMG/MH/MJ/MK	MB91F583ASG/SH/SJ/SK	
MB91F584AMG/MH/MJ/MK	MB91F584ASG/SH/SJ/SK	
MB91F585AMG/MH/MJ/MK	MB91F585ASG/SH/SJ/SK	
MB91F585LA/LB/LC/LD	MB91F586LA/LB/LC/LD	
MB91F587LA/LB/LC/LD	MB91F591B/BS/BH/BHS	
MB91F592B/BS/BH/BHS	MB91F594B/BS/BH/BHS	
MB91F596B/BS/BH/BHS	MB91F597B/BS/BH/BHS	
MB91F599B/BS/BH/BHS	MB91F59AC/CS/CH/CHS	
MB91F59BC/CS/CH/CHS		
MB91F610	MB91F625	MB91F627
MB91F637	MB91F639	MB91F635A
MB91F637A	MB91F639A	MB91F644
MB91F644A	MB91F647	MB91F647A
MB91F662	MB91F668	MB91F669
MB91F725	MB91F775	MB91F777
MB91F787		

3. EXAMPLE OF CONNECTION FOR ON-BOARD REPROGRAMMING BY PROGRAMMER

This chapter explains a pin setup which must be set up for every kind series.

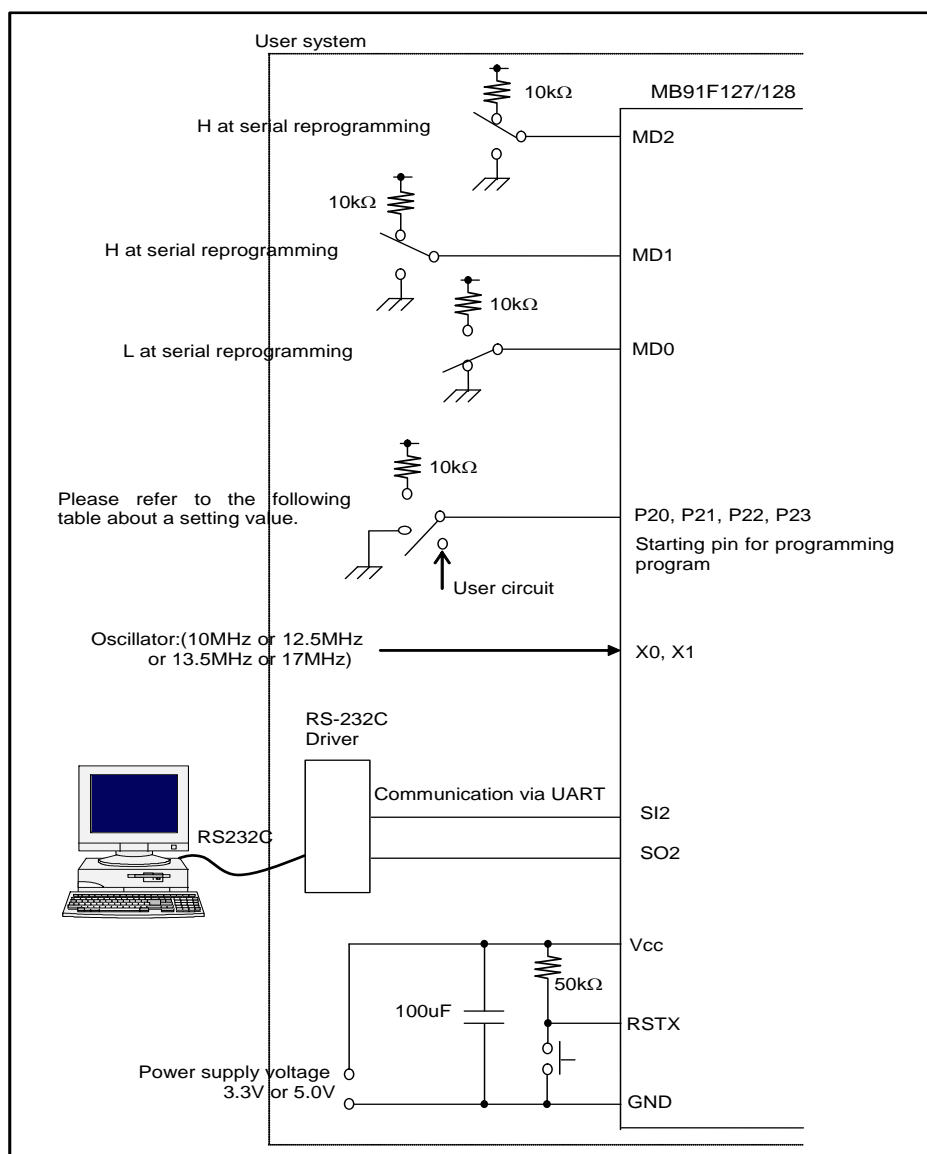
3.1 Setting for MB91F109



The MD2, MD1 and MD0 pins, and P20 and P21 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P20 and P21 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (12.5MHz or 25MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P20 and P21 pin. Then RSTX pin set from “Low” to “High” level executes user program.

3.2 Setting for MB91F127 / F128

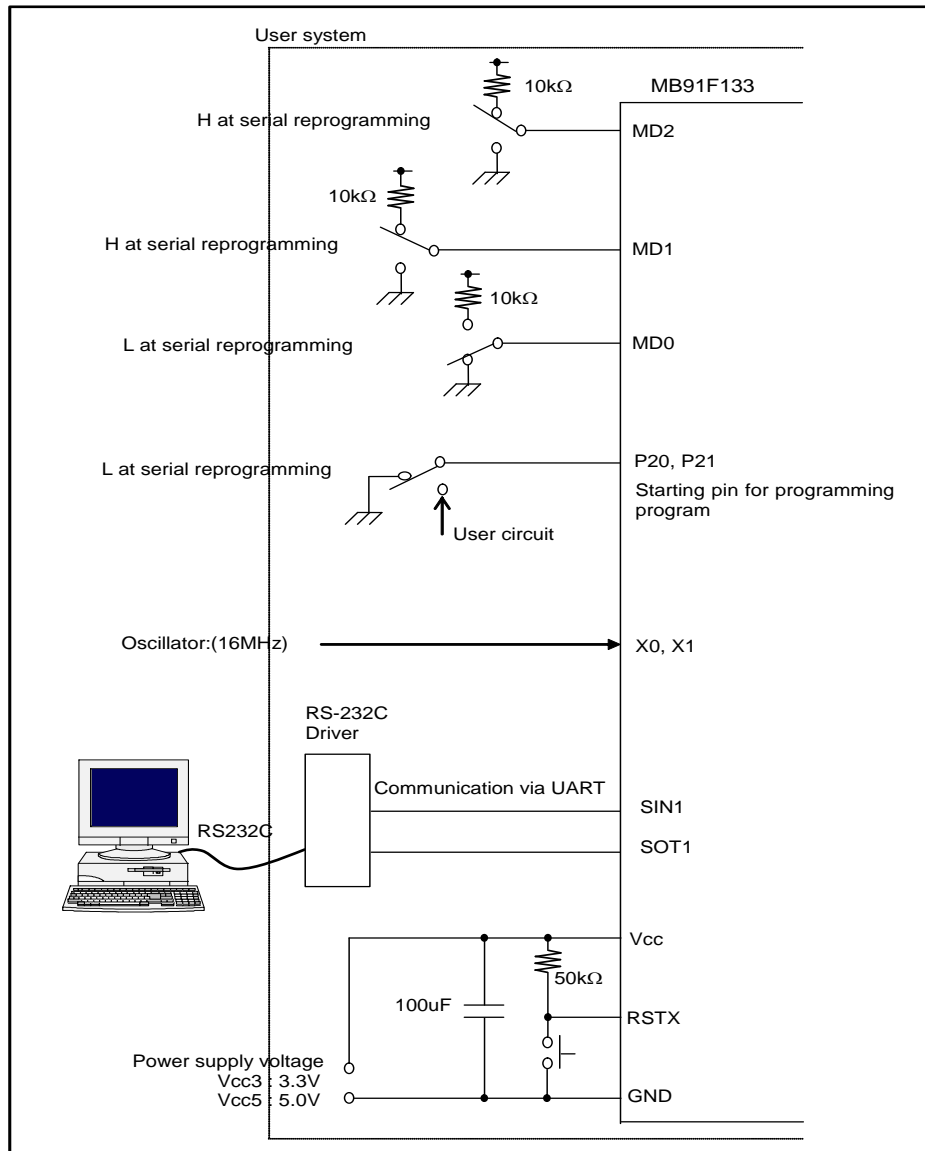


setting value for serial reprogramming

oscillator	P20	P21	P22	P23
10MHz	L	L	L	L
12.5MHz	L	L	H	L
13.5MHz	L	L	L	H
17MHz	L	L	H	H

The MD2, MD1 and MD0 pins, and P20, P21, P22 and P23 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P20, P21, P22, and P23 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10MHz or 12.5MHz or 13.5MHz or 17MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming. After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P20, P21, P22 and P23 pin. Then RSTX pin is set from “Low” to “High” level executes user program.

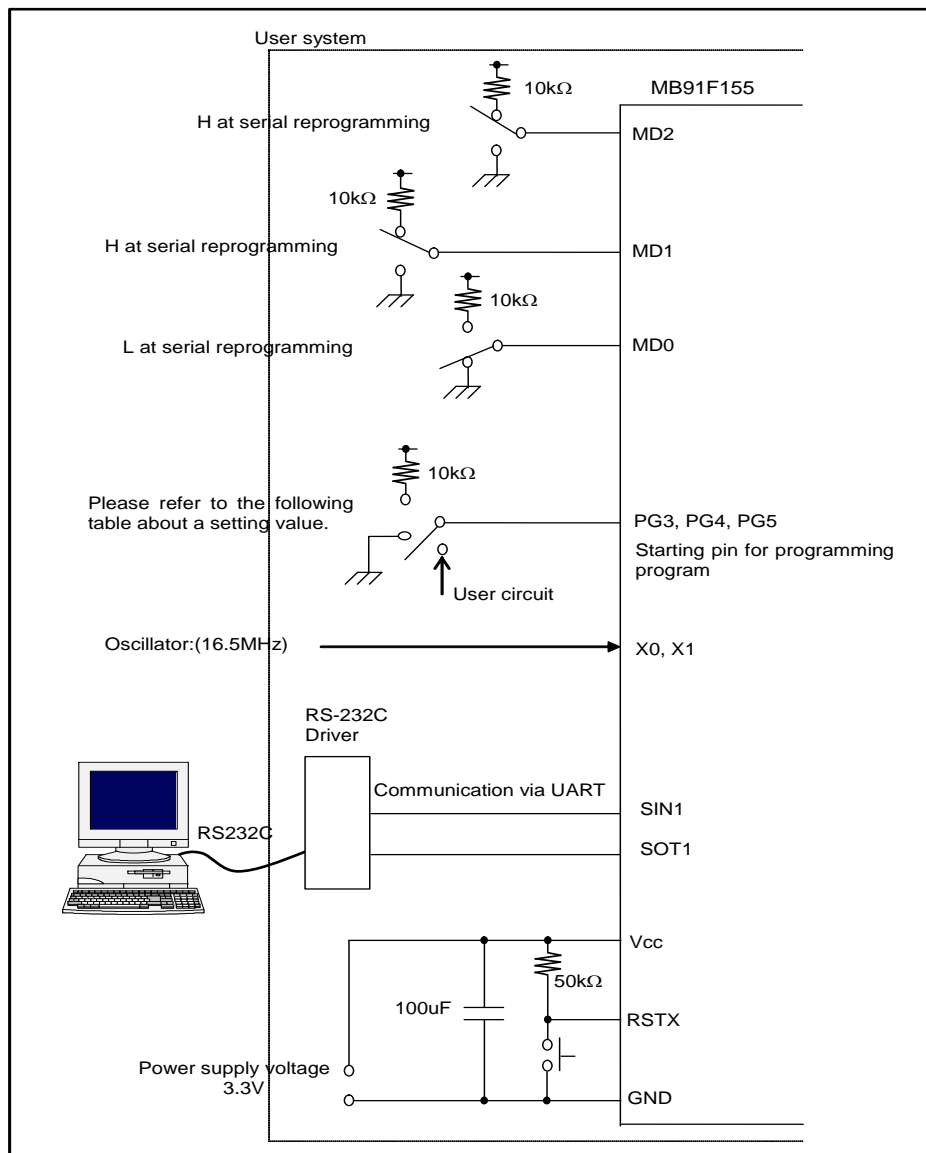
3.3 Setting for MB91F133



The MD2, MD1 and MD0 pins, and P20 and P21 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P20 and P21 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P20 pin. Then RSTX pin set from “Low” to “High” level executes user program.

3.4 Setting for MB91F155



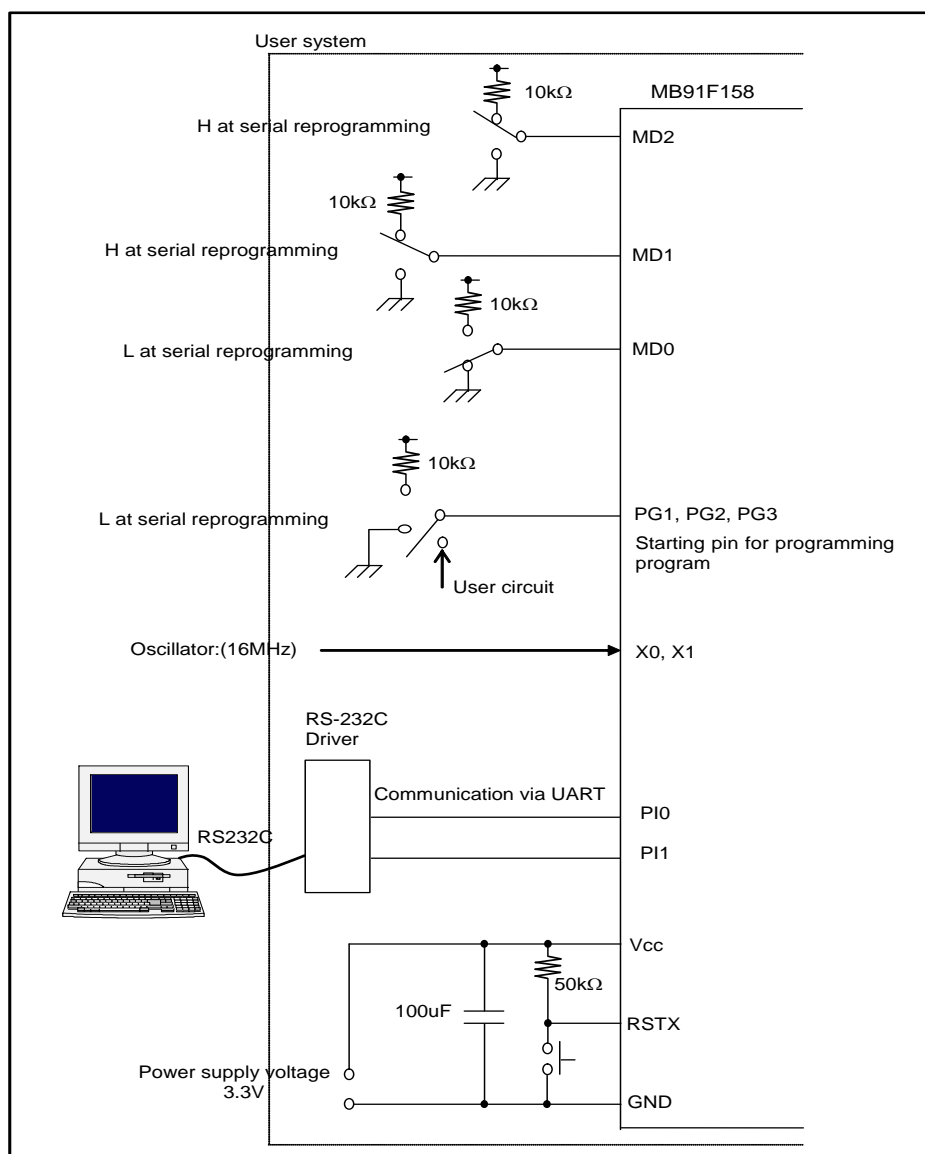
setting value for serial reprogramming

oscillator	PG3	PG4	PG5
16.5MHz	L	L	H

The MD2, MD1 and MD0 pins, and PG3, PG4 and PG5 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and PG3, PG4 and PG5 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (16.5MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for PG3, PG4, PG5 pin. Then RSTX pin set from “Low” to “High” level executes user program.

3.5 Setting for MB91F158



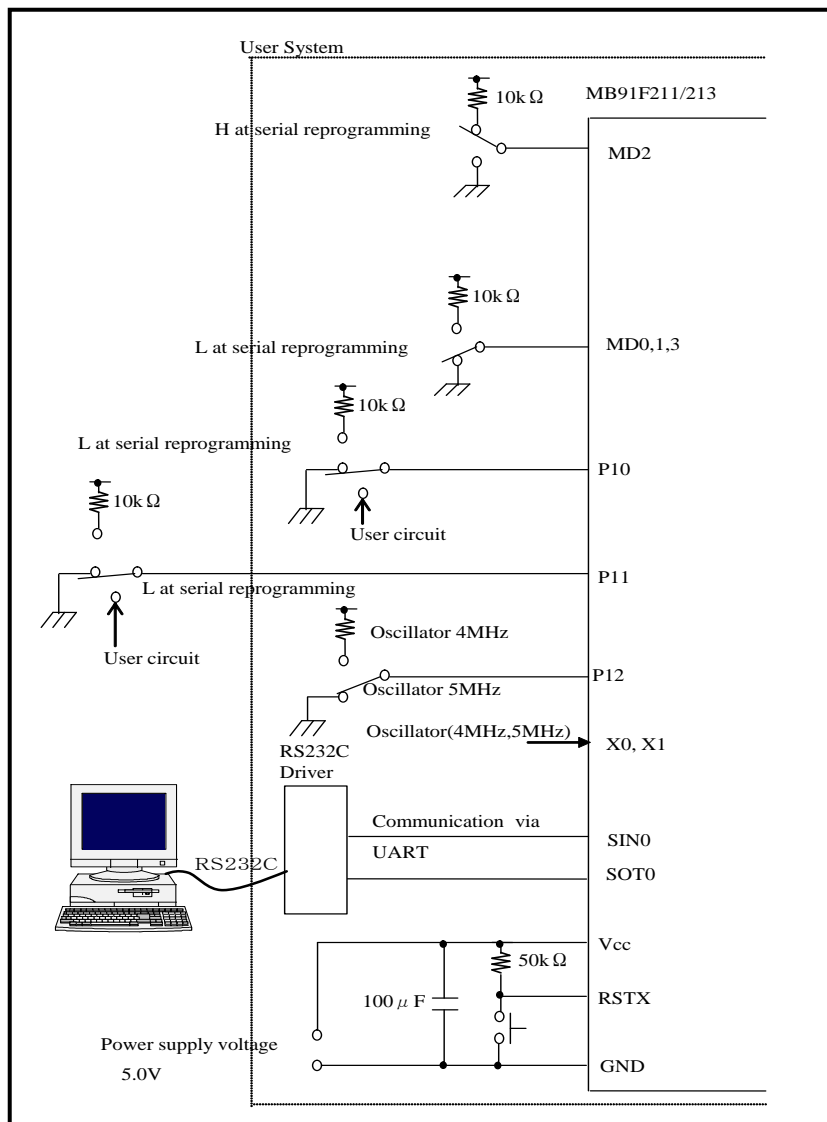
setting value for serial reprogramming

oscillator	PG1	PG2	PG3
16MHz	L	L	H

The MD2, MD1 and MD0 pins, and PG3, PG4 and PG5 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and PG3, PG4 and PG5 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for PG3, PG4 and PG5 pin. Then RSTX pin set from “Low” to “High” level executes user program.

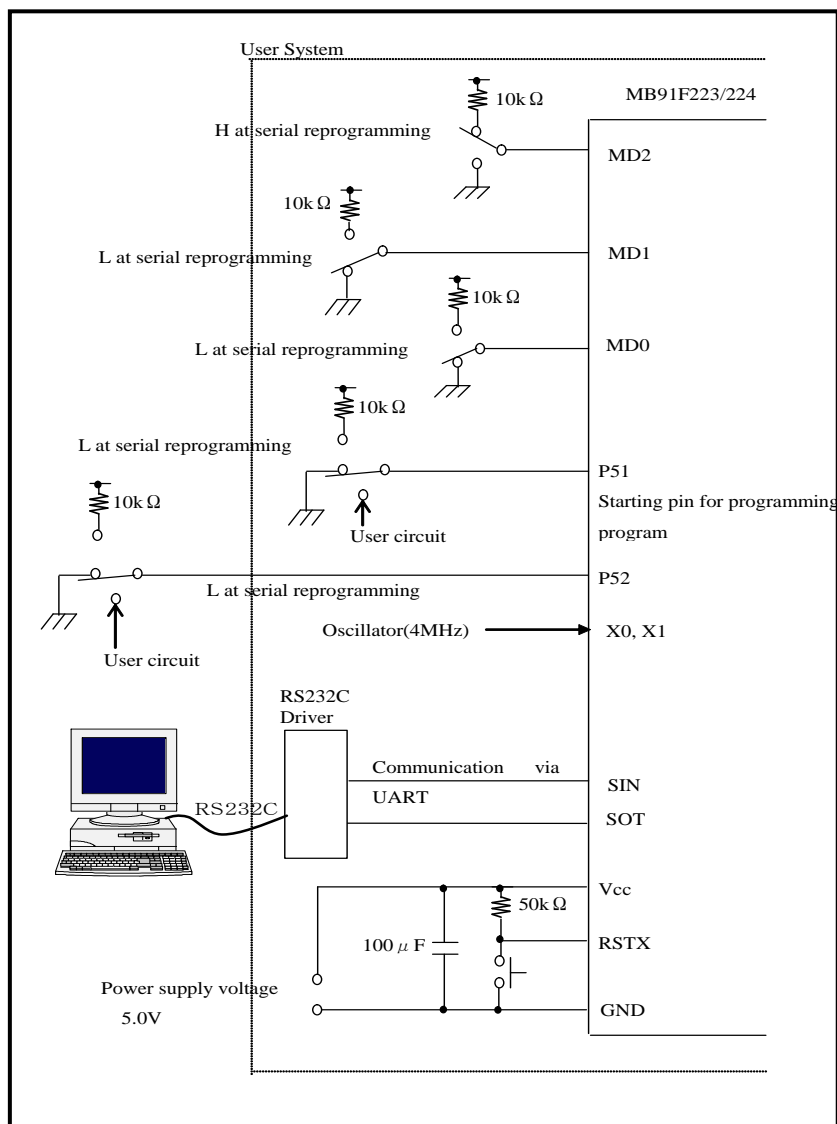
3.6 Setting for MB91F211 / F213



The MD3, MD2, MD1 and MD0 pins, and P10, P11 and P12 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD3, MD2, MD1 and MD0 pins, and P10, P11 and P12 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 5MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD3, MD2, MD1 and MD0 pins and to the user circuit side as for P10,P11 and P12 pin. Then INITX pin set from “Low” to “High” level executes user program.

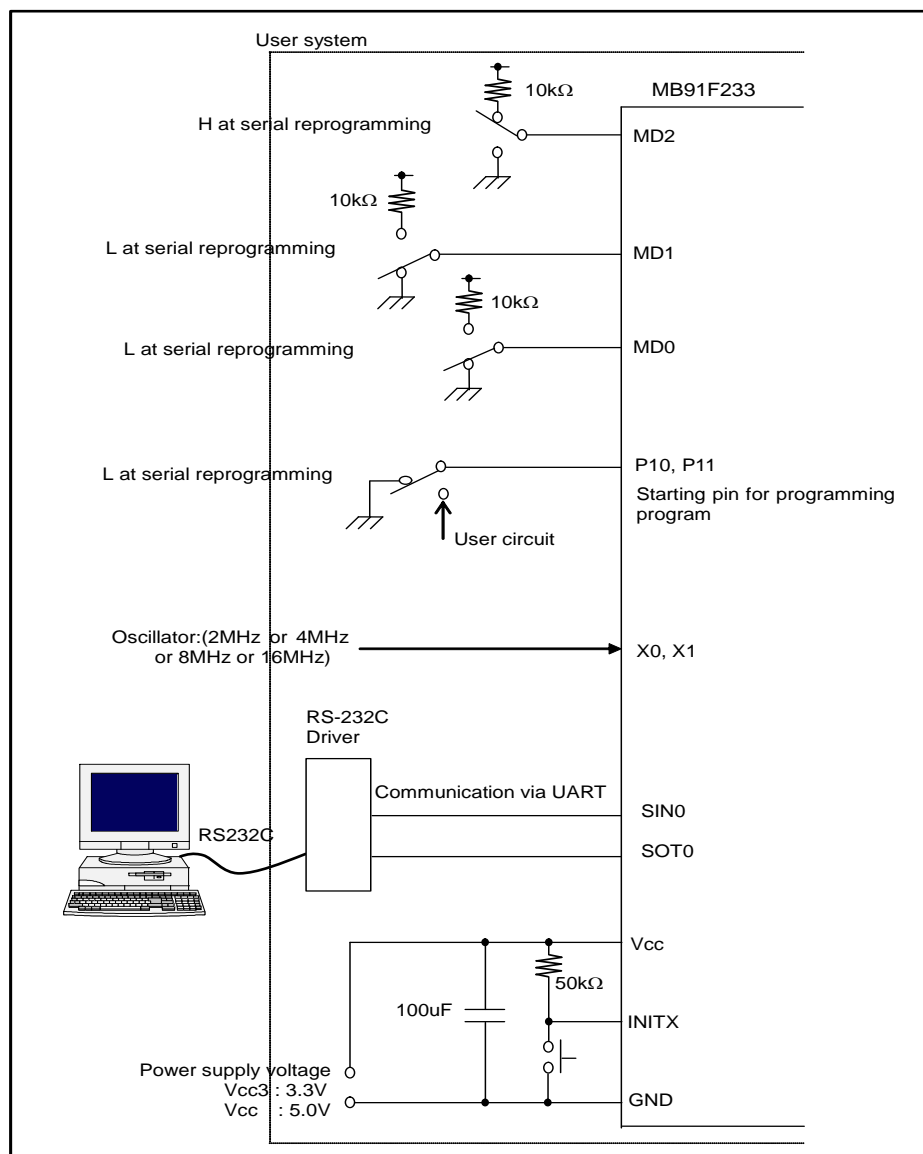
3.7 Setting for MB91F223 / F224



The MD2, MD1 and MD0 pins, and P51 and P52 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and P51 and P52 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

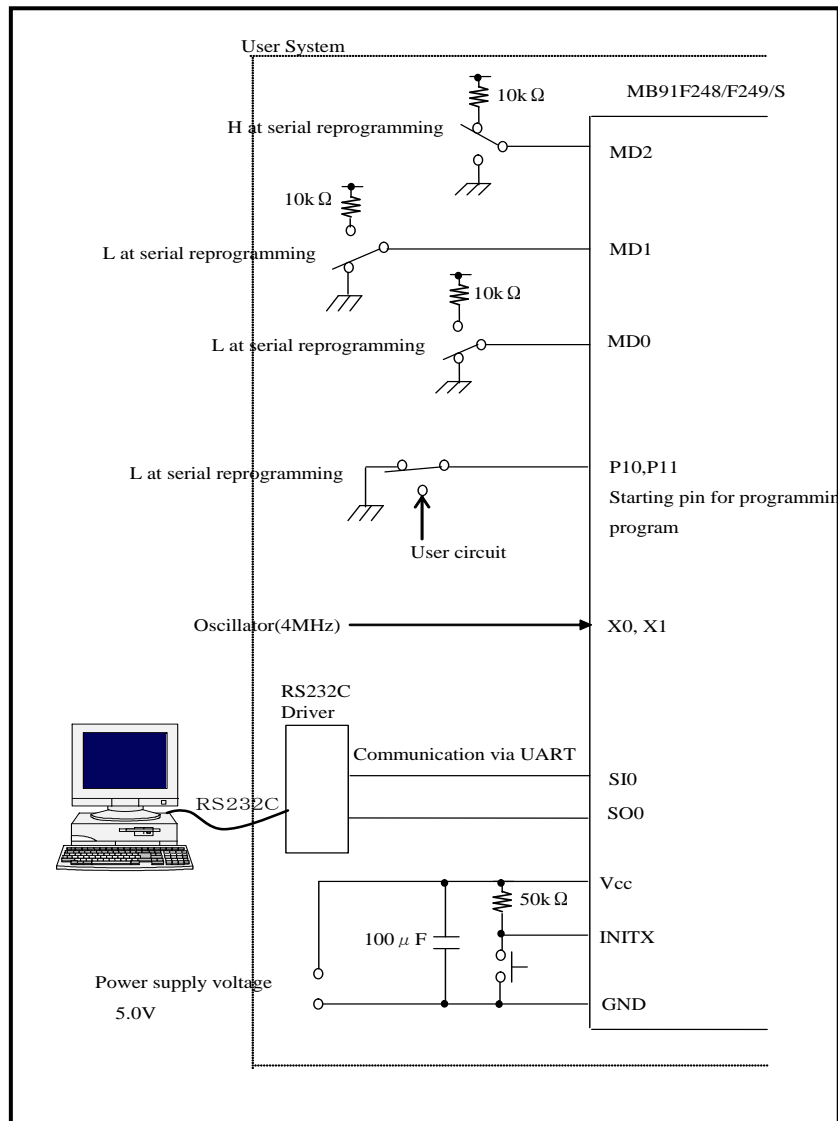
After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P51 and P52 pin. Then INITX pin set from "Low" to "High" level executes user program.

3.8 Setting for MB91F233



The MD2, MD1 and MD0 pins, and P10 and P11 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P19 and P11 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (2MHz or 4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming. After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P10 and P11pin. Then INITX pin set from “Low” to “High” level executes user program.

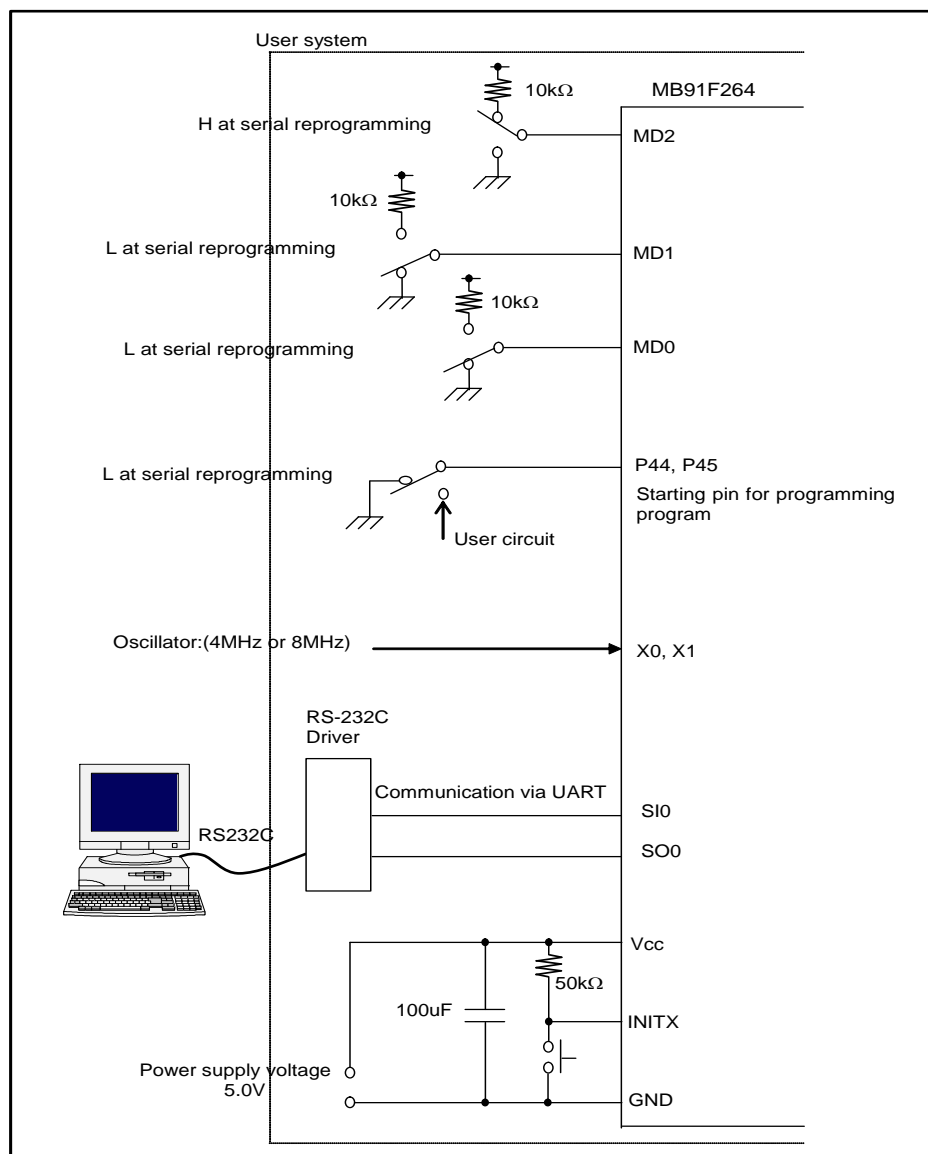
3.9 Setting for MB91F248 / F249/S



The MD2, MD1 and MD0 pins, and P10 and P11 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P10 and P11 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P10 and P11 pin. Then INITX pin set from “Low” to “High” level executes user program.

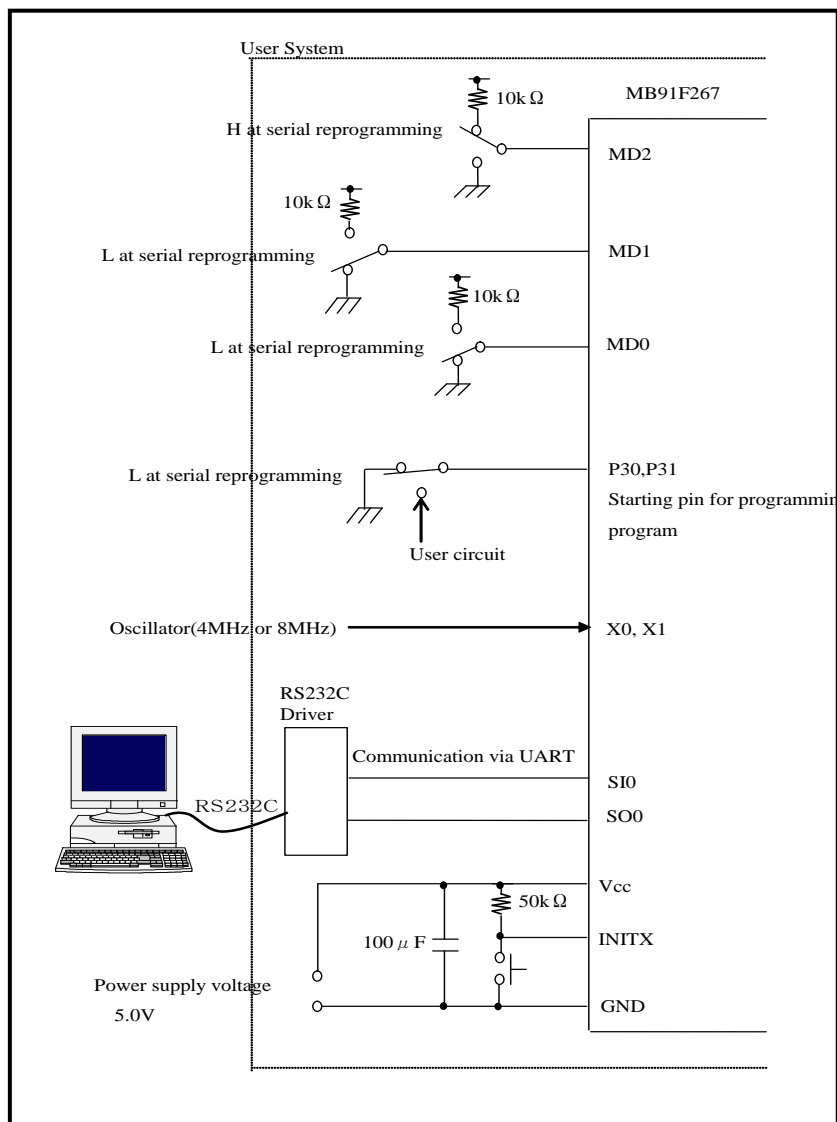
3.10 Setting for MB91F264



The MD2, MD1 and MD0 pins, and P44 and P45 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P44 and P45 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P44 and P45 pin. Then INITX pin set from “Low” to “High” level executes user program.

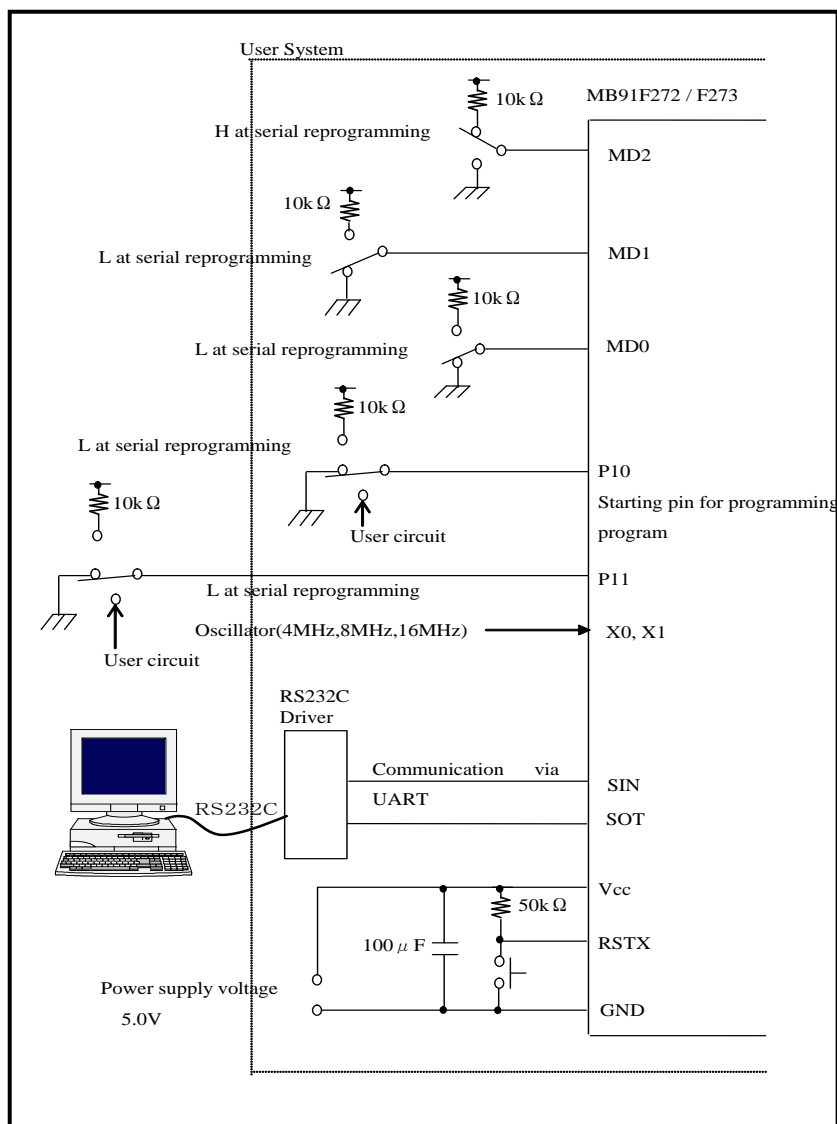
3.11 Setting for MB91F267



The MD2, MD1 and MD0 pins, and P30 and P31 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P30 and P31 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

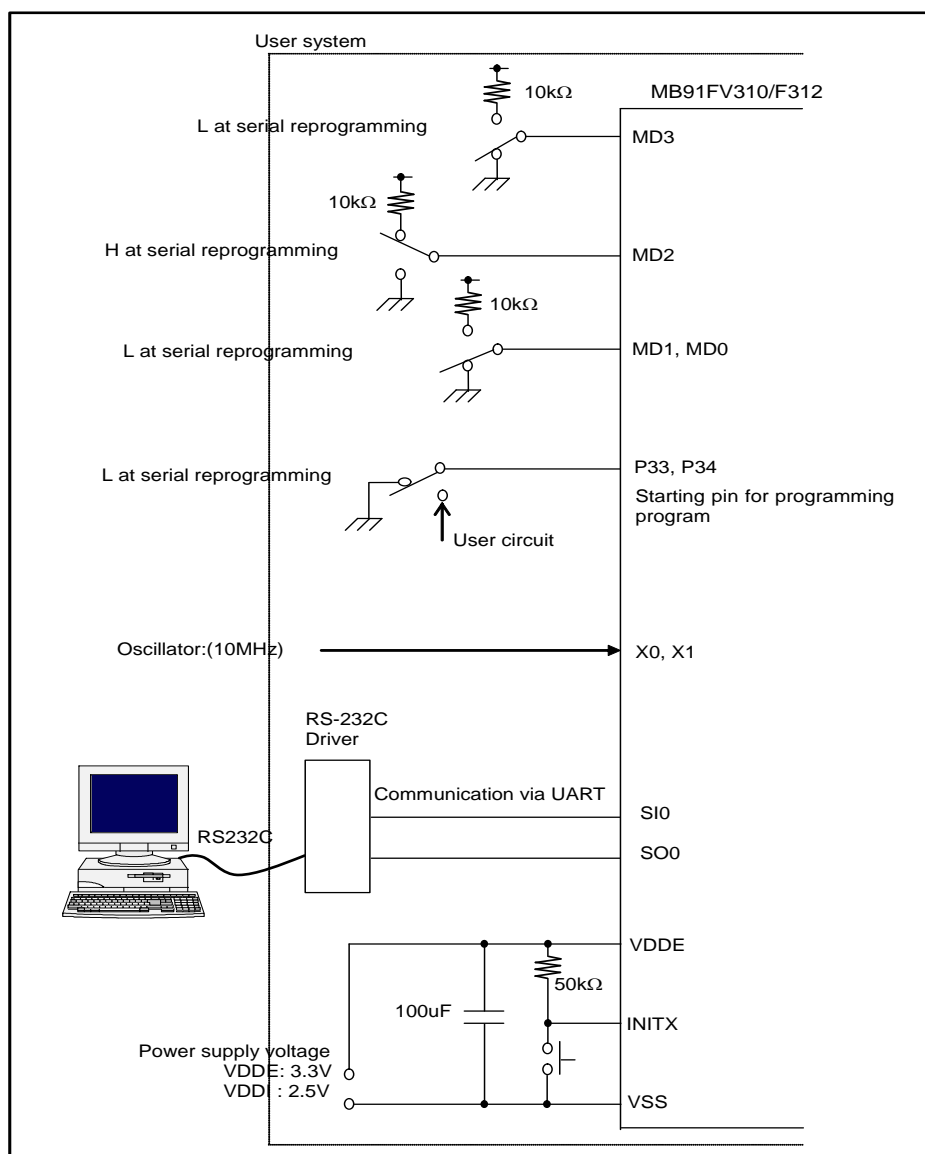
After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P30 and P31 pin. Then INITX pin set from “Low” to “High” level executes user program.

3.12 Setting for MB91F272 / F273



The MD2, MD1 and MD0 pins, and P10 and P11 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and P10 and P11 pin, the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming. After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P10 and P11 pin. Then INITX pin set from "Low" to "High" level executes user program.

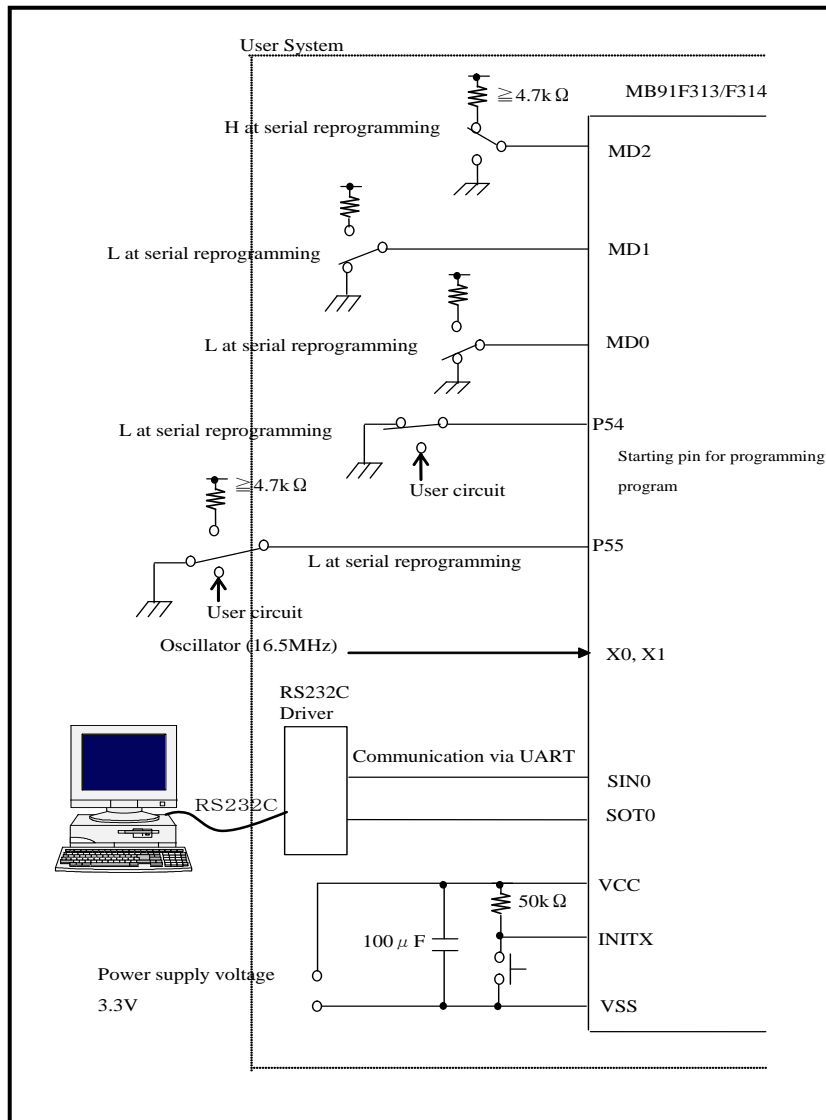
3.13 Setting for MB91FV310 / F312



The MD3, MD2, MD1 and MD0 pins, and P33 and P34 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD3, MD2, MD1 and MD0 pins, and P33 and P34 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD3, MD2, MD1 and MD0 pins and to the user circuit side as for P33 and P34 pin. Then INITX pin set from "Low" to "High" level executes user program.

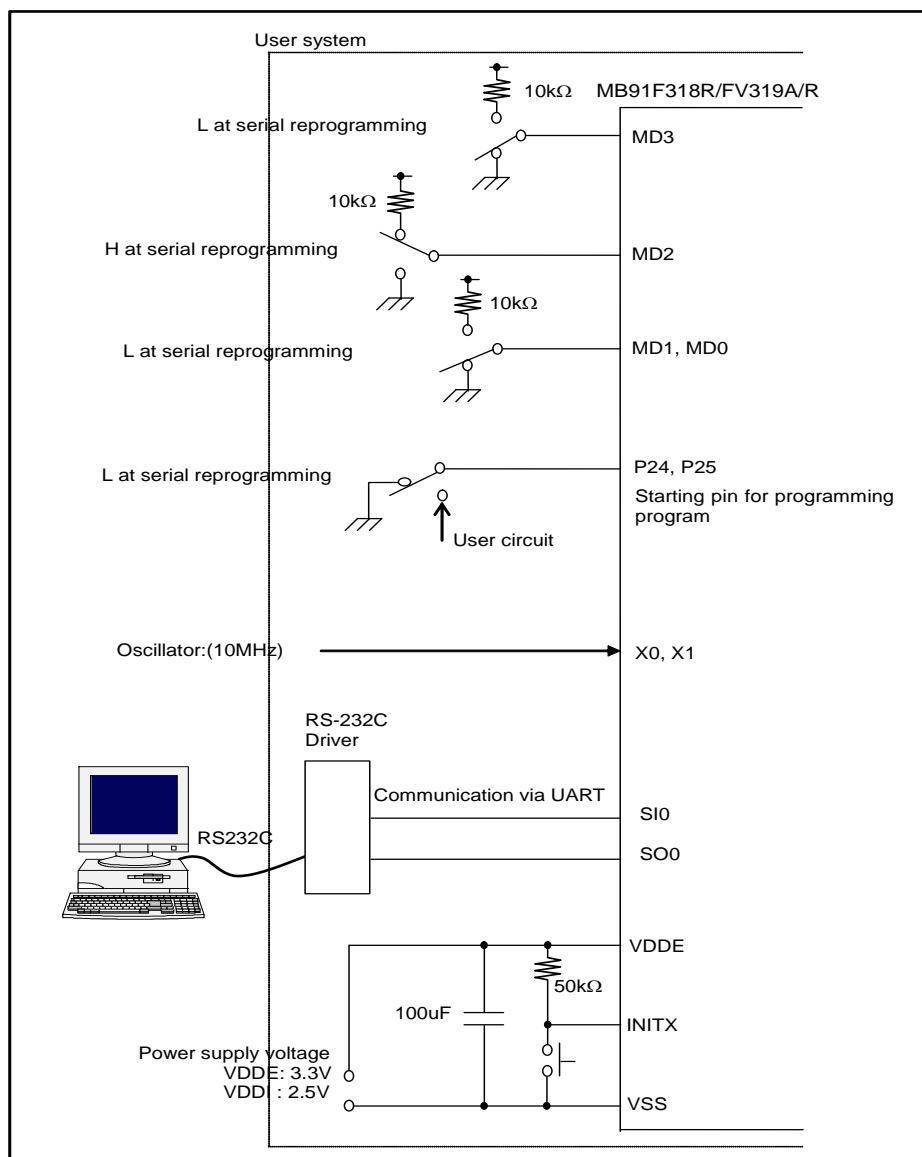
3.14 Setting for MB91F313 / F314



The MD2, MD1 and MD0 pins, and P54 and P55 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and P54 and P55 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10 or 20MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P54 and P55 pin. Then INITX pin set from "Low" to "High" level executes user program.

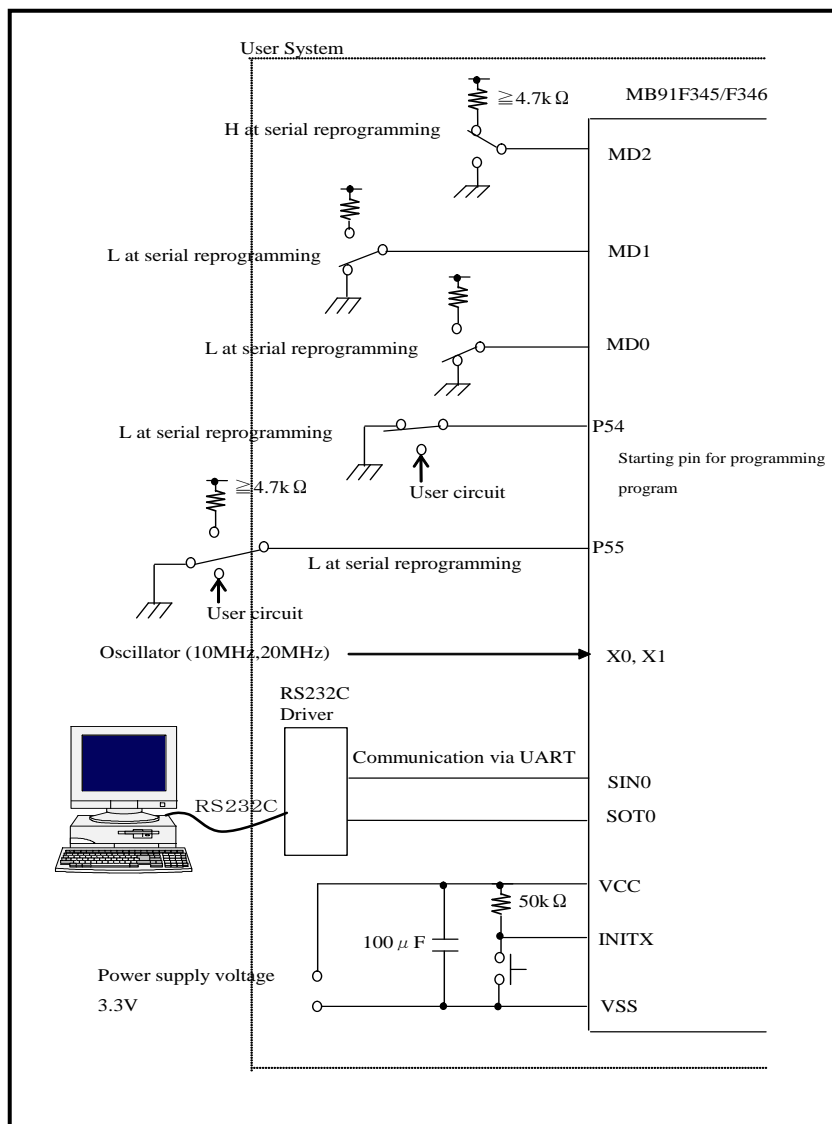
3.15 Setting for MB91F318R / FV319A / R



The MD3, MD2, MD1 and MD0 pins, and P24 and P25 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD3, MD2, MD1 and MD0 pins, and P24 and P25 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD3, MD2, MD1 and MD0 pins and to the user circuit side as for P24 and P25 pin. Then INITX pin set from "Low" to "High" level executes user program.

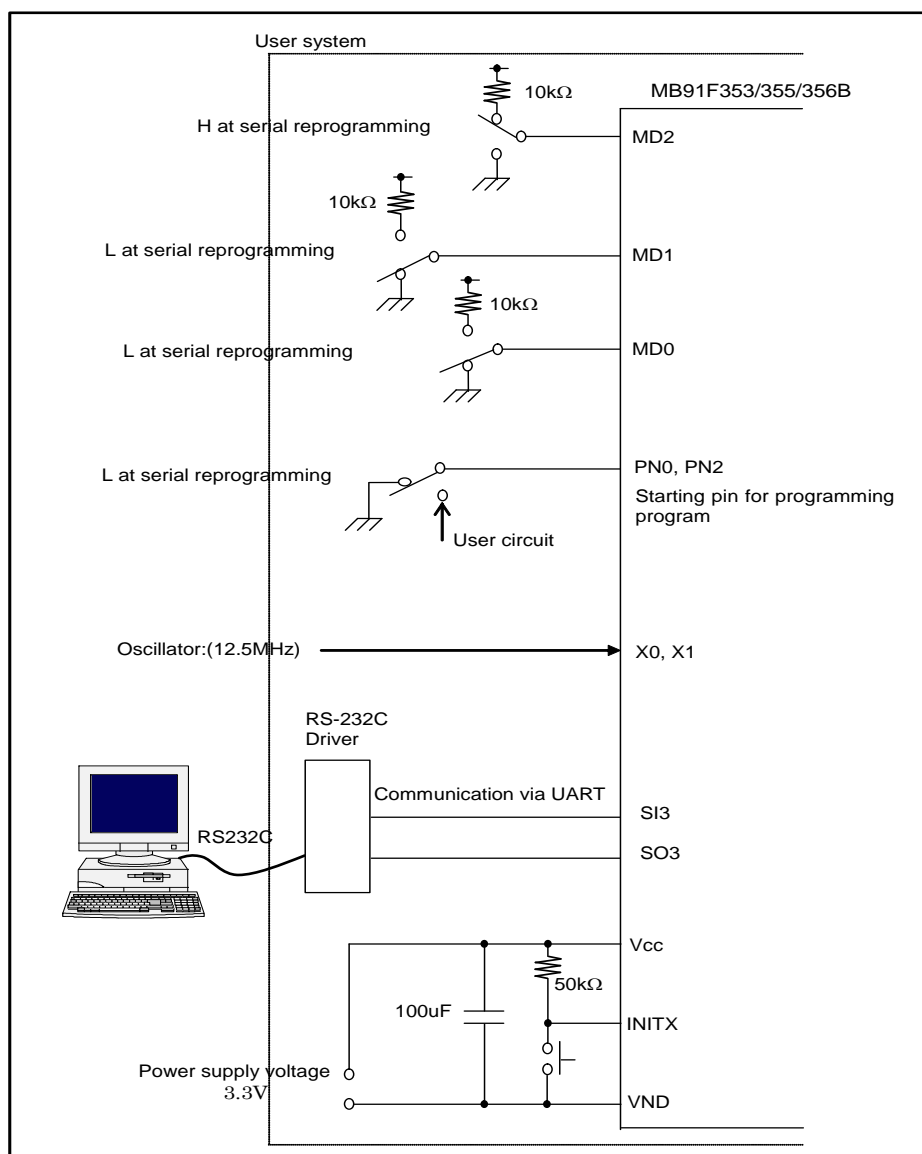
3.16 Setting for MB91F345 / F346



The MD2, MD1 and MD0 pins, and P54 and P55 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and P54 and P55 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10 or 20MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P54 and P55 pin. Then INITX pin set from "Low" to "High" level executes user program.

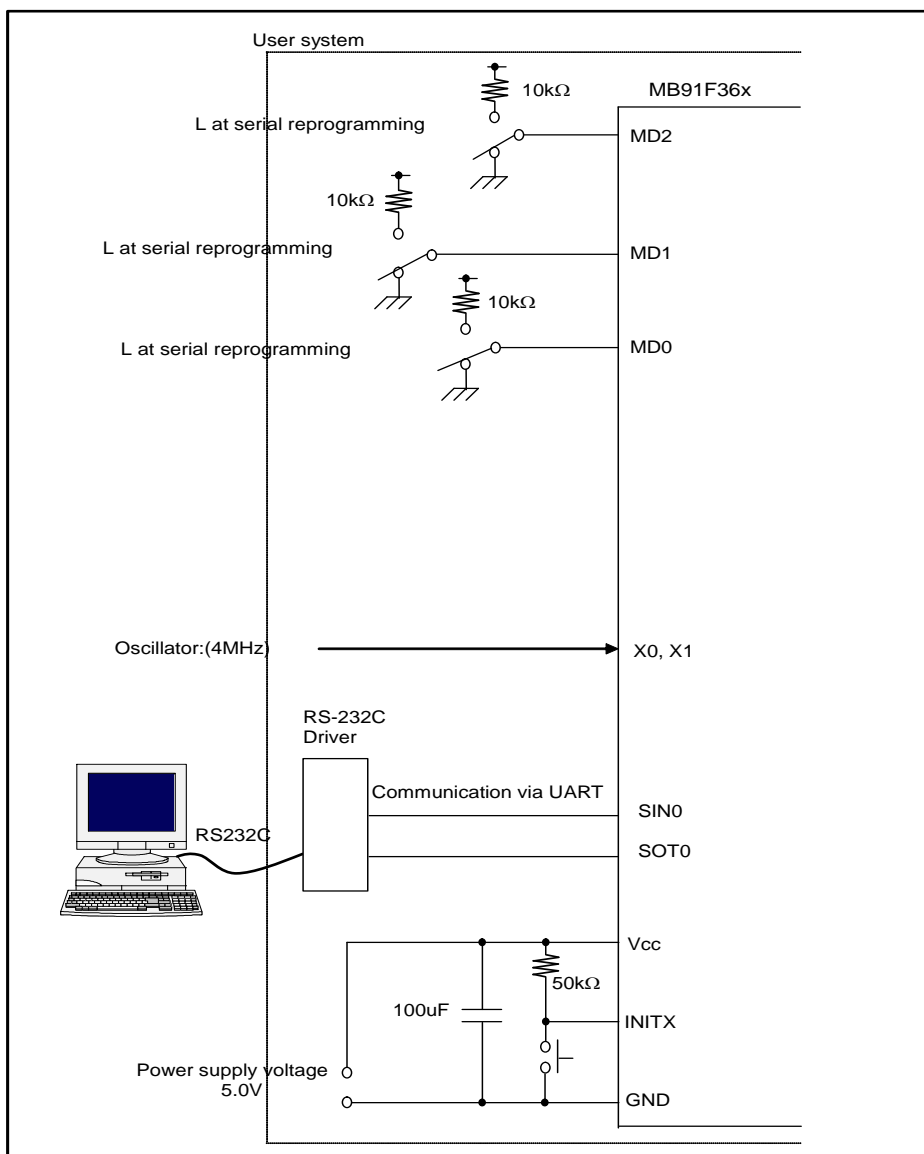
3.17 Setting for MB91F353 / F355 / F356B



The MD2, MD1 and MD0 pins, and PN0 and PN2 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and PN0 and PN2 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (12.5MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

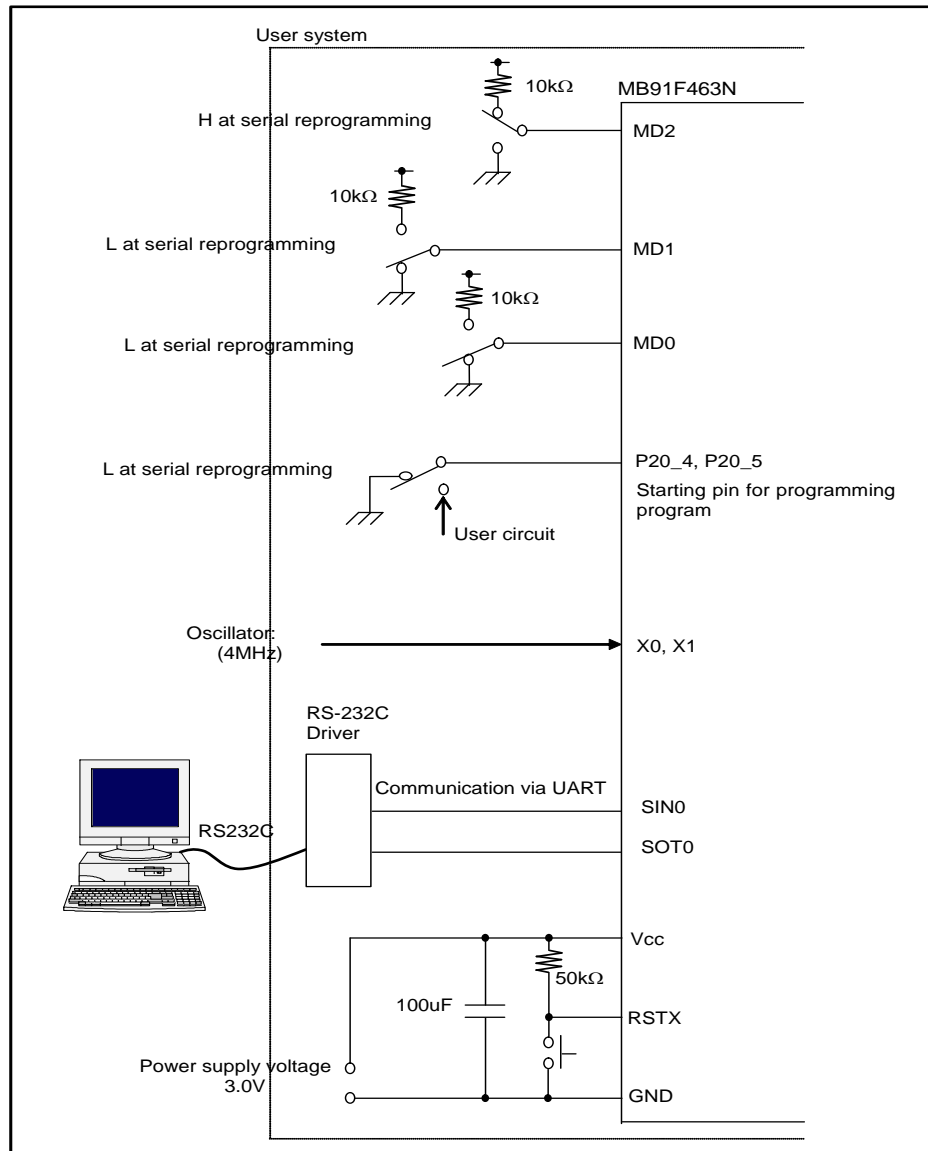
After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for PN0 and PN2 pin. Then INITX pin set from "Low" to "High" level executes user program.

3.18 Setting for MB91F362 / F365 / F366 / F367 / F368 / F369



The MD2, MD1 and MD0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming. After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins. Then INITX pin set from "Low" to "High" level executes user program.

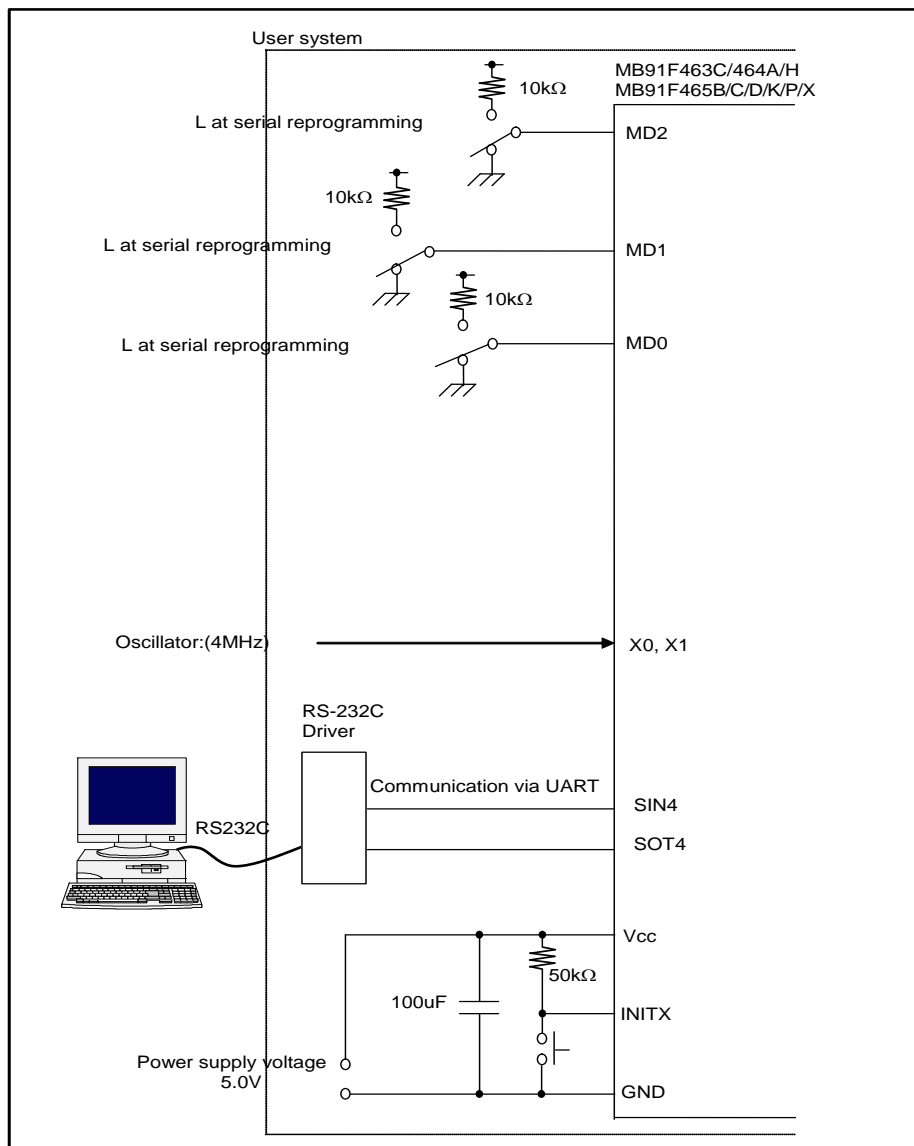
3.19 Setting for MB91F463NA/NC



The MD2, MD1 and MD0 pins, and P20_4 and P20_5 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P20_4 and P20_5 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P20_4 and P20_5 pin. Then RSTX pin set from “Low” to “High” level executes user program.

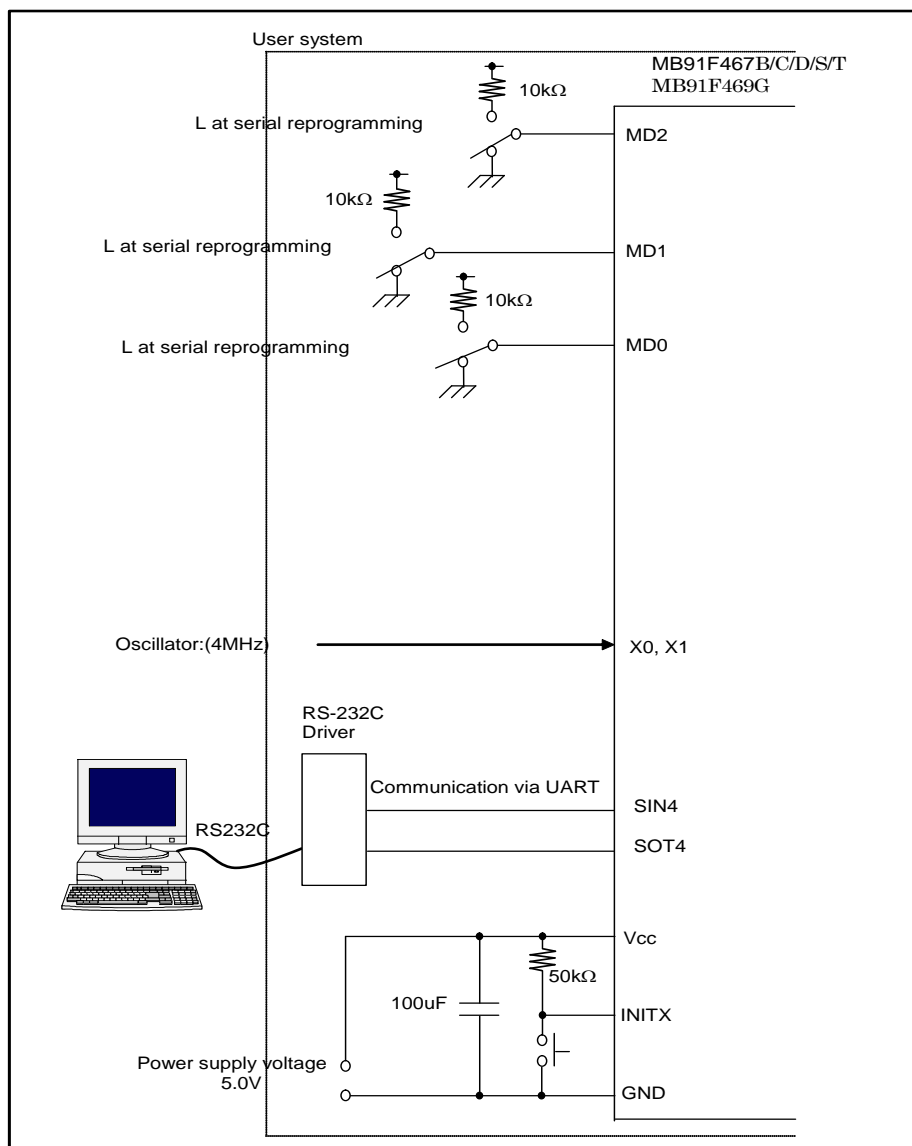
3.20 Setting for MB91F463C / MB91F464A/H / F465B/C/D/K/P/X



The MD2, MD1 and MD0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins. Then INITX pin set from “Low” to “High” level executes user program.

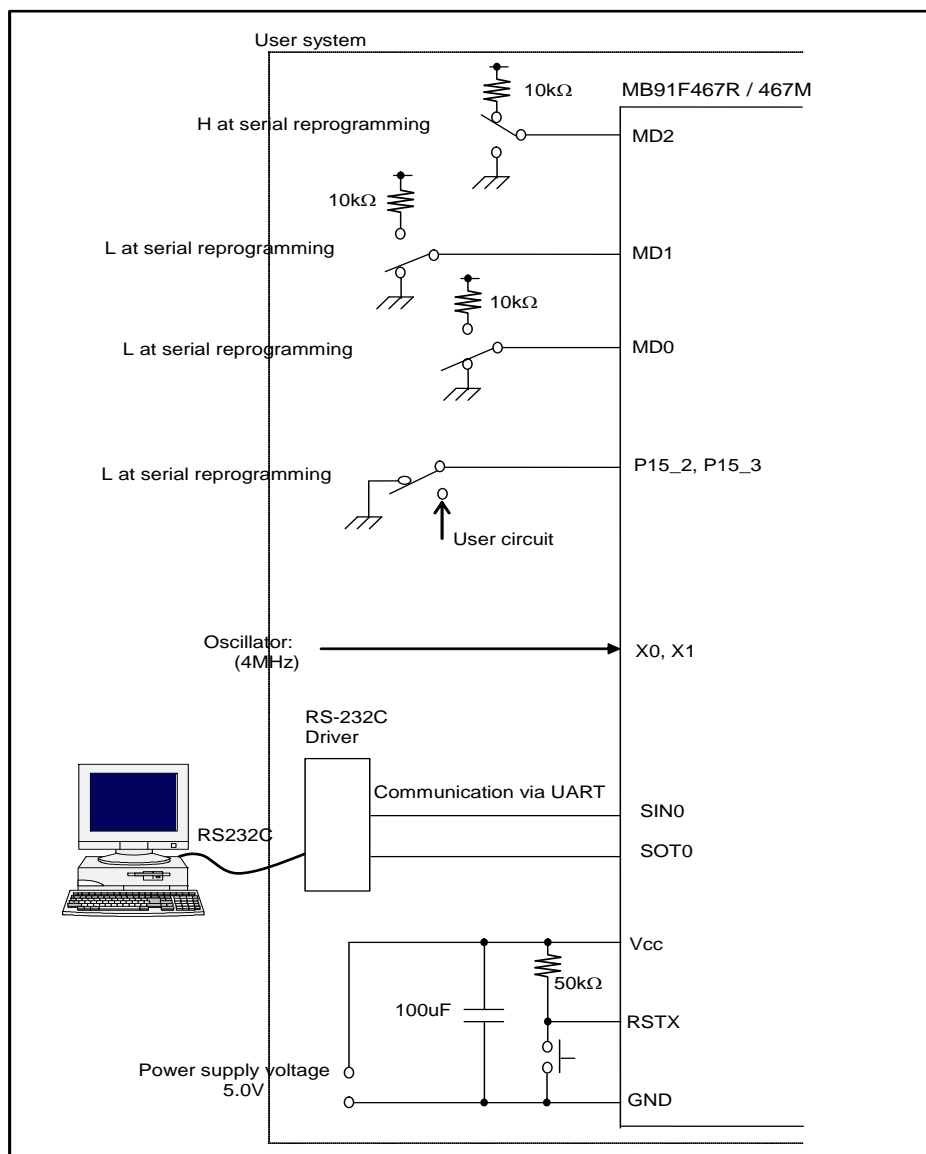
3.21 Setting for MB91F467B/C/D/S/T / F469G



The MD2, MD1 and MD0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the INITX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins. Then INITX pin set from “Low” to “High” level executes user program.

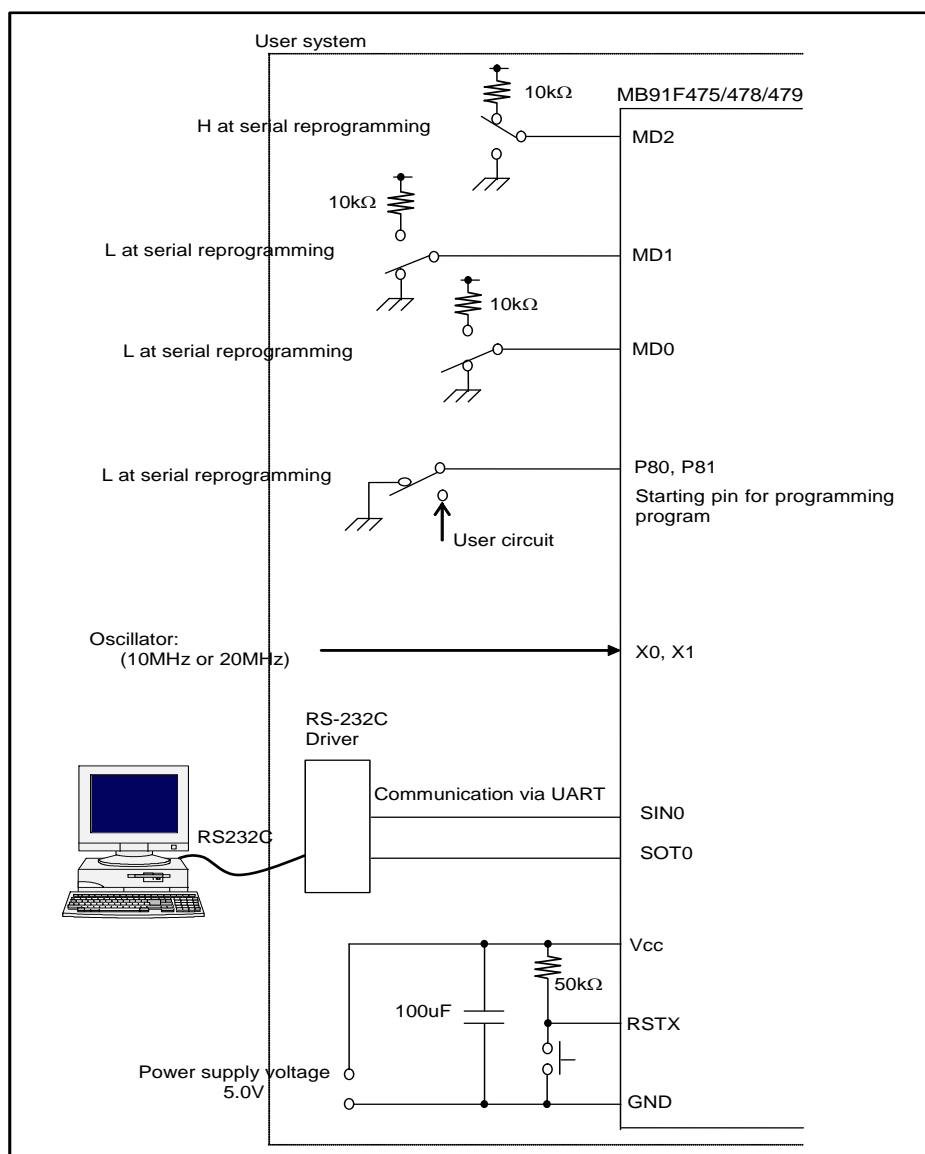
3.22 Setting for MB91F467R / 467M



The MD2, MD1 and MD0 pins, and P15_2 and P15_3 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P15_2 and P15_3 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P15_2 and P15_3 pin. Then RSTX pin set from “Low” to “High” level executes user program.

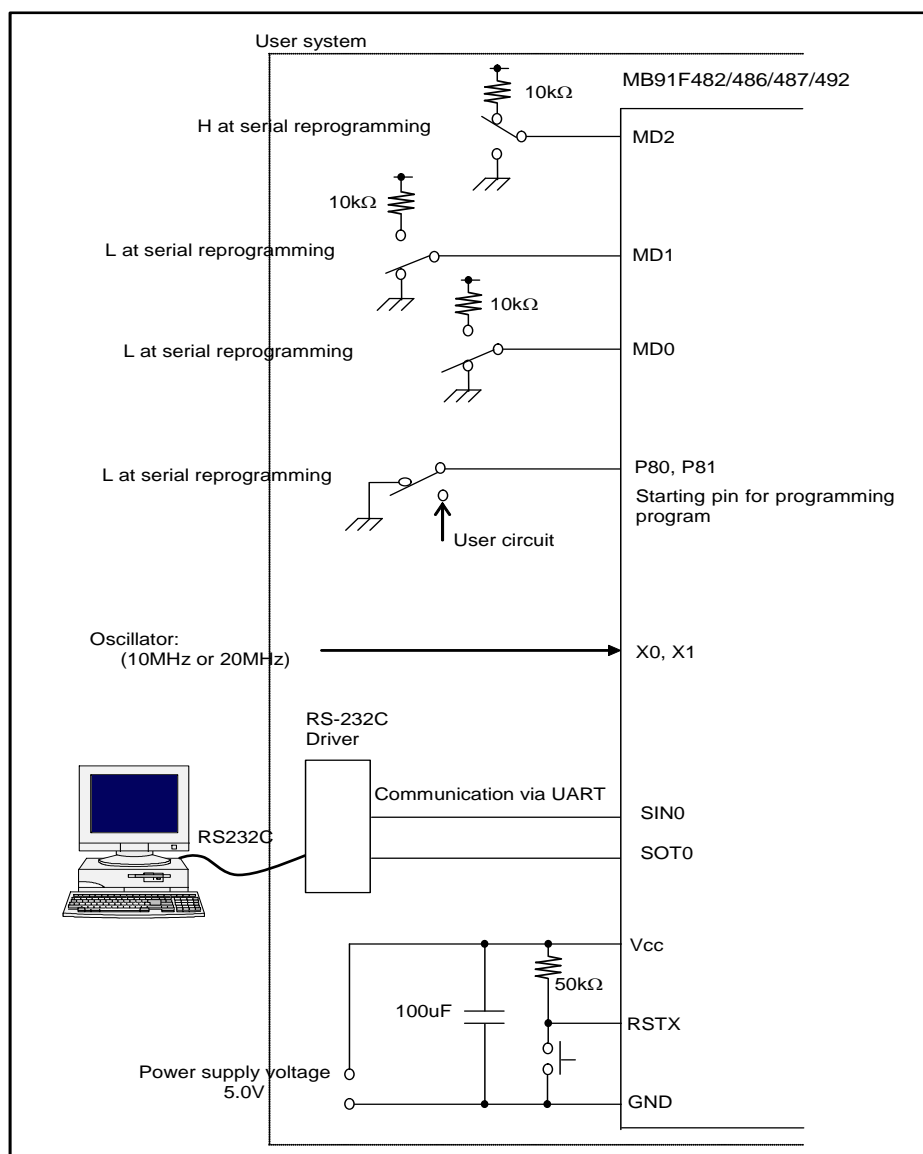
3.23 Setting for MB91F475 / F478 / F479



The MD2, MD1 and MD0 pins, and P80 and P81 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD2, MD1 and MD0 pins, and P80 and P81 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10MHz or 20MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P80 and P81 pin. Then RSTX pin set from “Low” to “High” level executes user program.

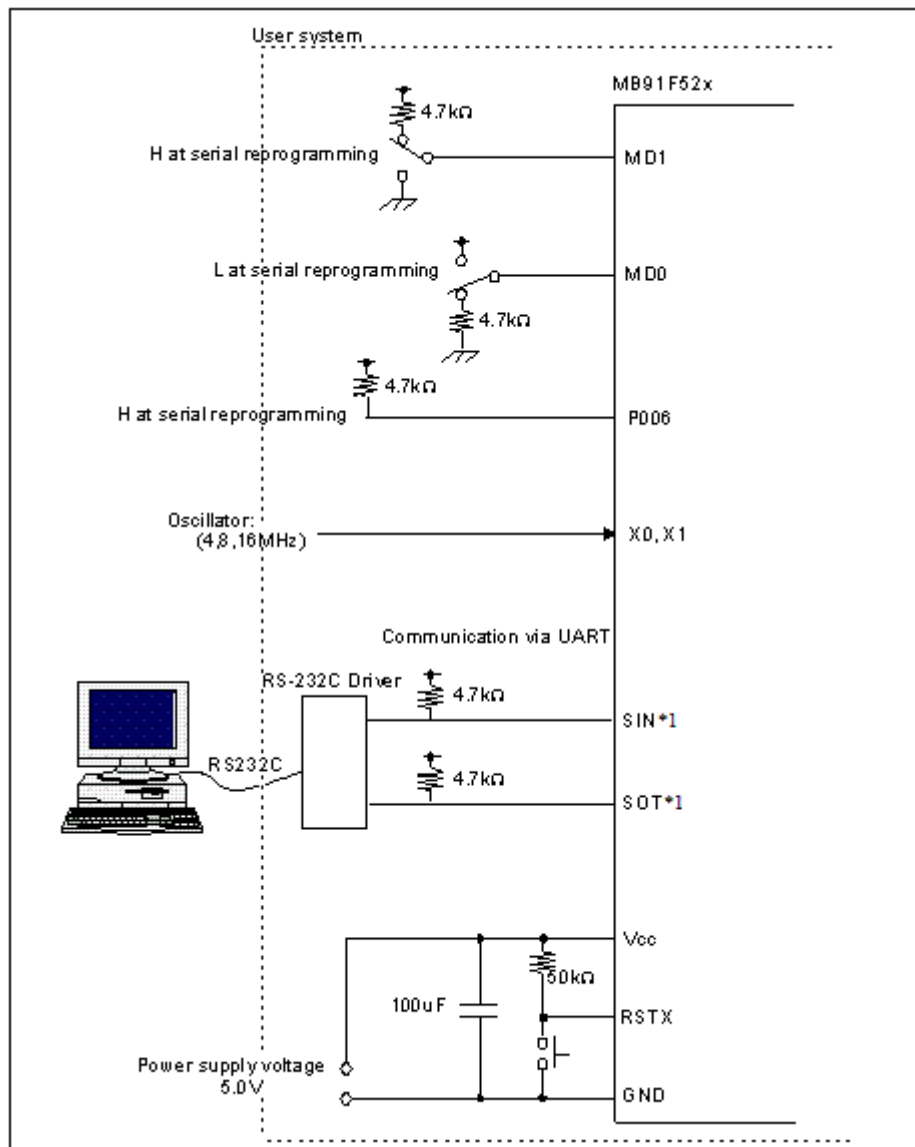
3.24 Setting for MB91F482 / F486 / F487 / F492



The MD2, MD1 and MD0 pins, and P80 and P81 pin cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from "Low" to "High" level after setting the MD2, MD1 and MD0 pins, and P80 and P81 pin, the microcontroller enters the serial reprogramming mode (reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (10MHz or 20MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for P80 and P81 pin. Then RSTX pin set from "Low" to "High" level executes user program.

3.25 Setting for MB91F522B/D/F/J/K/L / F523B/D/F/J/K/L / F524B/D/F/J/K/L / F525B/D/F/J/K/L / F526B/D/F/J/K/L / F527R/U/M/Y / F528R/U/M/Y



The MD1 and MD0 pins, P006 and SIN*1 and SOT*1 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from "Low" to "High" level after setting the MD1 pin(H level) and MD0 pin(L Level), and P006 pin(H Level)and SIN*1 and SOT*1 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for P006, SIN*1 and SOT*1 pins. Then RSTX pin set from "Low" to "High" level executes user program.

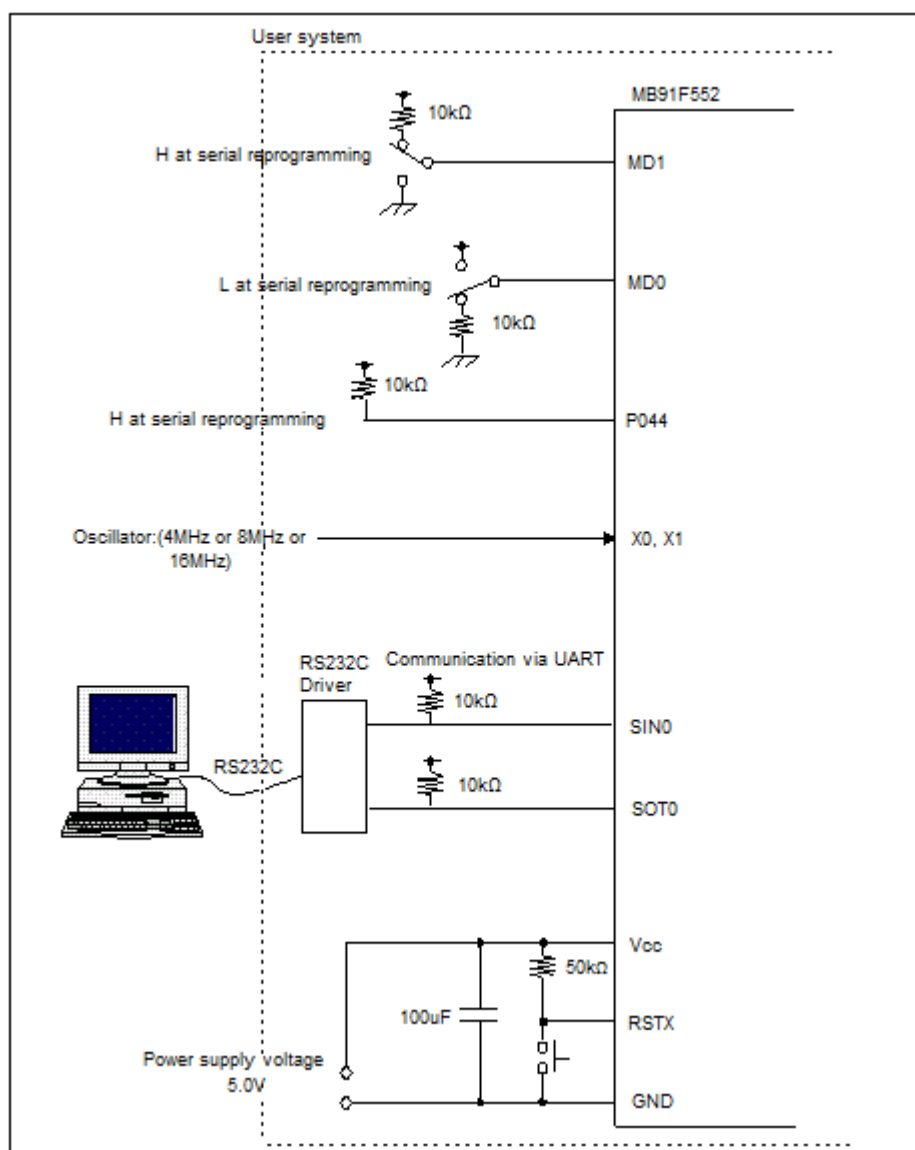
Note:

*1: The SIN and SOT pins which are connected with PC vary with the packages of microcontrollers. See the following for details.

SIN: P126/SIN0_0 (416,208,176,144,120,100pin), P040/SIN0_1 (80,64pin)

SOT: P127/SOT0_0 (416,208,176,144,120,100pin), P047/SOT0_1 (80,64pin)

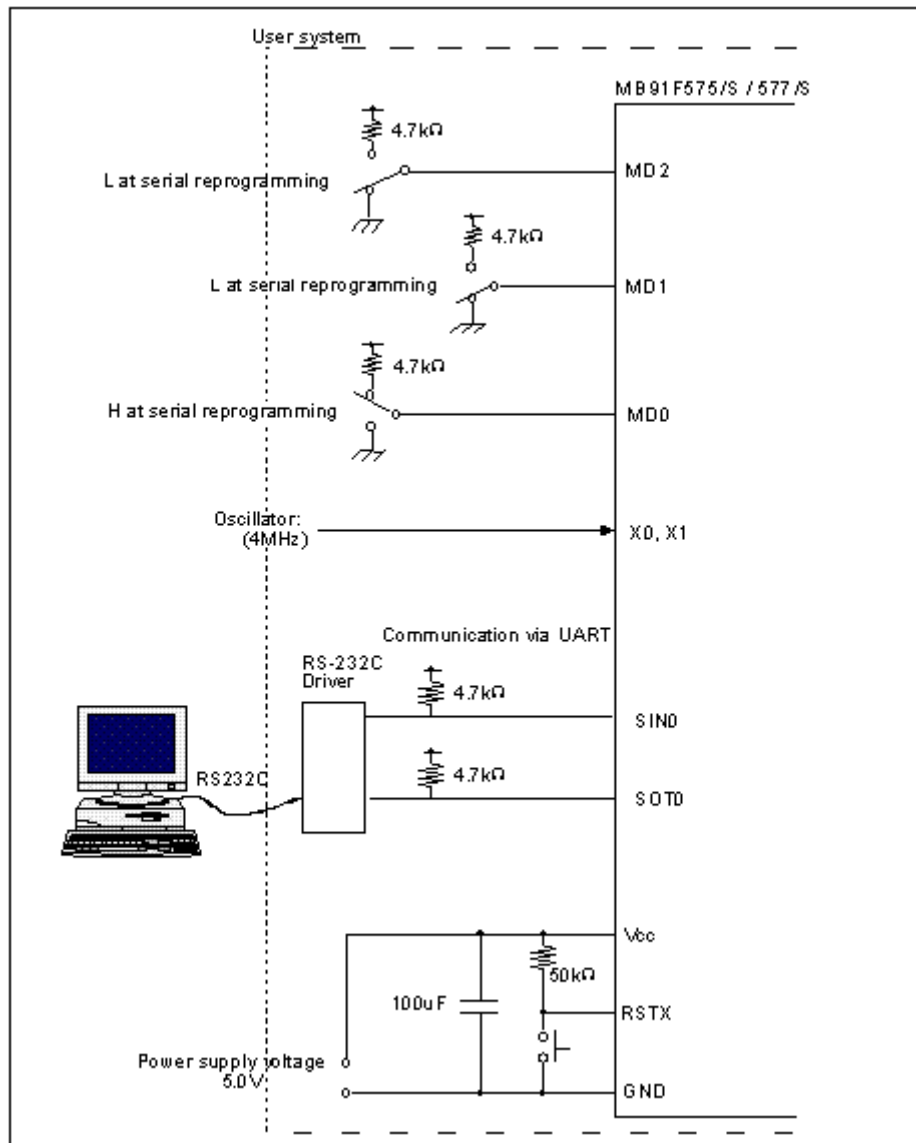
3.26 Setting for MB91F552



The MD1 and MD0 pins, P044 and SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(H Level) and MD0 pin(L Level), and P044 pin(H Level) and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for P044, SIN0 and SOT0 pins. Then RSTX pin set from “Low” to “High” level executes user program.

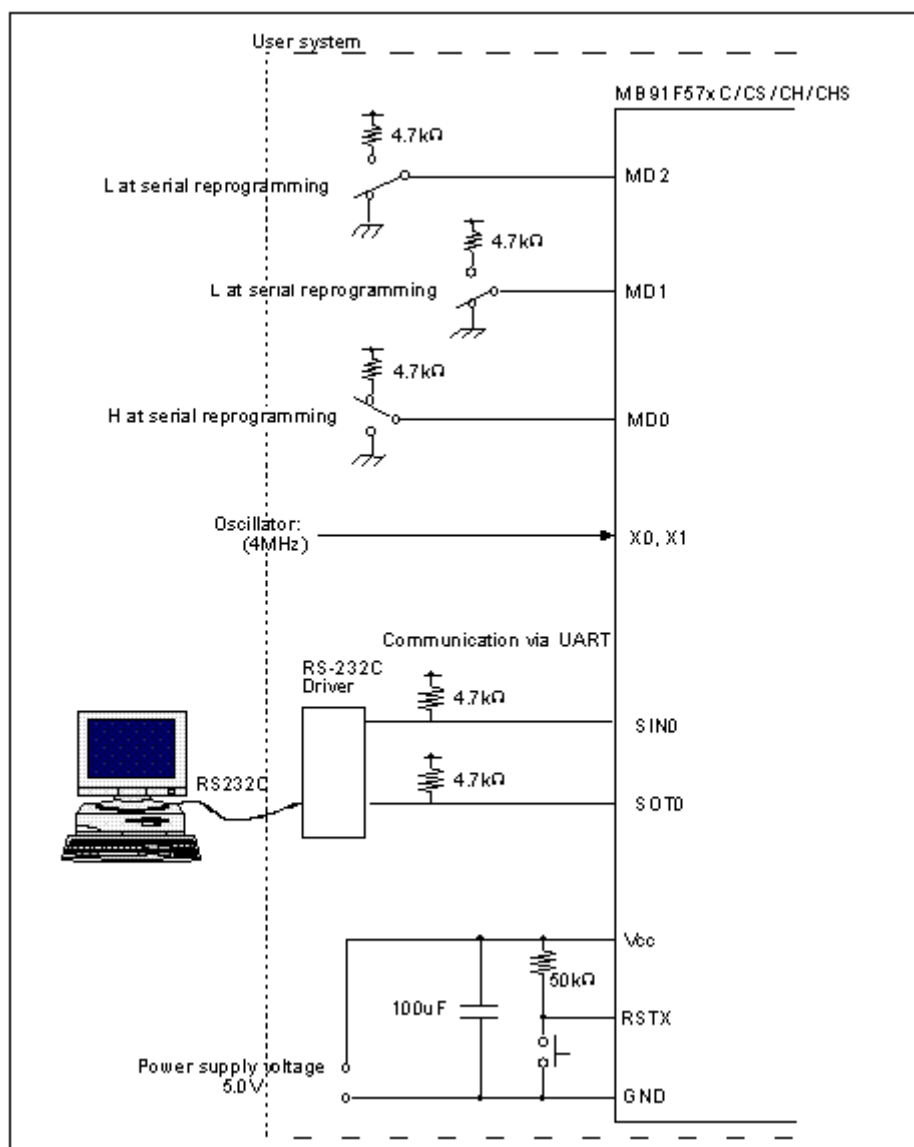
3.27 Setting for MB91F575/S / F577/S



The MD2, MD1 and MD0 pins, and SIND and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from Low to High level after setting the MD2 pin(L level), MD1 pin(L level) and MD0 pin(H Level), and SIND and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for SIND, SOT0 pin. Then RSTX pin set from Low to High level executes user program.

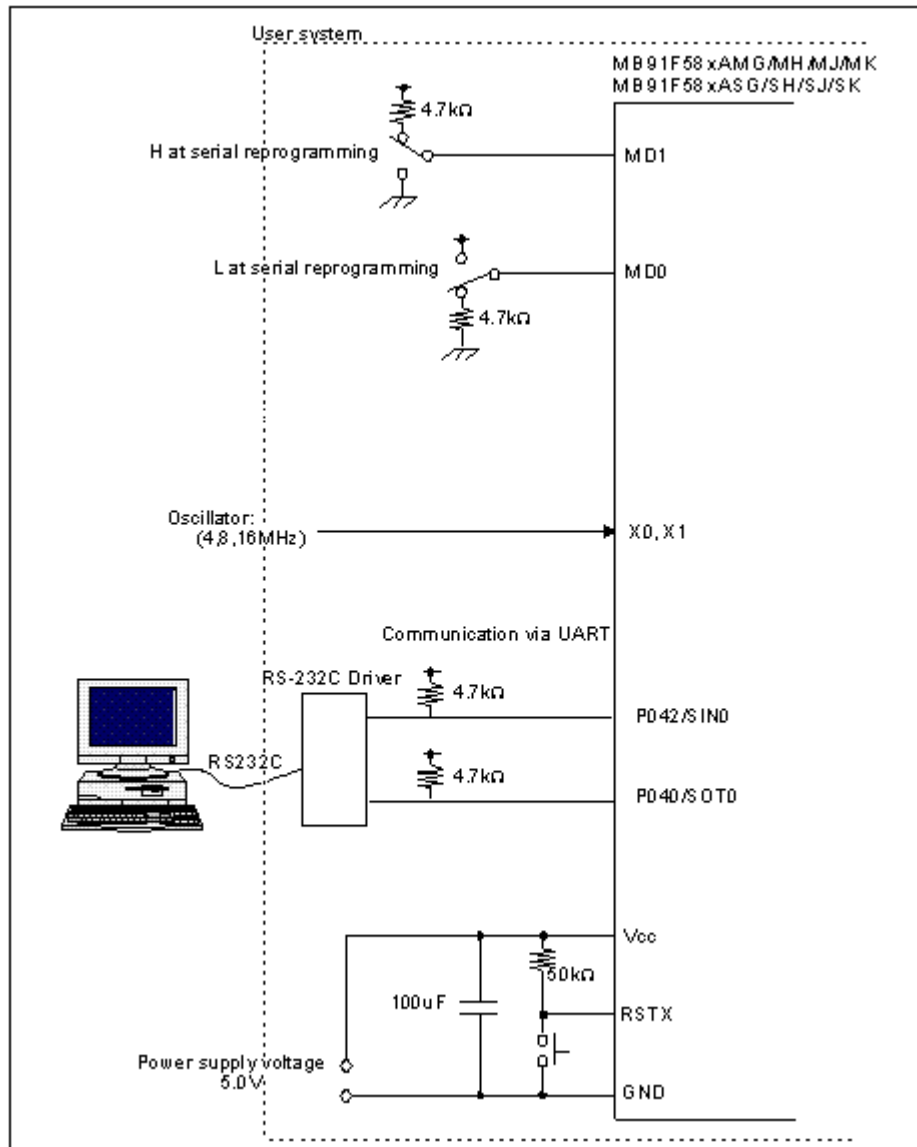
3.28 Setting for MB91F578C/CS/CH/CHS / F579C/CS/CH/CHS



The MD2, MD1 and MD0 pins, and SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from Low to High level after setting the MD2 pin(L level), MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for SIN0, SOT0 pin. Then RSTX pin set from Low to High level executes user program.

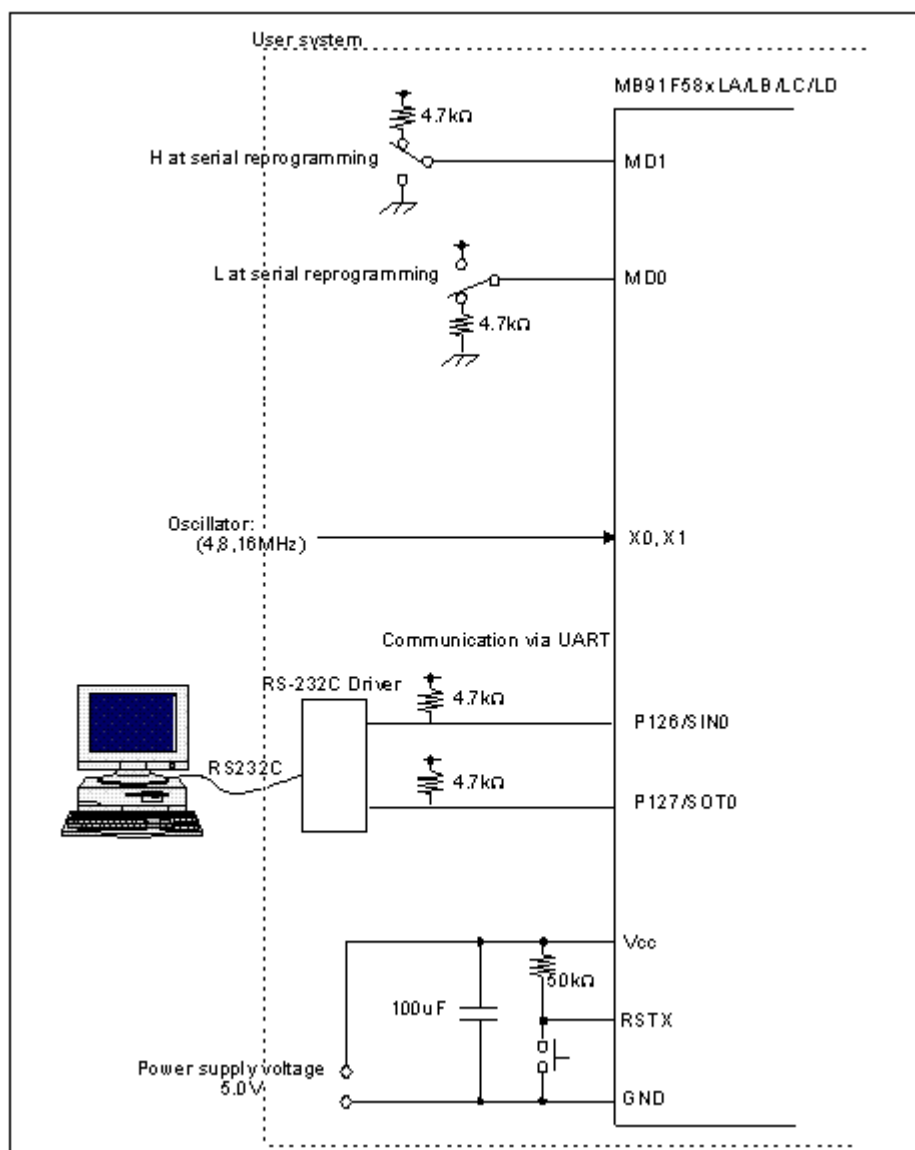
3.29 Setting for MB91F583AMG/MH/MJ/MK/ASG/SH/SJ/SK / F584AMG/MH/MJ/MK/ASG/SH/SJ/SK / F585AMG/MH/MJ/MK/ASG/SH/SJ/SK



The MD1 and MD0 pins, SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(H level) and MD0 pin(L Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SIN0, SOT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

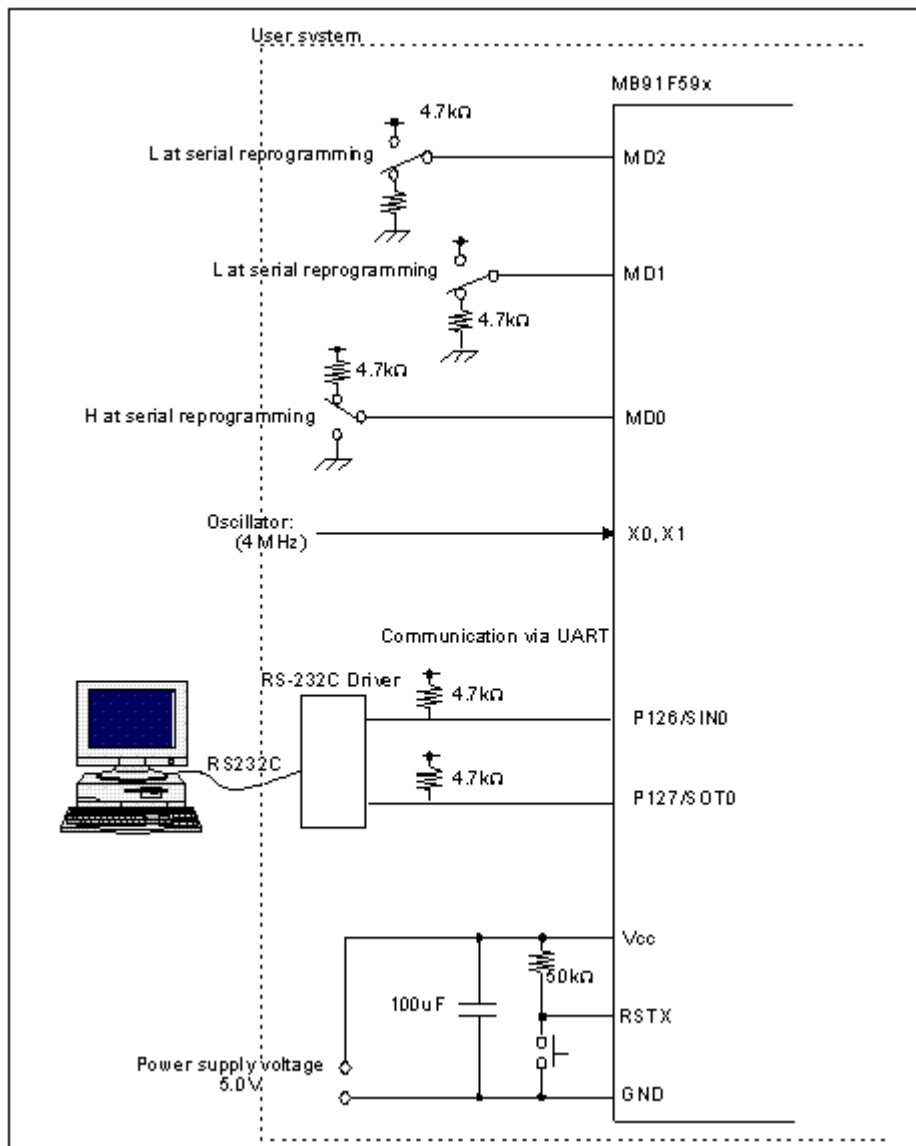
3.30 Setting for MB91F585LA/LB/LC/LD / F586LA/LB/LC/LD / F587LA/LB/LC/LD



The MD1 and MD0 pins, SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(H level) and MD0 pin(L Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SIN0, SOT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

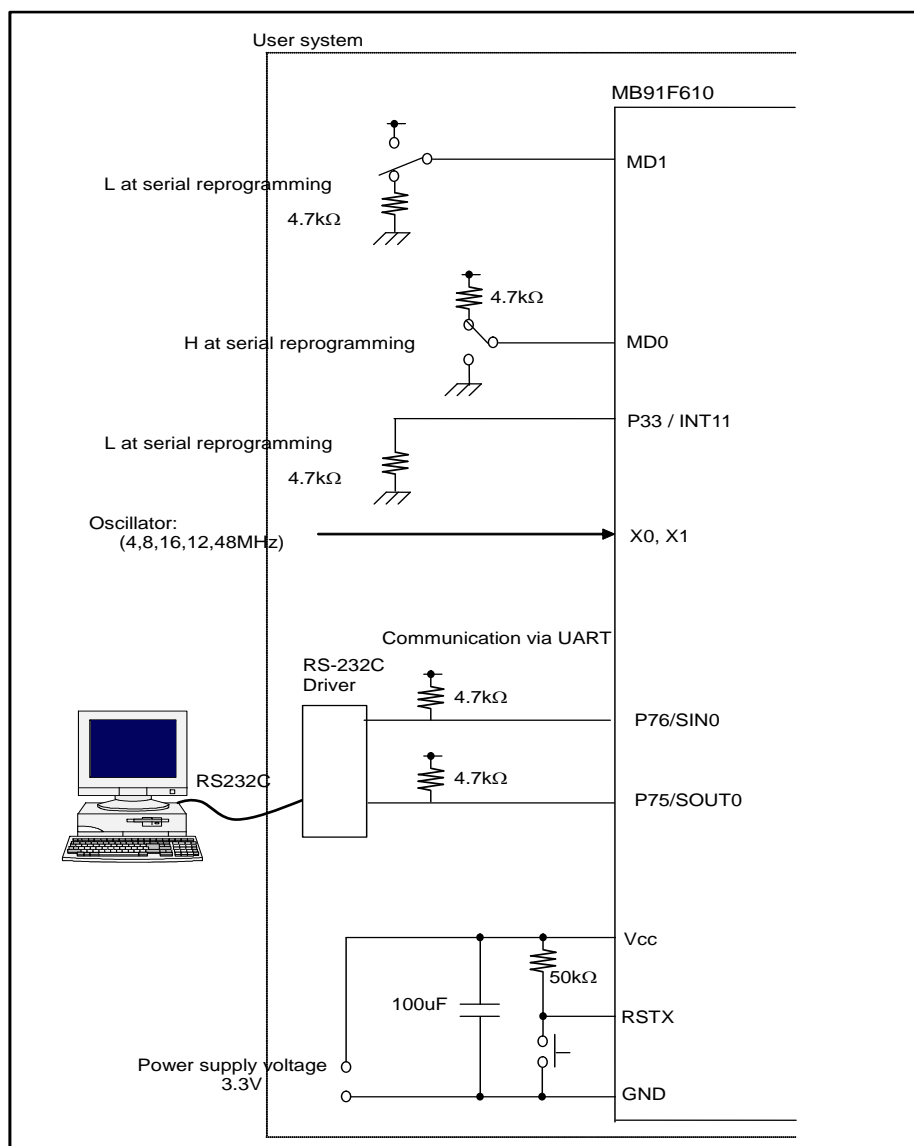
3.31 Setting for MB91F591B/BS/BH/BHS / F592B/BS/BH/BHS / F594B/BS/BH/BHS / F596B/BS/BH/BHS / F597B/BS/BH/BHS / F599B/BS/BH/BHS / F59AC/CS/CH/CHS / F59BC/CS/CH/CHS



The MD2, MD1 and MD0 pins, and SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from Low to High level after setting the MD2 pin(L level), MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD2, MD1 and MD0 pins and to the user circuit side as for SIN0, SOT0 pin. Then RSTX pin set from Low to High level executes user program.

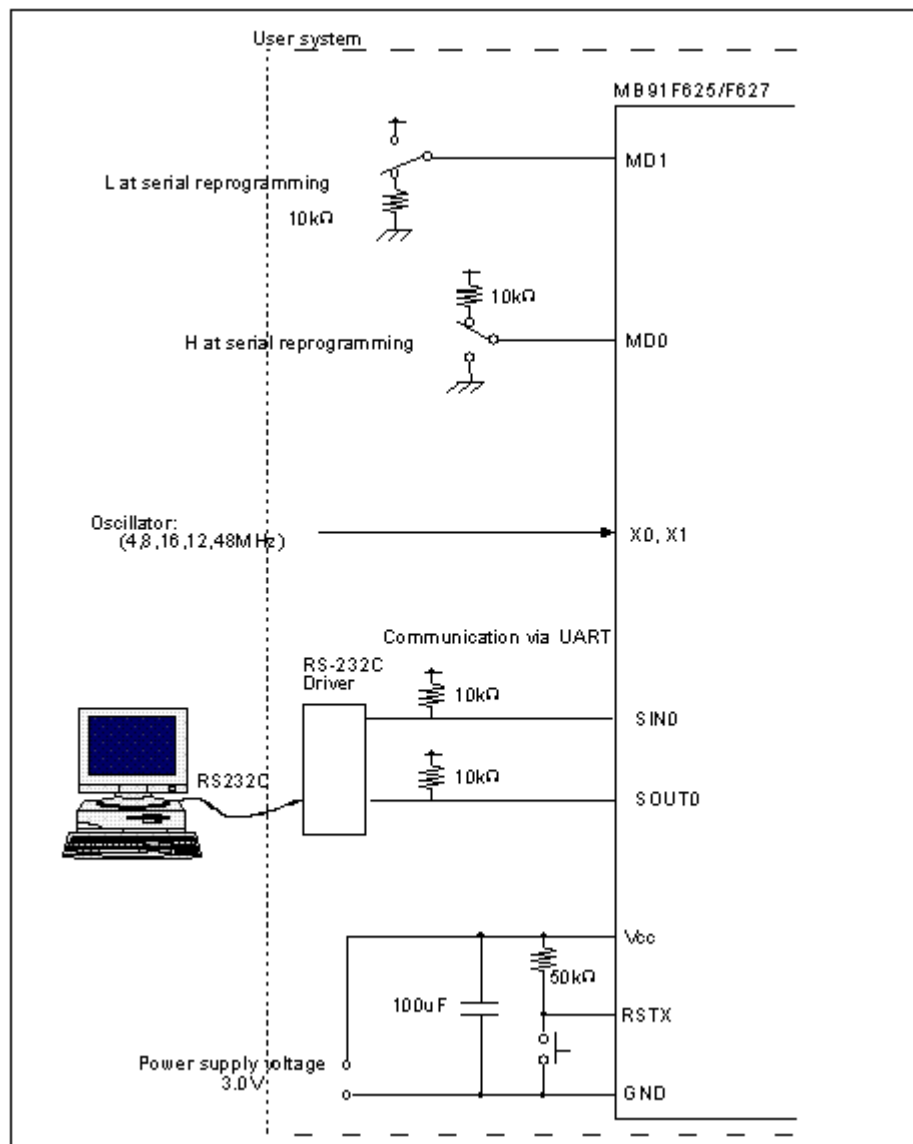
3.32 Setting for MB91F610



The MD1 and MD0 pins, P33 and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from "Low" to "High" level after setting the MD1 pin(L level) and MD0 pin(H Level), and P33 pin(L Level) and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and P33 pin and to the user circuit side as for SOUT0 pin. Then RSTX pin set from "Low" to "High" level executes user program.

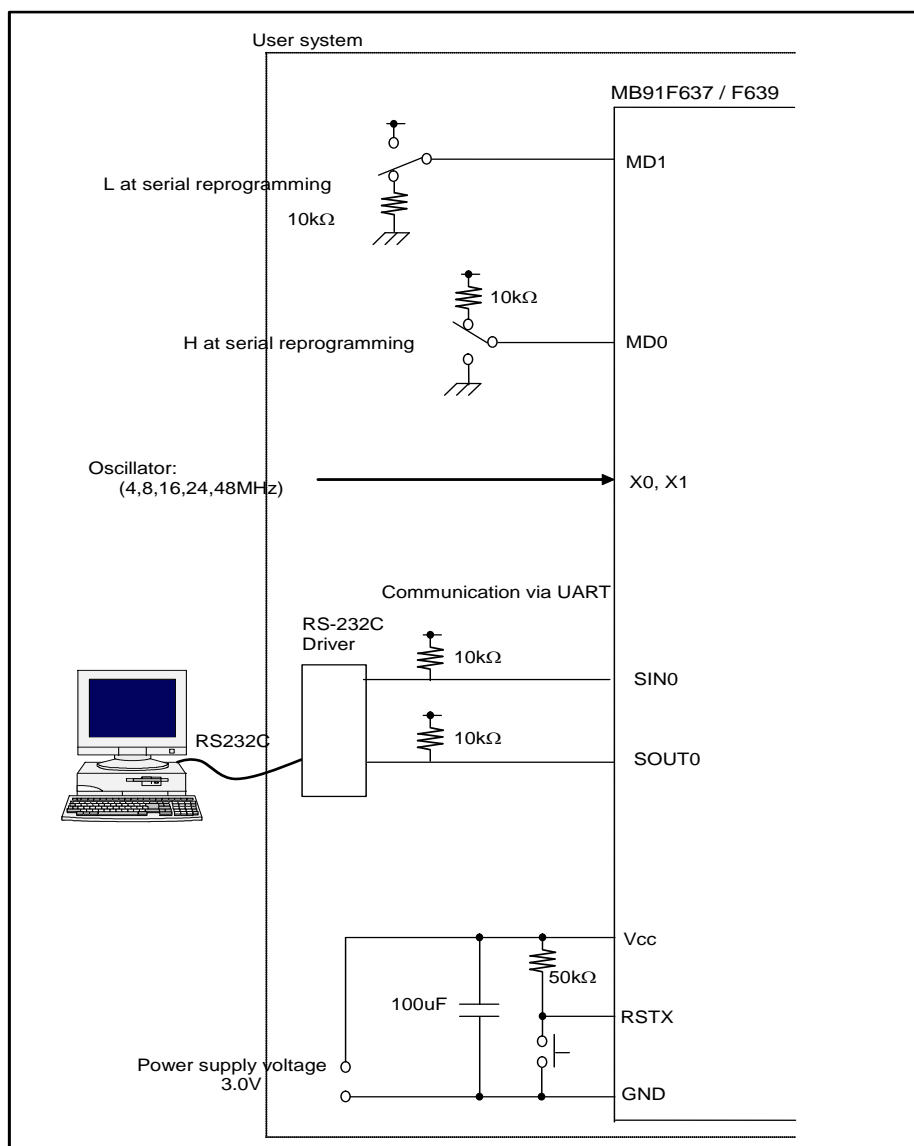
3.33 Setting for MB91F625 / F627



The MD1 and MD0 pins, and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

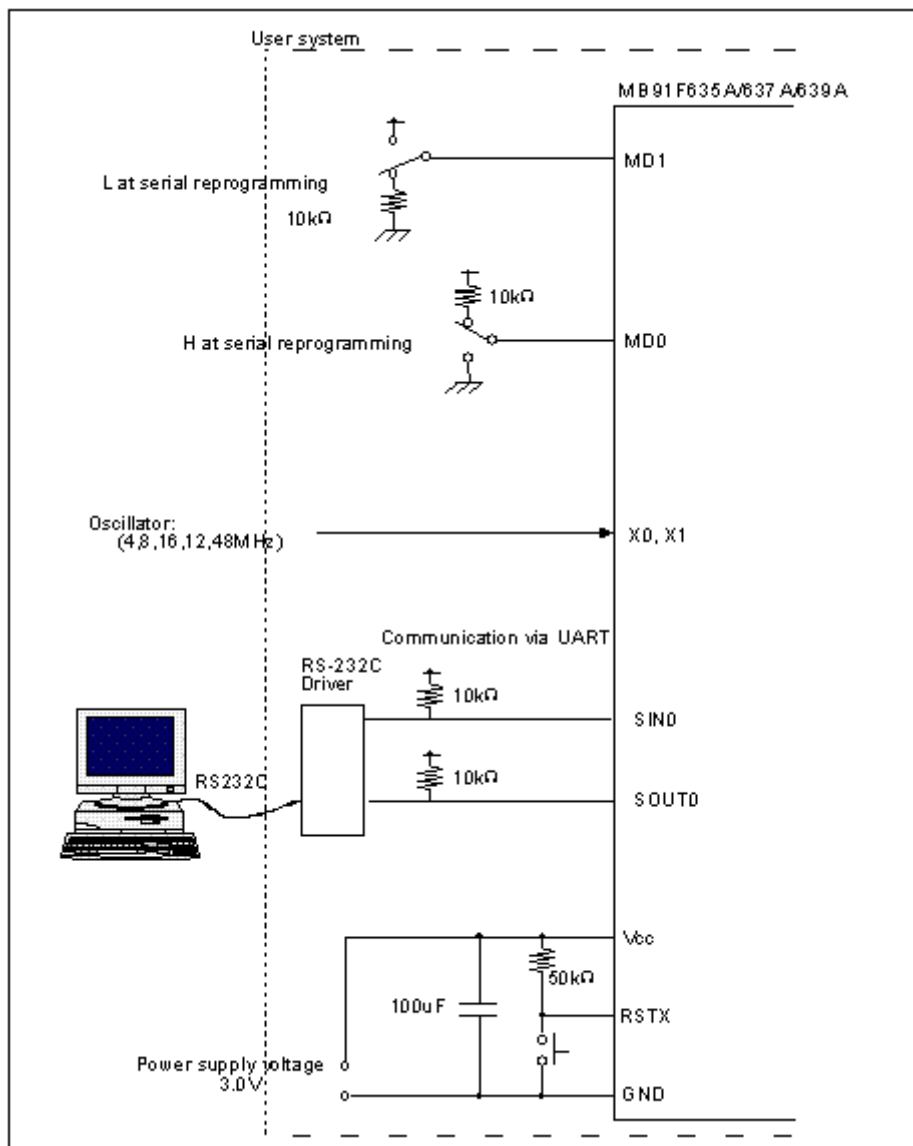
3.34 Setting for MB91F637 / F639



The MD1 and MD0 pins, and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from "Low" to "High" level after setting the MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SOUT0 pin. Then RSTX pin set from "Low" to "High" level executes user program.

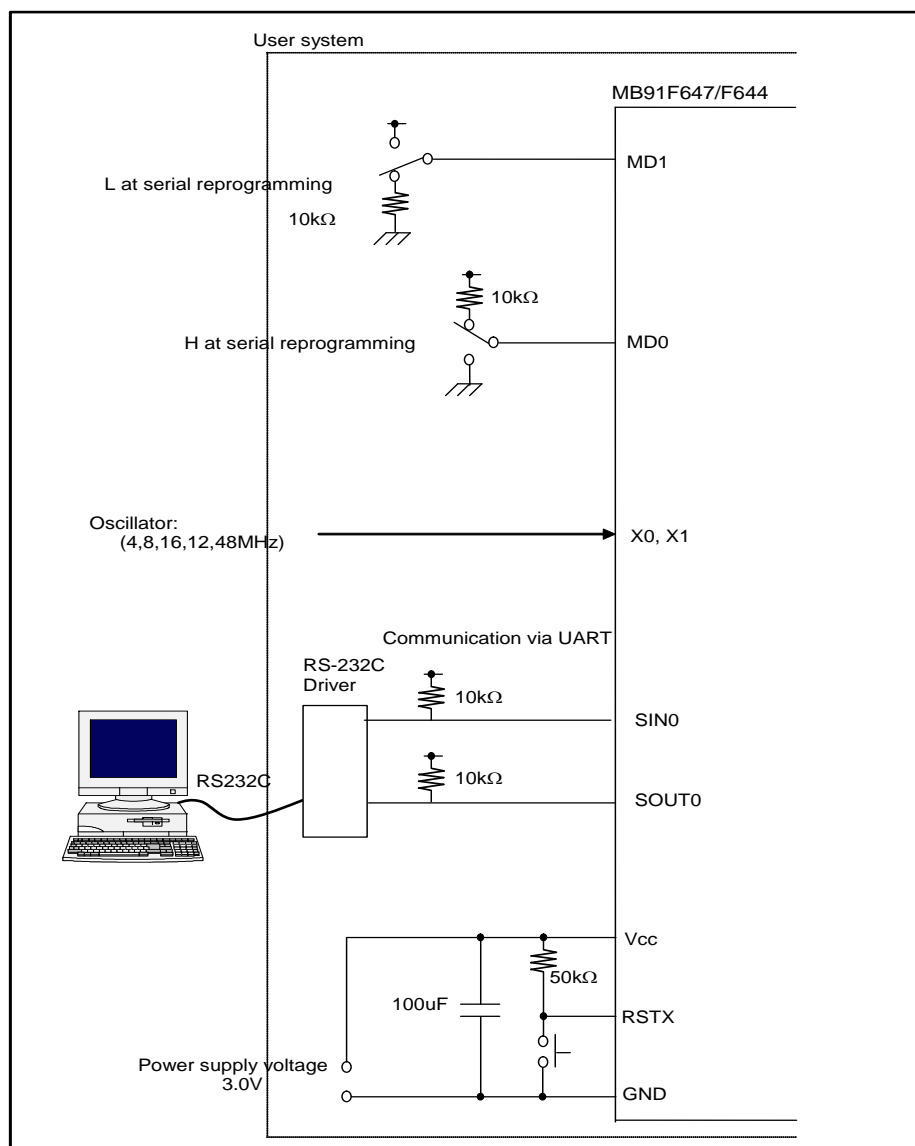
3.35 Setting for MB91F635A / F637A / F639A



The MD1 and MD0 pins, and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

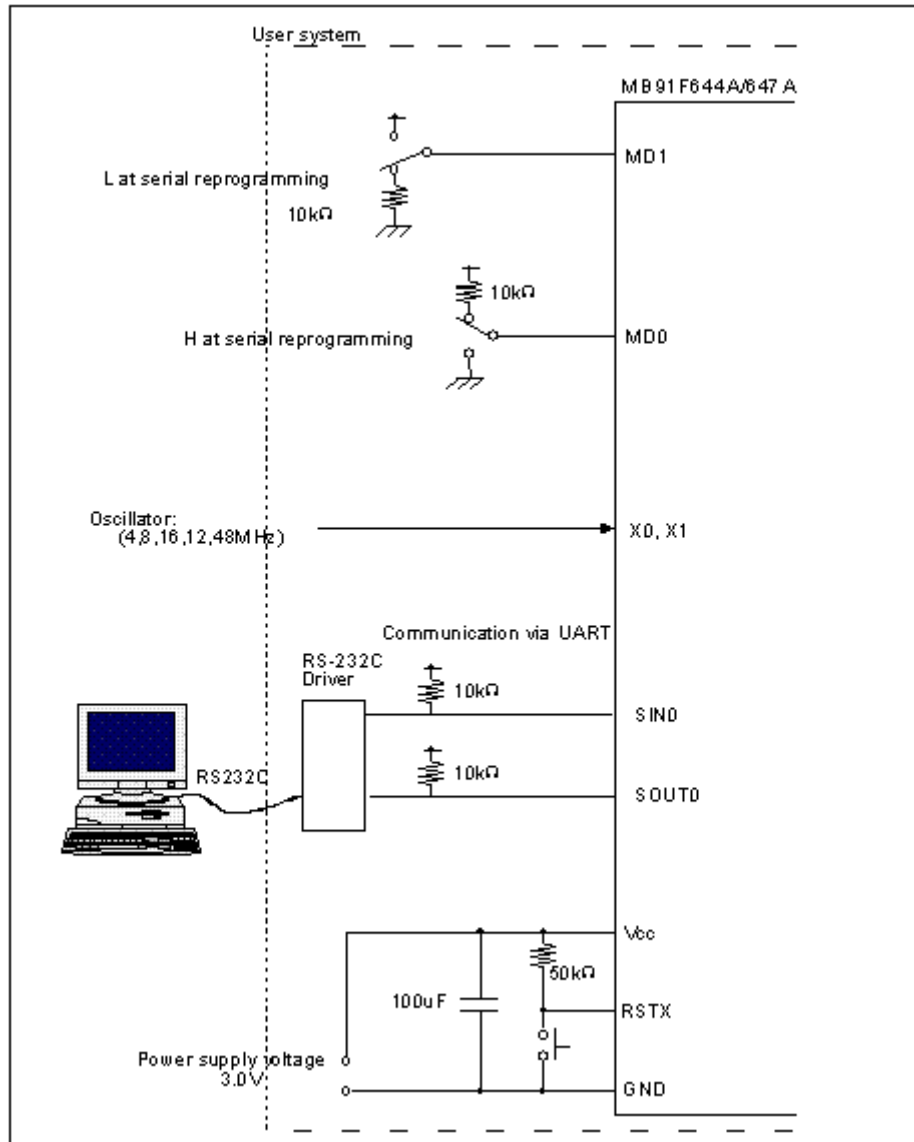
3.36 Setting for MB91F644 / F647



The MD1 and MD0 pins, and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

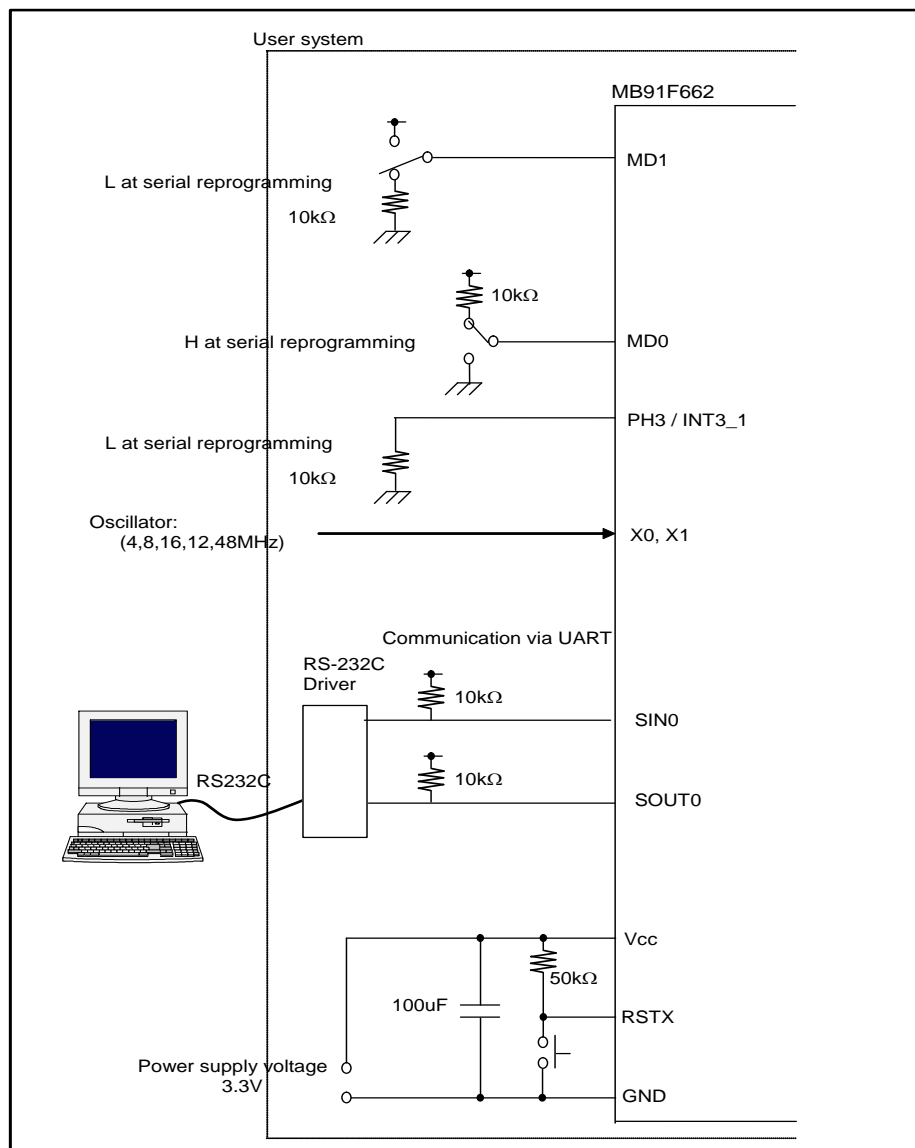
3.37 Setting for MB91F644A / F647A



The MD1 and MD0 pins, and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

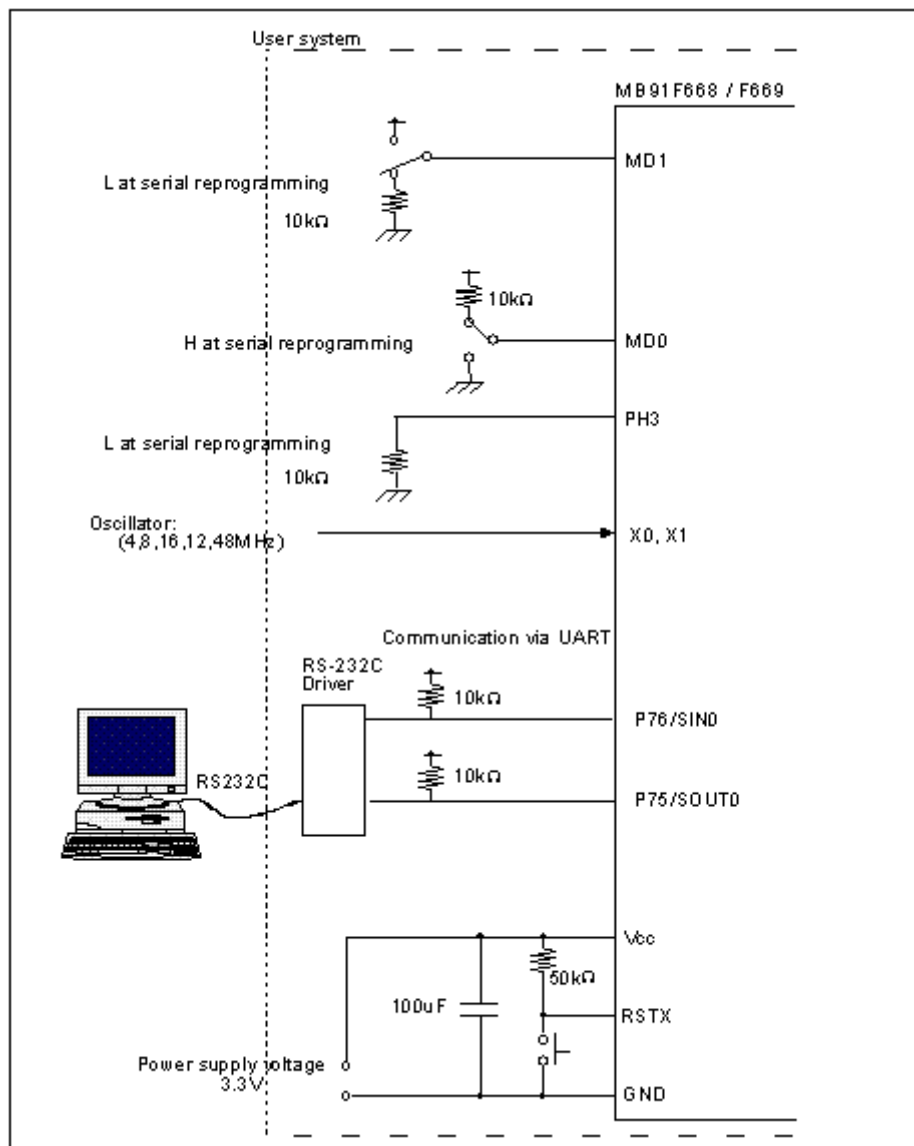
3.38 Setting for MB91F662



The MD1 and MD0 pins, PH3 and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and PH3 pin(L Level) and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and PH3 pin and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

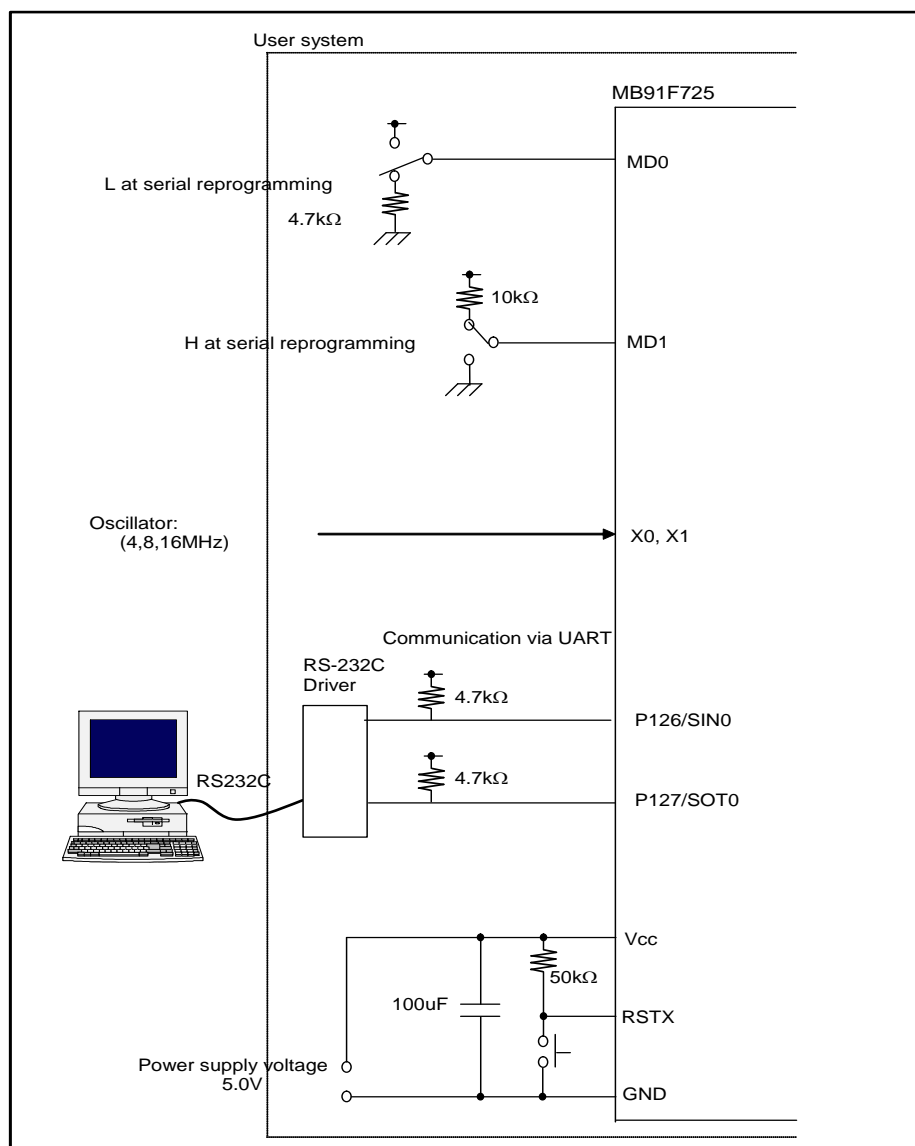
3.39 Setting for MB91F668 / F669



The MD1 and MD0 pins, PH3 and SIN0 and SOUT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(L level) and MD0 pin(H Level), and PH3 pin(L Level)and SIN0 and SOUT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz or 24MHz or 48MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and PH3 pin and to the user circuit side as for SOUT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

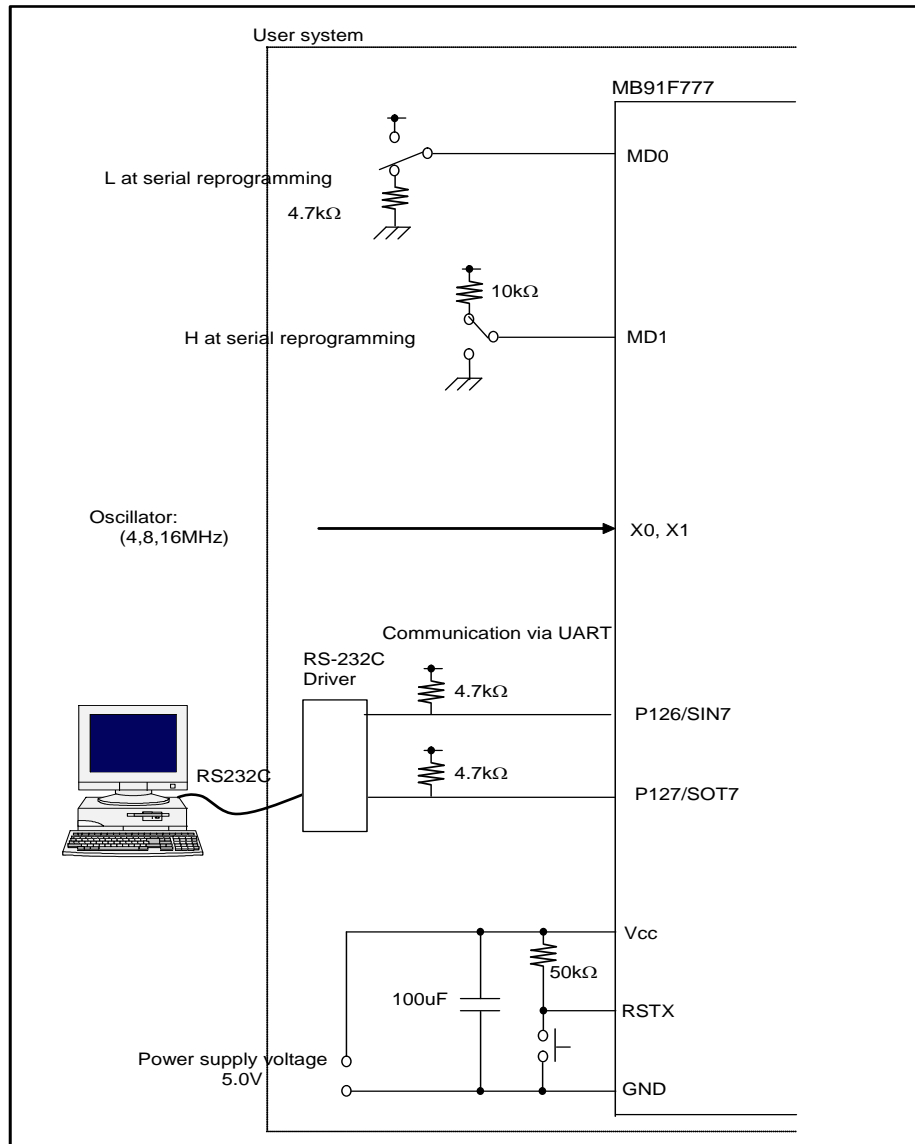
3.40 Setting for MB91F725



The MD1 and MD0 pins, SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from "Low" to "High" level after setting the MD1 pin(H level) and MD0 pin(L Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SIN0 and SOT0 pin. Then RSTX pin set from "Low" to "High" level executes user program.

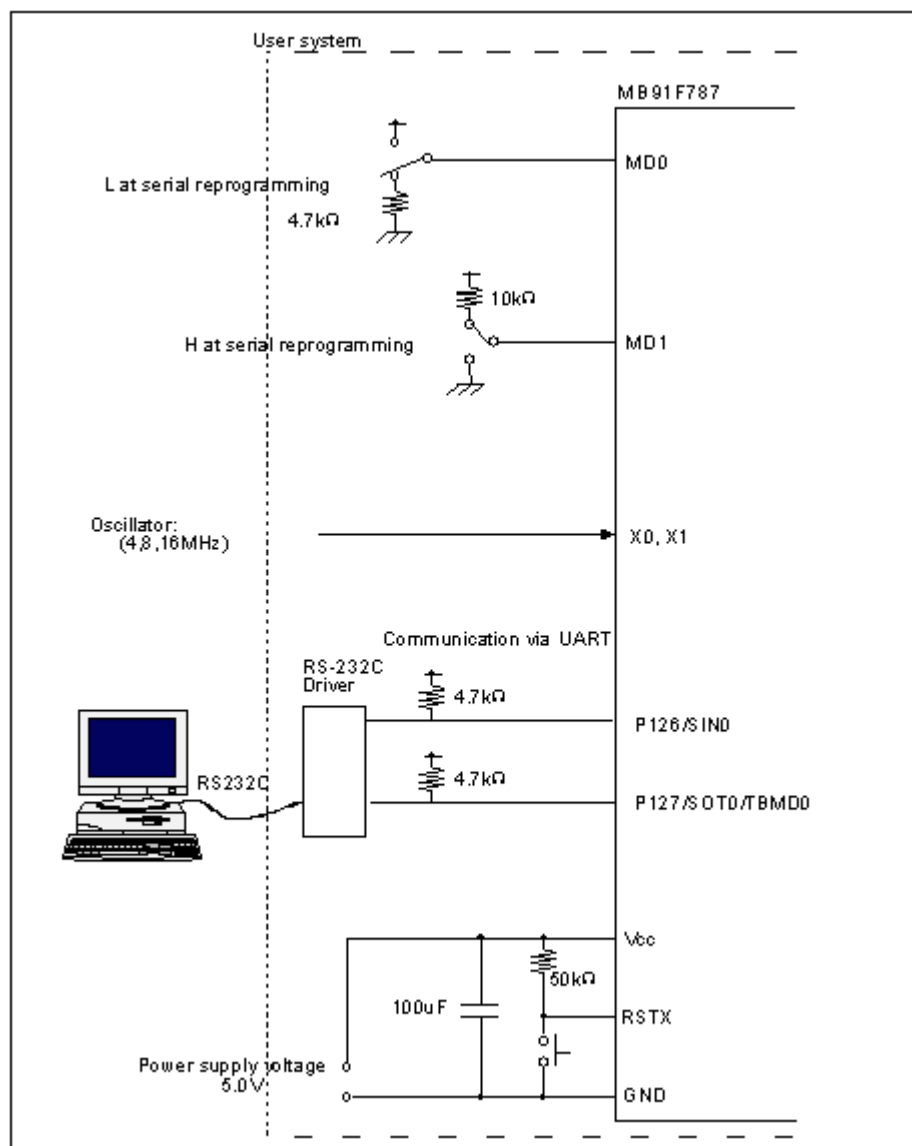
3.41 Setting for MB91F775 / F777



The MD1 and MD0 pins, SIN7 and SOT7 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(H level) and MD0 pin(L Level), and SIN7 and SOT7 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SIN7 and SOT7 pin. Then RSTX pin set from “Low” to “High” level executes user program.

3.42 Setting for MB91F787

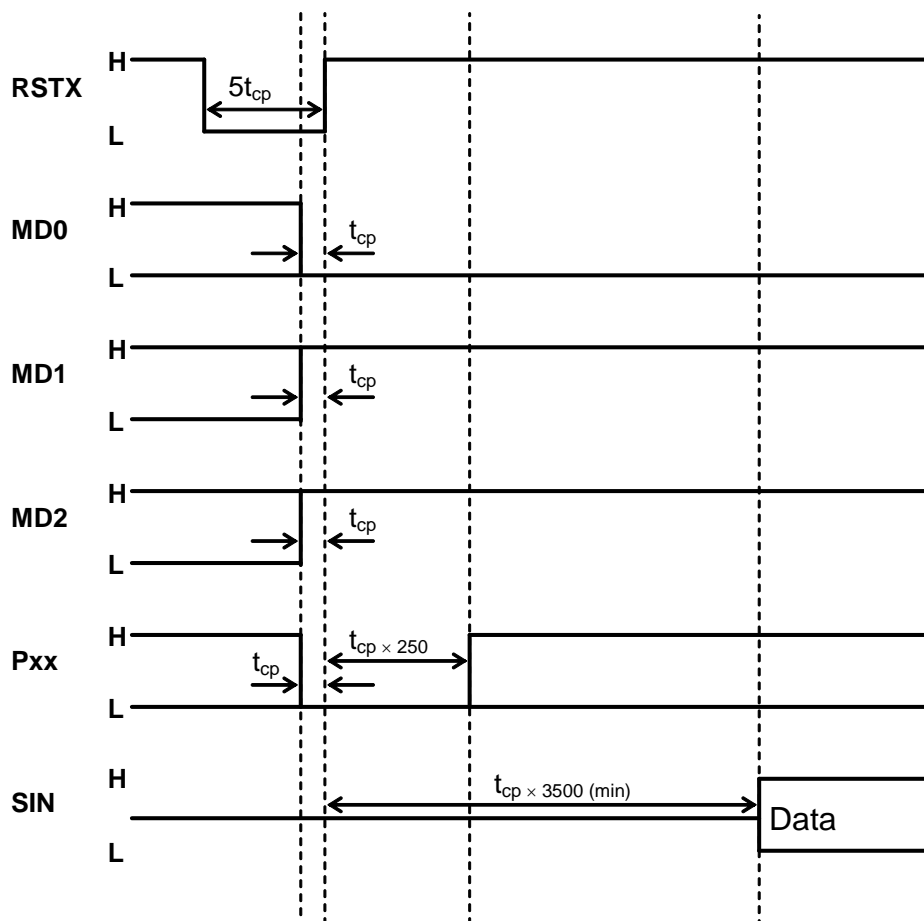


The MD1 and MD0 pins, SIN0 and SOT0 pins cannot be controlled by the PC and should be set in the user system. During serial reprogramming, when the RSTX pin is set from “Low” to “High” level after setting the MD1 pin(H level) and MD0 pin(L Level), and SIN0 and SOT0 pin(Pull Up), the microcontroller enters the serial reprogramming mode(reference of the upper figure), enabling serial reprogramming from the PC. In addition, please use an oscillator (4MHz or 8MHz or 16MHz) at the time of FLASH reprogramming. The oscillator of the other frequency cannot use it at FLASH reprogramming.

After the reprogramming, control is shifted to the normally-used mode as for MD1 and MD0 pins and to the user circuit side as for SIN0 and SOT0 pin. Then RSTX pin set from “Low” to “High” level executes user program.

4. TIMING CHART FOR EACH PIN

Input data to each pin of the microcontroller with the following timing on the basis of the input of the RSTX pin.



Minimum values of setup and hold times of each signal on rising edge of RSTX signal

Although the Pxx signal indicates a starting pin for programming program and the SIN signal a serial data input pin. The value of the above-mentioned figure [timing / setting / of each of these setting pins / to reset input] is only an example. Refer to the hardware manual for the detailed value over each kind.

Moreover, the above Although it is the chart figure for kinds set as Pxx = MD0 = L and MD1 = MD2 = H, since an input level setup of these setting pins changes with kinds, please set up the input level corresponding to each kind with reference to the individual connection figure of Chapter 3.

5. INSTALLATION AND EXECUTION OF SOFTWARE

If the old software version is installed, uninstall it first before installation.

Starting the installer to operate as instructed will complete the installation. Note that the install might not be performed when a directory in a deep nest is specified as the install directory.

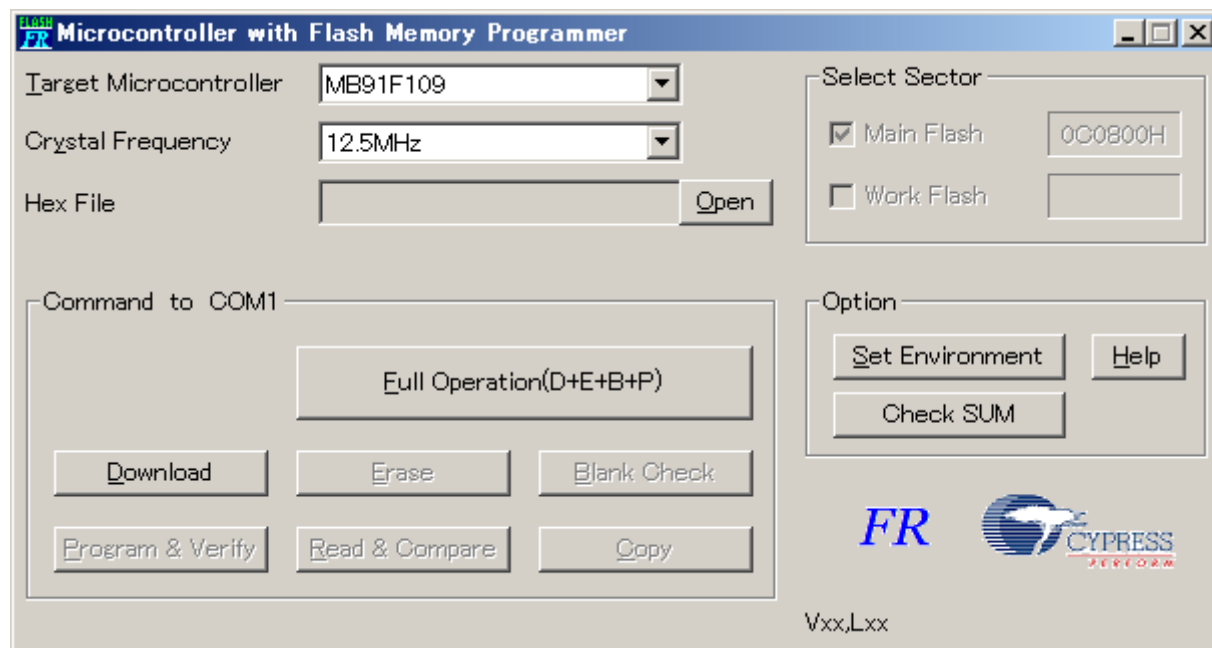
After installation, click the Windows **Start** button => **Program** => **CYPRESS FLASH MCU Programmer** => **FR** to start the programmer software.

6. PROGRAMMER FUNCTIONS

Erase, Blank Check, Program & Verify, Read & Compare, and Copy can be executed for flash memory integrated into the microcontroller.

- Main dialog box

Programmer software is started to open the dialog box as shown below.



- Overview of operating procedure

First, complete setting of the user system (microcontroller board) that data is programmed to (see **Chapter 3**). In starting or when setting has been changed, it is necessary to perform downloading (described later). After downloading terminates normally, perform procedures such as Erase and Programming.

- Product types of microcontrollers supporting security function

The types of microcontrollers that support the security function have slightly different operating procedures from other types.


For the MB91F155, see **Chapter 7** first.

For the MB91F360 series, see **Chapter 8** first.

6.1 Downloading

This section describes the operating procedure for downloading and the operating state of the program.

- (a) Specify the type of microcontroller used in the user system in **Target Microcontroller** of the main dialog box.

Note: To select the type of microcontroller, use the **Tab** key to move to **Target Microcontroller**, select with the cursor keys \uparrow and \downarrow and then press the **Enter** key, or click the  button on **Target Microcontroller** for dragging.

- (b) Specify the frequency of the crystal oscillator input to the microcontroller in **Crystal Frequency** of the main dialog box.

The frequency of the crystal oscillator that can be specified for each type of microcontroller is limited as follows.

Product Type	Frequency of Crystal Oscillator (MHz)
MB91F127 / F128	10, 12.5, 13.5, 17
MB91F133	16
MB91F155	16.5
MB91F158	16
MB91F211 / F213	4, 5
MB91F223 / F224	4
MB91F233	2, 4, 8, 16
MB91F248 / F249/S	4
MB91F264 / F267	4, 8
MB91F272 / F273	4, 8, 16
MB91FV310 / F312	10
MB91F313 / F314	16.5
MB91FV319A / F318R / FV319R	10
MB91F345 / F346	2, 4, 8, 10, 12, 12.5, 16
MB91F353 / F355 / F356B	12.5
MB91F362 / F365 / F366 MB91F367 / F368 / F369	4
MB91F463NA/NC MB91F463C / MB91F464A/H MB91F465B/C/D/K/P/X MB91F467B/C/D/R/S/T/M MB91F469G	4
MB91F475 / F478 / F479	10,20
MB91F482 / F486 / F487 / F492	10,20
MB91F522B/D/F/J/K/L MB91F523B/D/F/J/K/L MB91F524B/D/F/J/K/L MB91F525B/D/F/J/K/L MB91F526B/D/F/J/K/L MB91F527R/U/M/Y MB91F528R/U/M/Y	4, 8, 16
MB91F552	4, 8, 16

MB91F575/S / F577/S MB91F578C/CS/CH/CHS MB91F579C/CS/CH/CHS	4
MB91F583AMG/MH/MJ/MK MB91F583ASG/SH/SJ/SK MB91F584AMG/MH/MJ/MK MB91F584ASG/SH/SJ/SK MB91F585AMG/MH/MJ/MK MB91F585ASG/SH/SJ/SK	4, 8, 16
MB91F585LA/LB/LC/LD MB91F586LA/LB/LC/LD MB91F587LA/LB/LC/LD	4, 8, 16
MB91F591B/BS/BH/BHS MB91F592B/BS/BH/BHS MB91F594B/BS/BH/BHS MB91F596B/BS/BH/BHS MB91F597B/BS/BH/BHS MB91F599B/BS/BH/BHS MB91F59AC/CS/CH/CHS MB91F59BC/CS/CH/CHS	4
MB91F610 MB91F625 / F627 MB91F637 / F639 MB91F635A / F637A / F639A MB91F644 / F647 MB91F644A / F647A MB91F662 / F668 / F669	4, 8, 16, 24, 48
MB91F725 MB91F775 / F777 / F787	4, 8, 16
Other than the above	12.5, 25

Notice: This program will not operate normally if the microcontroller uses a crystal oscillator frequency not listed in the above table.

(c) Select the COM port of the PC connected to the user system.

Click the **[Set Environment]** button in the main dialog box to open the setup window. When the **[COM PORT]** tab in the setup window is clicked, the specifying window is opened. Select any of the following COM ports.

COM1, COM2, COM3, COM4, COM5, COM6, COM7, COM8, COM9, COM10

COM11, COM12, COM13, COM14, COM15, COM16, COM17, COM18, COM19, COM20

(d) Specify the target sectors in the **Select Sector** area of the main dialog box.

Specify the target sectors for each operation from any combination of Main Flash and Work Flash in the **Select Sector** area of the main dialog box. The **Select Sector** area is available for some microcontrollers, and it is unavailable for the other microcontrollers. When the **Select Sector** area is unavailable, the target sectors can't be specified by users and all sectors are selected by default.

Please specify the target sectors for each operation (Full Operation, Erase, Blank Check, Program & Verify, Read & Compare, Copy) by operating the checkboxes in the **Select Sector** area of the main dialog box.

[Notes concerning sector select]

At least one sector should be selected in the **Select Sector** area of the main dialog box. If the **[Download]** button is clicked without selecting any sector, the warning message “Please Select the area of writing” will be opened.

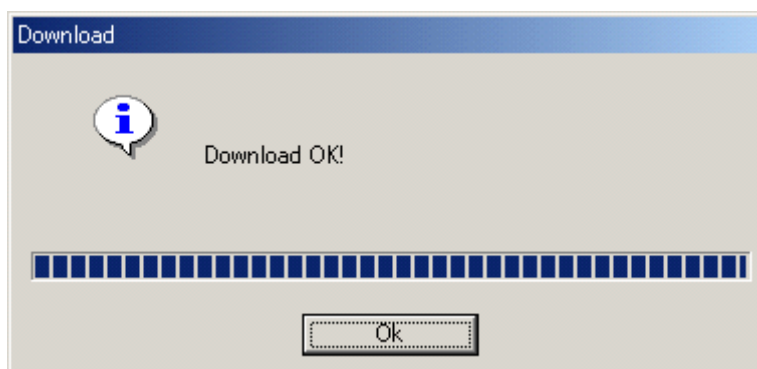
(e) Execution of downloading

Click the **[Download]** button.

If the following dialog window is opened, Input a reset signal to the microcontroller to start the program in the flash programming mode and then click the **[OK]** button



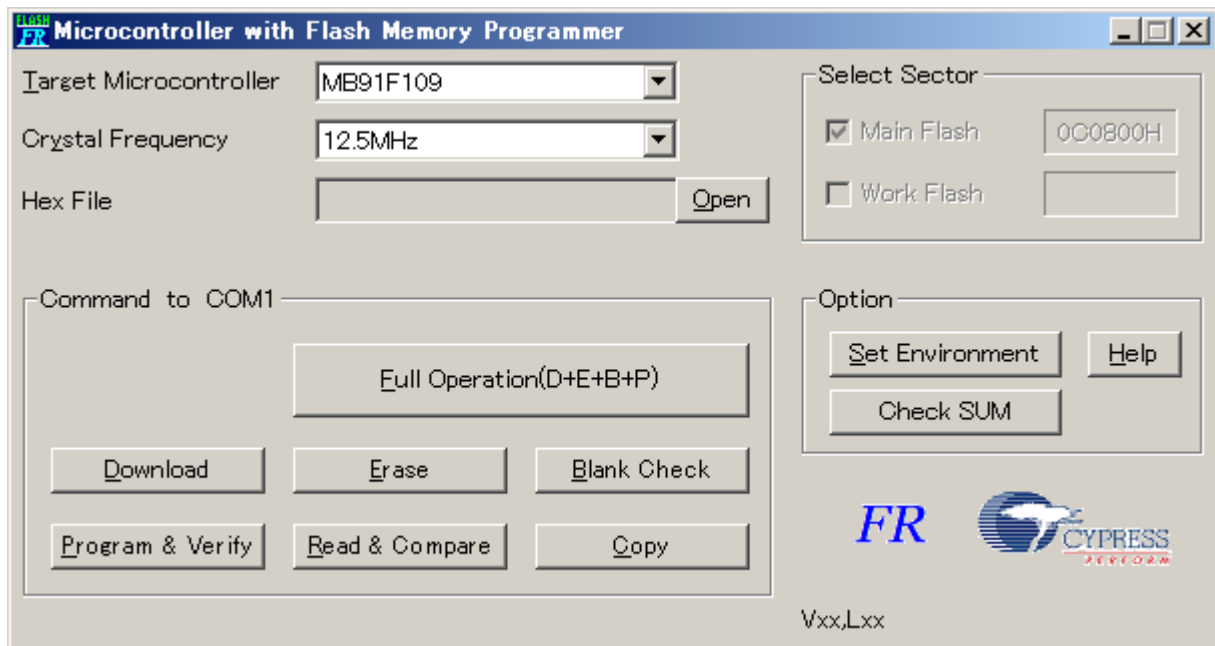
Downloading is performed to open the “Download” window. When downloading is completed normally, the following dialog window opens.



When the **[OK]** button is clicked to close the dialog window, the **[Erase]**, **[Blank Check]**, **[Program & Verify]**, **[Read & Compare]** and **[Copy]** buttons are enabled. At the same time, all checkboxes in the **Select Sector** area of the main dialog box are disabled, and can't be operated. You can enable the **Select Sector** area in the main dialog box by reselecting the type of the microcontroller in **Target Microcontroller** of the main dialog box, and then the state of the main dialog box will return to the state before the **[Download]** button clicking.

6.2 Erasing and Programming

This section explains how to specify **Hex File** and the processing and operation performed when the **[Erase]**, **[Blank Check]**, **[Program & Verify]**, **[Read & Compare]**, **[Copy]** and **[Full Operation (D+E+B+P)]** buttons are clicked.



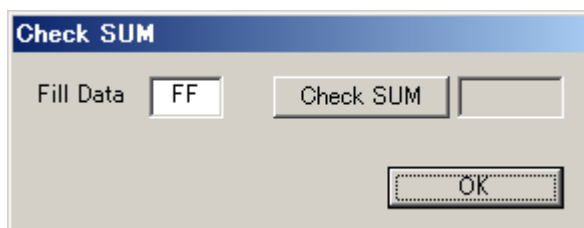
(a) **Hex File:** Select the file to be programmed to flash memory

Specify the Motorola-S or Intel-HEX format file to be programmed to flash memory in the microcontroller. Although the specification method by drags and drops a direct file from Explorer etc. is recommended, it can specify also by the file appointed window displayed by pushing the **[Open]** button.

Hex File must be specified to execute **[Program & Verify]**, **[Read & Compare]** and **[Full Operation (D+E+B+P)]**. Since it is decoded at the head of these processings each time, even if the specified Motorola-S or Intel-HEX format file changes specification of a file just before processing, it is OK.

After Hex File is specified, checksum **to ROM image** after Motorola-S format file or Intel-HEX format file shown in Hex File is deciphering done can be calculated.

The dialog box to calculate checksum when a lower right **[Check SUM]** button is pushed opens.



The range of the calculation of checksum is limited to the Flash area shown in the upper right of the main dialog. When the area has divided into plural block, the empty area between blocks is not added, and the total of each block is calculated.

The calculation method is simple addition of every one byte, and the result shows the last 4 digits (It is not a complement representation) by the hexadecimal number.

ROM value in the Flash area not shown in Hex File is calculated assuming that it is a value indicated by Fill Data at the left of the dialog. When starting, FF is set here. Please specify it by two hexadecimal number digits when changing.

[Notes concerning checksum]

This function doesn't calculate the checksum of ROM image written in the FLASH memory in the microcontroller chip. When Hex File is not specified, and the error is detected at the decipherment of Hex File, nothing is displayed.

The SUM value calculated here is not peculiar against Hex File. When another microcontroller is selected, same Hex File might reach another value.

The value specified with Fill Data is not written at the time of writing. This value is used only for the calculation of checksum.

(b) **Erase:** Erase flash memory areas

Flash memory must be in the blank state (0xff) when programming a new program to it. By pushing this button, an erase command is published to FLASH and elimination is performed.

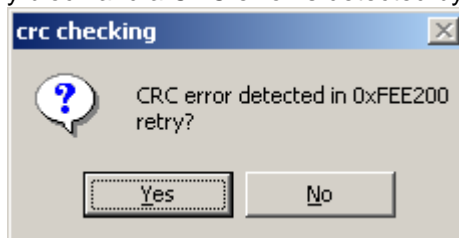
In addition, a blank check does not perform this command.

(c) **Blank Check:** Check that flash memory areas are blank

This button is clicked to check that flash memory is in the blank state (0xff).

(d) **Program & Verify:** Program data to flash memory

This button is clicked to program the Motorola-S or Intel-HEX format file specified in **Hex File** to flash memory in the microcontroller concurrently with verification. An error dialog is displayed, when writing is performed for 512 bytes of every block and a CRC error is detected by the block.



This dialog If YES is pushed, the block of an error will be resent and it will continue writing. A push on NO interrupts write-in processing.

(e) **Read & Compare:** Compare **Hex File** with data in flash memory in microcontroller

This button is clicked to compare data in the Motorola-S or Intel-HEX format file specified in **Hex File** with data in flash memory in the microcontroller. Like the **[Program & Verify]** processing, the data of FLASH is transmitted for 512 bytes of every block, a CRC error check is performed, and comparison processing is performed.

(f) **Copy:** Save data in flash memory in microcontroller to file

This button is clicked to read data from flash memory integrated into the microcontroller and save it as an Motorola-S or Intel-HEX format file. Like **[Read & Compare]** processing, FLASH memory reading is performed for 512 bytes of every block, and a CRC error check is performed similarly.

The output file format can be changed by **right-clicking** in the Copy button. The button name changes by **[Copy]** and **[Copy_i]** whenever right-clicking. The state of **[Copy]** shows Motorola-S format, and the state of **[Copy_i]** shows Intel-HEX format.

Processing begins when the button is **left-clicked**, the folder is specified preservation ahead, the file name is input, and the **[Save]** button is pushed when the form is selected.

(g) **Full Operation (D+E+B+P):** Automatic programming

Operation to **[Download]** to **[Program & Verify]** is performed by package.

In the case of a blank chip, processing is performed in order of **[Download]**, **[Blankcheck]**, and **[Program & Verify]**. When it is not a blank chip, processing is performed in order of **[Download]**, **[Blankcheck]**, **[Erase]**, **[Blankcheck]**, and **[Program & Verify]**.

[Notes concerning automatic programming]

At least one sector should be selected in the **Select Sector** area of the main dialog box. If the **[Full Operation (D+E+B+P)]** button is clicked without selecting any sector, the warning message "Please Select the area of writing" will be opened.

6.3 Motorola-S format decoder specification

Before programming, Motorola-S format Decoder of programmer changes Motorola S format data into binary data, according to the following specification.

(a) The decoder does not error when overlap of addresses occurs.

The decoder does not error about overlap of address. If user writes a data on an address which was already written another data before, former data is overwritten by new data.

(b) Available address

If user writes a data beyond an address range of FLASH memory, programming results in an error. But if an address range of whole FLASH memory does not continue, decoder does not give an error and programming procedure goes on. For example, user can program a FLASH memory which starts an address H'F90000 and ends an address H'FFFFFF and does not have memory function between H'FC0000-H'FCFFFF even if user tries to program on such eclipse address range.

(c) About the error detected by the decoder.

The error detected by the decoder is the following (1)-(4). When these errors are detected, processing is interrupted by the decoder. Then the line number and the cause of the error are displayed in the dialog window.

(1) file error

The start of the line is not "S".

(2) S-format error

The start of the line is not "S0", "S1", "S2", "S3", "S5", "S7", "S8" and "S9".

(3) decode error

- There are character except "0123456789ABCDEF". ("S" is excluded. See (1) and (2).) And, the small letter "abcdef" cannot be used.
- The LENGTH data is different from the length of an actual data row.
- The SUM data is different.

(4) address error

There is data besides the FLASH area. (See b.Available address)

(d) Other detail

The decoder skips a line. even if the line is contained only new-line code NL and programming goes on.

A line beginning with "S0", "S5", "S7", "S8" and "S9" is ignored and decoder skips such lines in S format file without error.

6.4. Intel-Hex format decoder specification

Before programming, Intel-Hex format Decoder of programmer changes Intel-Hex format data into binary data, according to the following specification.

- (a) The decoder does not error when overlap of addresses occurs.

The decoder does not error about overlap of address. If user writes a data on an address which was already written another data before, former data is overwritten by new data.

- (b) Available address

If user writes a data beyond an address range of FLASH memory, programming results in an error. But if an address range of whole FLASH memory does not continue, decoder does not give an error and programming procedure goes on. For example, user can program a FLASH memory which starts an address H'F90000 and ends an address H'FFFFFF and does not have memory function between H'FC0000-H'FCFFFF even if user tries to program on such eclipse address range.

- (c) About the error detected by the decoder.

The error detected by the decoder is the following (1)-(4). When these errors are detected, processing is interrupted by the decoder. Then the line number and the cause of the error are displayed in the dialog window.

- (1) file error

The start of the line is not ":".

- (2) decode error

There are character except "0123456789ABCDEF".(":" is excluded. See (1).) And, the small letter "abcdef" cannot be used.

The record type is not 00, 01, 02, 03, 04, and 05.

The length of the data string that turns out by the number of data is different from the length of an actual data string.

The SUM data is different.

- (3) record error

When not is in number 0 of data at 01 records.

When not is in number 2 of data at 02 records.

When not is in number 4 of data at 03 records.

When not is in number 2 of data at 04 records.

When not is in number 4 of data at 05 records.

- (4) address error

There is data besides the FLASH area. (See b.Available address)

(d) Other detail

The decoder skips a line. even if the line is contained only new-line code NL.

The decipherment processing ends when end record (01) is processed. It is invalid no matter what it is written after this record.

The record from 01 to 05 is not used to process the offset address value. Moreover, the error judgment to it is not done.

6.5 Special specification

(1) for MB91FV310

for 0x80000 – 0xFFFFF writing, choose [MB91FV310 : PROG] in **Target Microcontroller**.

for 0x180000 – 0x1FFFFFF writing, choose [MB91FV310 : FONT] in **Target Microcontroller**.

(2) for MB91FV319A

for 0x80000 – 0x17FFFF writing, choose [MB91FV319A : PROG] in **Target Microcontroller**.

for 0x180000 – 0x1FFFFFF writing, choose [MB91FV319A : FONT] in **Target Microcontroller**.

(3) for MB91FV319R

for 0x80000 – 0x17FFFF writing, choose [MB91FV319R : PROG] in **Target Microcontroller**.

for 0x180000 – 0x1FFFFFF writing, choose [MB91FV319R : FONT] in **Target Microcontroller**.

(4) for MB91F610

for 0x80000 – 0xFFFFF writing, choose [MB91F610 : PROG] in **Target Microcontroller**.

for 0x400000 – 0x5FFFFFF writing, choose [MB91F610 : FONT] in **Target Microcontroller**.

7. SECURITY FUNCTION OF MB91F155

(1) Outline

This type of microcontroller has a security function for protecting programs and data programmed to internal flash memory.

A cipher data string with a maximum length of 255 bytes is programmed to a specific flash memory area to perform verification. An operator who does not know the cipher written to the chip can only issue the **Erase** command to the chip, preventing program modification (corruption) and data reading. Note that the **Erase** command can be executed.

The security function does not work on a blank chip. A blank chip can be processed in the same manner as other chips having no security function.

(2) Programming cipher data string to chip

The length of the cipher data string is 8 to 255 bytes consisting the "cipher length (1 byte) + cipher data (7 to 254 bytes)". Program the data strings successively to any area in the flash memory area from the Motorola-S format file in the same manner as normal programs. Or program the data strings with programs.

If all cipher data is "0xFF", verification is always successful.

The address range where the entire cipher data string can be programmed varies with the type of microcontroller.

Product Type	Address Range
MB91F155	0x80800 to 0x827FE

(3) Accessing chip

To access a chip with set ciphers, it is necessary to make and set a cipher file. See item **(4)** for making and setting a cipher file.

a. **Erase**

This is a special command that is not verified. When it is executed, all data programmed to flash memory is erased.

b. **Full Operation**

This command is not verified. The old program is replaced by the new one even verification is unsuccessful.

When the chip is blank, verification is always successful and the “**Download, Blank Check, Program & Verify**” commands are executed sequentially.

Except when the blank chip is blank, if verification is successful, the “**Download, Blank Check, Erase, Blank Check, Program & Verify**” commands are executed sequentially.

If verification is unsuccessful, the “**Erase, Download, Blank Check, Program & Verify**” commands are executed sequentially.

c. **Download**

If verification is unsuccessful, downloading is not performed.

d. **Other commands**

These commands are not verified. They cannot be executed as long as the execution of the **Full Operation** or **Download** command to be verified is unsuccessful.

(4) Making and setting cipher file

This is explained using the example of setting for the MB91F155 chip to which a cipher data string (8 bytes of 07, 01, 02, 03, 04, 05, 06, and 07) is programmed from "0x080800".

Make a new text file, write "080800, 07, 01, 02, 03, 04, 05, 06, 07" to the file, and save the file under a correct name.

The beginning numeric data (for six characters) is the starting address where the cipher data string is programmed.

The following numeric data is a cipher data string which should be delimited with commas. All the numeric values are represented in hexadecimal format. This text file is called a "cipher file".

Find the folder containing the execution program of the PC writer and edit **chipdef.ini** stored in the same directory using Word Pad. Find the [MB91F155] entries.

Find the "SecurityFile=" string from the entries. Specify the full path of the cipher file directory in the string.

If the directory is **C:\CYPRESS FLASH MCU Programmer\FR\security.txt**, change it to **SecurityFile=C:\CYPRESS FLASH MCU Programmer\FR\security.txt**, and overwrite **chipdef.ini** for saving to complete the setting.

(5) Cautions

An verification check is always performed when the **Full Operation** or **Download** command is executed on the MB91F155 chips. In this case, the cipher file is read and must be set as described in item (4). A dummy cipher file must be set even if verification is not required.

The dummy cipher file is provided under a name **security.txt** in the same folder containing the program.

A valid encrypted file is required for access to the chip to which encrypted data is written. When encrypted data is written to a blank chip or after deleting all data from the chip, the encrypted data part of the encrypted file is not referenced.

Therefore, any value can be set to data in the encrypted data part. It is however necessary to set the **address** and **encryption length** so as to fall properly into the area for each model explained in the above (2).

8. SECURITY FUNCTION OF MB91F360 SERIES

(1) Outline

The MB91F360 series has the security function for protecting data in internal flash memory. When the chip starts from the power-on reset in the internal ROM mode, control jumps to the reset vector. The reset vector is fixed at the starting address of the boot ROM and cannot be changed; the boot program is started automatically.

The boot program references the security vector (#66, 0xFFEF4) to move to the sequence for control of programming to flash memory only when it is "0xFFFFFFFF". If the security vector is not "0xFFFFFFFF", the boot program jumps to the address written to the security vector and cannot control programming to flash memory. Therefore, write to the security vector after determining that data in flash memory is unchanged.

The boot program determines whether to start the boot loader or the user program. If nothing is input within 200 ms after a reset at input to the INITX pin, the boot program starts the user program from the starting address (0xf4000). For details, refer to the **Hardware Manual** for each chip. Therefore, note that the user program should be created to start from this starting address.

If "V" is received via a serial communication pin within 200 ms after input to the INITX pin, the boot loader is started. Since the flash memory programming program uses this boot loader, use the following procedure for programming to flash memory.

(2) Operating procedure

1. Input a reset signal (INITX) to the chip.

It is important to disable the chip to transmit data serially. If the already-programmed program is started to transmit data serially, continue to input "Low" to the INITX pin while performing steps **2** and **3** and set the INITX pin to "High" at step **4**.

2. Click the **[Download]** or **[Full Operation]** button.
3. Wait until the following dialog box is opened.



4. Input a reset signal (INITX) to the chip.

At step **3**, the PC is ready to transmit "V" at fixed intervals. When a signal is input to the INITX pin, "V" is received within 200 ms after input to the INITX pin to start the boot loader.

5. If the dialog box display changes and the progress bar advances, downloading is successful. If successful, the processing is same as for other types of microcontrollers (**Chapter 6**). If the dialog box display does not change, refer to the following cautions and retry it.

(3) Cautions

1. For a chip with anything other than "0xFFFFFFFF" written to the security vector, flash memory cannot be checked, programmed, and erased by this programmer.
2. Data cannot be written to and erased from the vector area from "0xFFFF8" to "0xFFFFF". This programmer does not display errors caused by erasing, writing and comparing for this area.
3. If there is no reaction after a reset signal is input to the chip in step **4**, cancel and retry after checking whether:
 - (a) The chip has anything other than "0xFFFFFFFF" written to the security vector.
 - (b) The setting of the RS-232C port numbers is correct.
 - (c) The connection of serial communication pins and the setting of MD0, MD1 and MD2 pins are correct.

9. OPERATING ENVIRONMENT

Required equipment :

- IBM PC compatible machine equipped with the RS-232C port
- RS-232C cable (commercial item)

OS :

- The Japanese version and English version of Windows XP/Vista/7/8
- * There is fault that some characters are not displayed correctly, in Windows Vista.

However, we are checking that the program is performing normal operation.

Memory size :

- More than the memory quantity that OS recommends

Hard disk :

- (Availability) Not less than 10 MB

NOTICE : The operations of all models that meet the above conditions may not be ensured.

10. OTHERS

(A) Setting of voice output

The setting of voice generated when an error occurs and processing is terminated normally can be changed.

Select the **[Sound]** tab in the setup window that opens when the **[Set Environment]** button is clicked.

- To output sound, put a check in the **Enable sound** checkbox.
- Check the status of sound output. Select **ERROR** or **END** in the sound column.
- Select **Wave** or **Beep** as the type of sound to be output in **Sound type**.
- Set the voice file to be output in the **Wave** file column only when **Wave** is selected. When the **[Open]** button is clicked, the File Open window is opened. Select the **Wave** file to be output. The **[Play]** button is used to play the set **Wave** file. The **[Stop]** button is used to stop the **Wave** file.

(B) Setting of tooltips display

The tooltips display can be “enabled” or “disabled”.

Select the **[Tooltips]** tab in the setup window that opens when the **[Set Environment]** button is clicked.

When a checkmark is put in the **tooltips** checkbox to move the mouse cursor over the contents such as buttons in the dialog window, simple help (the full path of a file for Hex File) is displayed.

(C) Error messages

Many error messages are displayed owing to the setting mistake of hardware and software.
the case where an error is outputted in addition even if it checks these in detail, please tell the person in charge of software acquisition origin a detailed condition.

No.	Item	Description
No.001	Message	Download error *1
	Cause	The response of download processing is unusual.
	Action	Please check connection and a setup of hardware.
No.003	Message	Timeout error
	Cause	The response of a command does not come on the contrary.
	Action	Please check connection and a setup of hardware.
No.006	Message	Unable to open COM port
	Cause	Another application is using COM.
	Action	Please check the use situation and port number of a COM port.
No.007	Message	Unable to open Download file
	Cause	m_flash.xxx not found
	Action	Please reinstall this software.
No.009	Message	Unable to gain COM port info
	Cause	It will be in the state where the target COM port can be used.
	Action	Please check the number of a COM port and setup to be used.
No.010	Message	Unable to change COM port setting
	Cause	A communication setup cannot be set as the target COM port.
	Action	Please inform support of condition.
No.011	Message	Communication error
	Cause	The unusual command response was received.
	Action	Please reperform by improving connection and a setup of hardware.
No.012	Message	Read error
	Cause	The response at the time of read&compare or copy processing is unusual.
	Action	Please reperform by improving connection and a setup of hardware.
No.013	Message	Program error
	Cause	The response at the time of Program&Verify processing is unusual.
	Action	Please reperform by checking whether a chip is blank.
No.015	Message	COM port write error
	Cause	There is the possibility of the abnormalities of a COM port driver or the port itself.
	Action	Please inform support of condition.

No.	Item	Description
No.016	Message	COM port read error
	Cause	There is the possibility of the abnormalities of a COM port driver or the port itself.
	Action	Please inform support of condition.
No.017	Message	File access error
	Cause	Access of a m_flash.xxx file went wrong.
	Action	Return the folder and file configurations to the installation defaults.
No.018	Message	Erase error *1
	Cause	The response at the time of erase processing is unusual. There is the possibility that a chip is poor.
	Action	Please improve a setup of hardware or exchange chips.
No.019	Message	Unable to open KEY file
	Cause	Key file cannot open.
	Action	Please create and set up right key file.
No.101	Message	Please set "hex file"
	Cause	"hex file" not set
	Action	Set "hex file" in the dialog box.
No.105	Message	Key length too short
	Cause	The minimum conditions for key length are not met.
	Action	Prepare a correct security file.
No.106	Message	Key length too long
	Cause	The maximum conditions for key length are not met.
	Action	Prepare a correct security file.
No.107	Message	Illegal security file
	Cause	The security file description is invalid.
	Action	Prepare a correct security file.
No.207	Message	memory is not available
	Cause	Unable to allocate memory for execution
	Action	Quit any running application and retry.
*2	Message	Please redo from download operation

*1: "MCU xxH" is displayed if the error cause is returned from the microcontroller at a download error.

"MCU xxH" means:

MCU 02H → SUM error at downloading

MCU 04H → Abnormal termination at downloading

*2: This is an additional message. It is displayed as necessary after other messages are displayed.

11. CAUTIONS

The PC programming software has the possibility of receiving the influence by the communications cable, the outside environment, and the PC.

Therefore, please evaluate it enough when you use the software.

Please use programming systems of programmer venders when you write two or more devices at the same time.

Please don't use the USB HUB between PC and MCU.

The specifications of the product are subject to change without notice.