User's Manual

R-CarH3-SiP/M3-SiP System Evaluation Board Salvator-XS

Setup Manual

RTP0RC7795SIPB0012S

[Confidential]

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1. Introduction

This setup manual describes the settings of switches mounted on the R-CarH3-SiP/M3-SiP system evaluation board "Salvator-XS." The SiPs mentioned in this manual (R-CarH3-SiP and R-CarM3-SiP) refer to version 2.0 of the R-CarH3-SiP, version 1.0 of the R-CarM3-SiP, and version 1.1 of the R-CarM3-SiP unless the version number is otherwise specified. Also, this manual uses the abbreviation "R-CarH3-SiP/M3-SiP" in place of "R-CarH3-SiP or R-CarM3-SiP" and "R-CarH3-SiP and R-CarM3-SiP" to refer to either product or both products.
For the correspondence between the functions of the Salvator-XS board and the connectors mounted on the board, see section 1.1, Location of Connectors on the Salvator-XS Board.
For the correspondence between the numbers and locations of the switches mounted on the Salvator-XS board, see section 1.2, Location of Switches on the Salvator-XS Board.
For the initial settings of slide switches mounted on the Salvator-XS board, see section 2.1, Initial Settings of Slide Switches.

1.1. Location of Connectors on the Salvator-XS Board

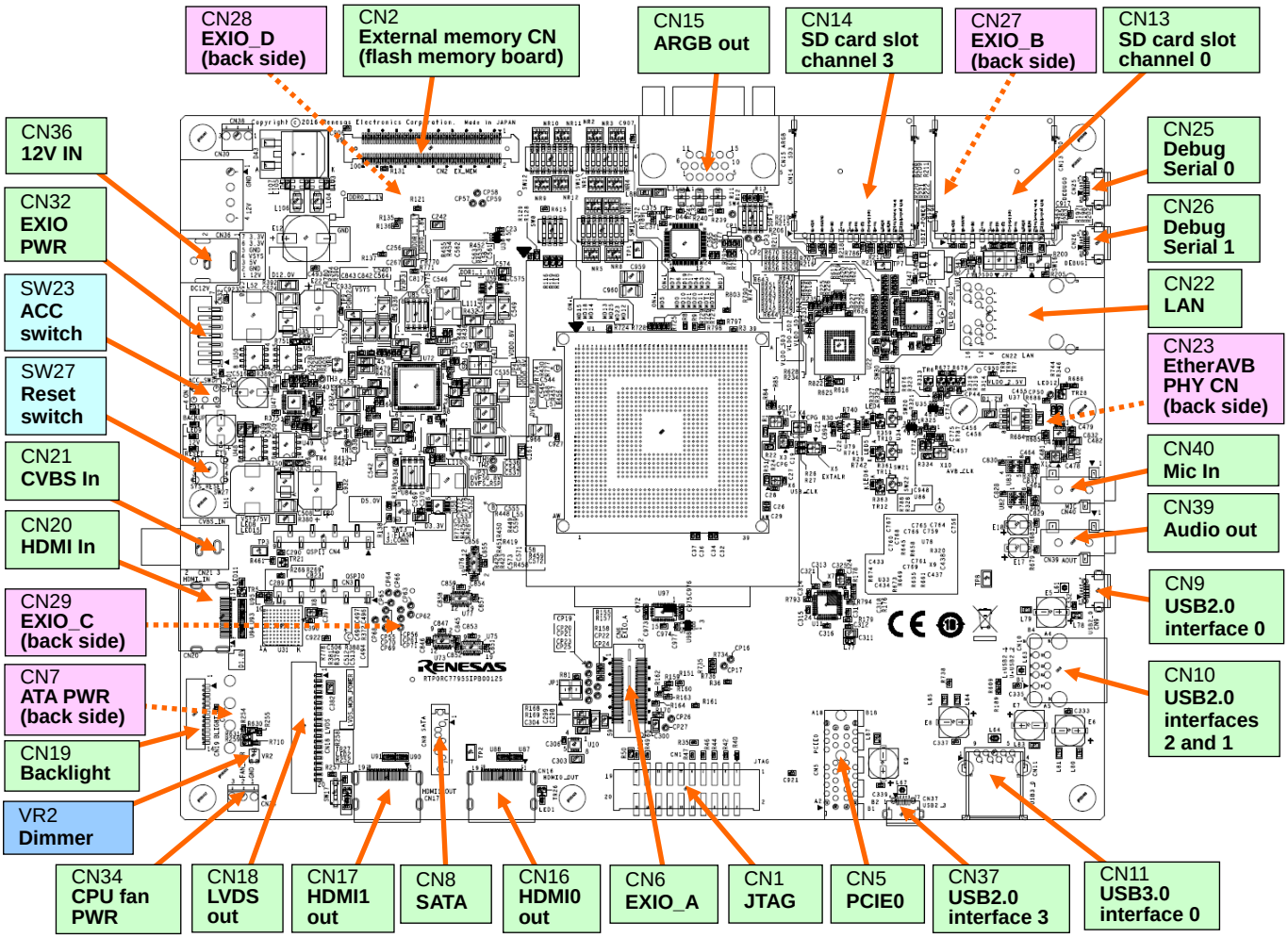


Figure 1.1.1 Location of Connectors on the Salvator-XS Board

Notes: 1. EXIO_A, EXIO_B, EXIO_C, and EXIO_D in the figure respectively refer to EXIO connectors A, B, C, and D. CN is the abbreviation for connectors in general.
2. The following functions and connectors are only available on the Salvator-XS board incorporating the R-CarH3-SiP. They are not available on Salvator-XS boards incorporating the R-CarM3-SiP because the R-CarM3-SiP doesn't have these functions.
- SATA (CN8)
- USB2.0 interface 2 (upper part of CN10)
- USB2.0 interface 3 (CN37)
- HDMI1 out (CN17)

1.2. Location of Switches on the Salvator-XS Board

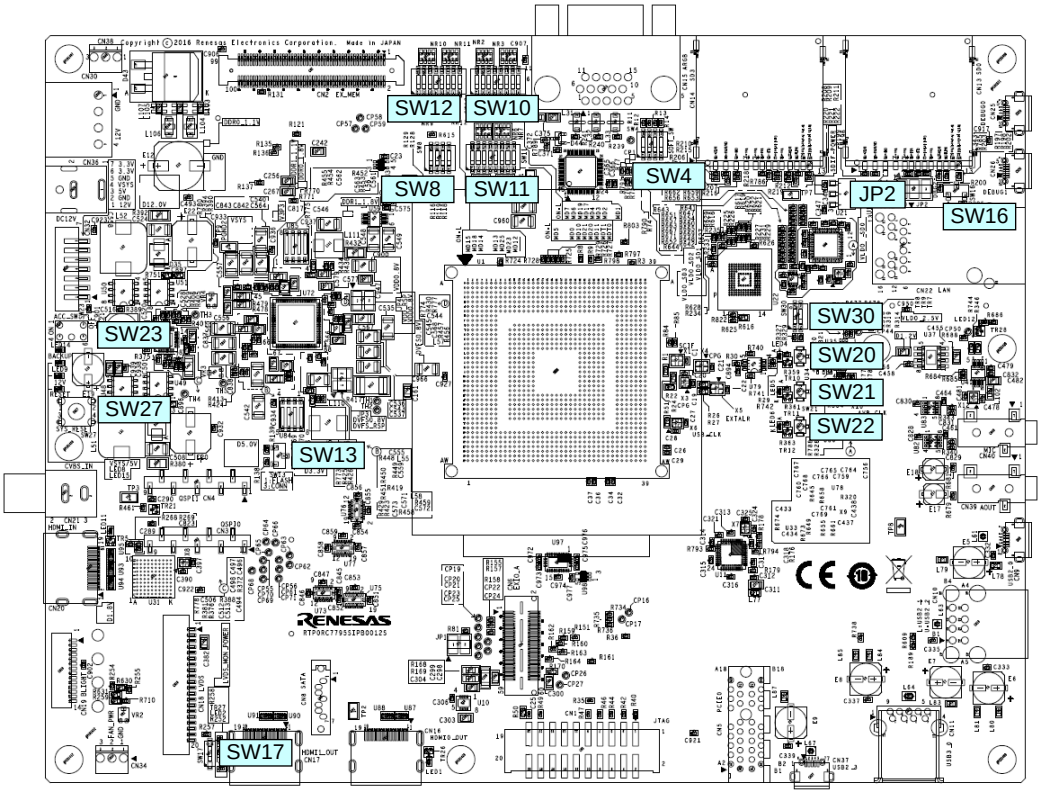


Figure 1.2.1 Location of Switches on the Salvator-XS Board (Component Side)

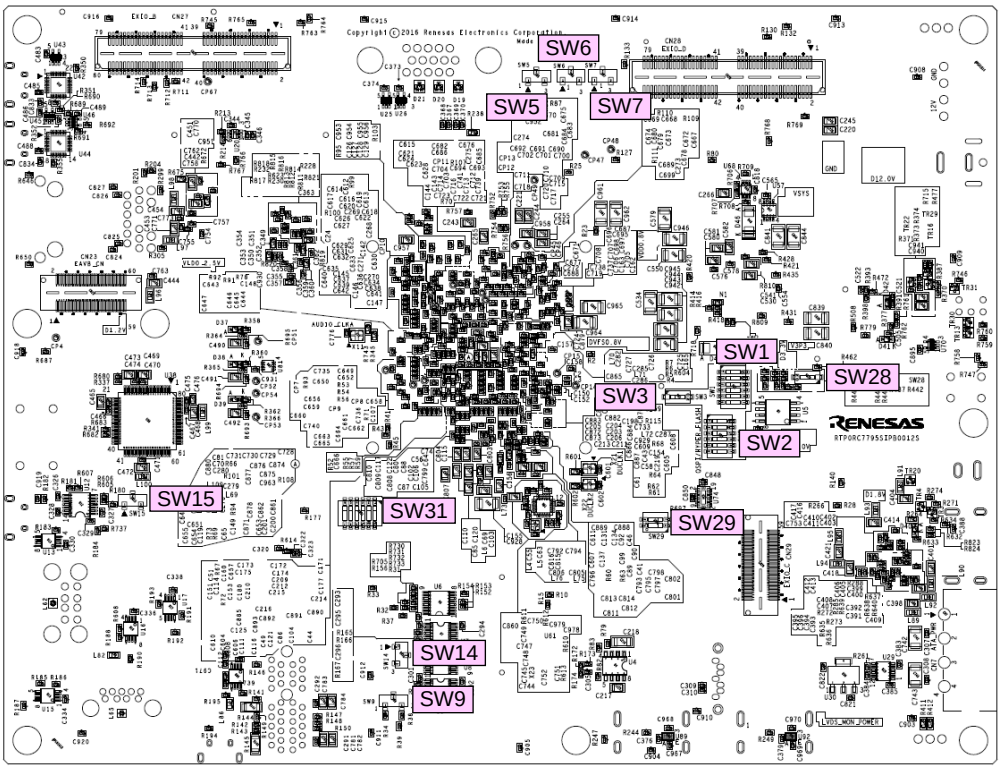


Figure 1.2.2 Location of Switches on the Salvator-XS Board (Solder Side)

1.3. Quick Setup of the Salvator-XS Board

1.3.1. Installing the USB Driver

The Salvator-XS board uses Silicon Labs' USB-to-UART Bridge controller, CP2102. Firstly, install a USB driver for the CP2102 (a virtual COM port driver). Download the driver from the website below.

[VCP Drivers]
http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx

1.3.2. Connecting the PC and Salvator-XS Board

For connection between the PC and Salvator-XS board, use a USB cable (type A to micro B). Connect the type A end to the PC and the micro B end to CN25 (Debug Serial 0) on the Salvator-XS board. For the location of CN25, see Figure 1.1.1, Location of Connectors on the Salvator-XS Board.

1.3.3. Settings for Terminal Emulation Software on the PC Side

Set up the serial communications protocol for the terminal emulation software on the PC side as follows.

Communications rate	115.2 kbps (115,200 bps)
Data length	8 bits
Parity bits	None
Stop bits	1 bit
Flow control	None

1.3.4. Confirming Activation of the Mini-Monitor on the Salvator-XS Board

Connect the 12.0-V DC plug of the AC adapter supplied with the Salvator-XS board to CN36 and then plug the other end of the adapter into the power source. Subsequently, switch the ACC switch (SW23) to the on side. The Salvator-XS board is activated and the following message is displayed on the screen of the terminal emulation software.

```
R-Car Gen3 Sample Loader Vx.xx 20xx.xx.xx
  Initial setting for Salvator / R-Car xx ESx.x
  CPU       : AArch64 CA57
  DRAM      : LPDDR4 xxxxxxx
  DEVICE : QSPI Flash(S25FS128) at 40MHz DMA
  BOOT      : Normal Boot
  BACKUP : DDR Cold Boot
  jump to 0xXXXXXXXX

R-Car Gen3 MiniMonitor Vx.xx 20xx.xx.xx
  Work Memory    : SystemRAM (H'xxxxxxxx-H'xxxxxxxx)
  Board Name     : Salvator
  Product Code : R-Car xx ESx.x

>
```

For the location of ACC switch (SW23), see Figure 1.1.1, Location of Connectors on the Salvator-XS Board.

1.3.5. VR2

The Salvator-XS board is equipped with an LVDS signal output connector (CN18) that can be connected to the LCD. By supplying the power to the backlight of this LCD through CN19 (backlight), the brightness of the LCD is adjustable by using a trimmer potentiometer (VR2, DIMMER). For the location of VR2, see Figure 1.1.1, Location of Connectors on the Salvator-XS Board.

As well as using VR2, the brightness is also adjustable on the Salvator-XS board by using the on-chip PWM function (PWM1, group A) in the R-CarH3-SiP/M3-SiP. For details, see the Salvator-XS Board Hardware Manual.

1.3.6. Precautions

When the AC adapter is connected to the power source, the 12.0-V DC power is supplied to the Salvator-XS board and some of the circuitry start operating. Setting the ACC switch (SW23) to the on side after that leads to the generation of various power supply levels (including 5.0-V DC and 3.3-V DC) from the 12.0-V DC power.

- The Salvator-XS evaluation board is only usable with version 2.0 of the R-CarH3-SiP, version 1.0 of the R-CarM3-SiP, and version 1.1 of the R-CarM3-SiP. The Salvator-XS board does not support the older versions (1.x) of the R-CarH3-SiP, so mounting the older versions of the given SiPs on the board is prohibited.

- Take particular care to ensure the correct configurations of the jumpers and switches mounted on the Salvator-XS board. Incorrect configurations may damage on-board devices.

- For the Salvator-XS board, be sure to use the AC adapter that comes with it. Applying a voltage greater than 12.0 V may damage devices on the Salvator-XS board.

- There are sequences for turning on and off the power supply to the Salvator-XS board. Be sure to obey the notes below.

  (1) When turning on the power
  Be sure to confirm that the ACC switch (SW23) is off before plugging the AC adapter into the power source. It is prohibited to plug the AC adapter into a power source while the ACC switch (SW23) is on.

  (2) When turning off the power
  Be sure to turn off the ACC switch (SW23) before unplugging the AC adapter from the power source. It is prohibited to unplug the AC adapter from the power source while the ACC switch (SW23) is on.

- The AC adapter that comes with the Salvator-XS can supply current up to 9.0 A at 12.0 V. If you intend to connect IO expansion boards or external storage devices to the Salvator-XS board, ensure that this does not lead to supply current exceeding 9.0 A.
  If the system configuration is such that the current supply does exceed 9.0 A, prepare a separate stabilized DC power supply that can supply 15.0 A or more at 12.0 V.

- The development of software that involves use of the SPI flash memory connected to U5 is not guaranteed on the Salvator-XS board.

- Do not remove the fan and heat sink for cooling the R-CarH3-SiP/M3-SiP from the board, as doing so will lead to the R-CarH3-SiP/M3-SiP being overheated to destruction.

- If the R-CarH3-SiP/M3-SiP in the socket of the product as shipped is exchanged for another device (replacing an R-CarH3-SiP with an R-CarM3-SiP, or vice versa), the model number of the board must be changed when the Salvator-XS board is exported. Since shipment with the model number as-is is not possible, obtain the product datasheet for the board that corresponds to the mounted SiP for customs clearance and go through the procedures required for export compliance. Contact your local Renesas sales representative regarding any point that may be unclear to you.

- If you intend to use the Salvator-XS board with a Wi-Fi board, we have confirmed the connection with the LBEE6ZZ1FD-TEMPS-D board manufactured by Murata. Note that you must prepare the Wi-Fi driver software yourself, which will require you to have a license agreement with Broadcom. If you intend to use a different Wi-Fi board, contact the manufacturer for details on the board.

- Do not use the GP3_06 and GP3_07 pins because the voltages on these pins may become unstable while the eMMC is operating.
  <TBD>

1.3.7. Precaution on Voltage Settings by the GPIO Pins

The Salvator-XS board incorporates an eMMC which is connected to the on-chip MMCIF0 in the R-CarH3-SiP/M3-SiP. The interface signals between the R-CarH3-SiP/M3-SiP and an eMMC are pulled up to the D1.8V voltage on the Salvator-XS board. Accordingly, ensure the supply of 1.8 V to the VDDQVA_SD1 and VDDQVA_SD2 pins of the R-CarH3-SiP/M3-SiP. For details, see section 2.12, eMMC Memory Interface (MMCIF0) in the Salvator-XS Hardware Manual.

The Salvator-XS board incorporates an SD card slot (CN13) for the JTAG2 or SDHI0 as debugger interfaces. When using the JTAG2 interface, ensure the supply of 1.8 V to the VDDQVA_SD0 pin of the R-CarH3-SiP/M3-SiP. For details, see section 2.18, Debugger Interfaces (JTAG and JTAG2) in the Salvator-XS Hardware Manual.

2. Switch Settings

This section describes the settings of slide switches mounted on the Salvator-XS board.

2.1. Initial Settings of Slide Switches

The following describes the initial setting of each slide switch on the Salvator-XS board. **These settings are valid only when the Salvator-XS board is switched on along with the launching of the mini-monitor supplied with the Salvator-XS board. To launch any other program than the mini-monitor, reconfigure the slide switches according to the pin function (PFC) and GPIO functions related to that program.**

Table 2.1.1 Initial Setting of Slide Switches

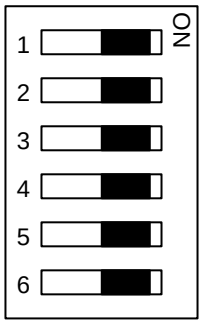
Switch Number	Switch Name	Side (C/S)	Pin 1 ▲	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
SW1	QSPI-A	S	All ON						-	-
SW2	QSPI-B	S	All ON						-	-
SW3	QSPI-C	S	✔ (OFF)		-	-	-	-	-	-
SW13	QSPI-D	C	✔	-		-	-	-	-	-
SW4	SOFTSW	C	OFF	OFF	OFF	OFF	-	-	-	-
SW5	GPIO/PWM1	S			✔	-	-	-	-	-
SW6	GPIO/PWM2	S		✔		-	-	-	-	-
SW7	DDRBKUP-A	S		✔		-	-	-	-	-
SW8	DDRBKUP-B	C	OFF	OFF	OFF	OFF	-	-	-	-
SW9	TRST#	S			✔	-	-	-	-	-
SW10	MODESW-A	C	ON	ON	ON	ON	ON	OFF	ON	ON
SW11	MODESW-B	C	OFF	ON	ON	ON	ON	ON	ON	ON
SW12	MODESW-C	C	OFF	ON	ON	ON	ON	ON	ON	ON
SW14	SSI78-M/S	S	✔	-		-	-	-	-	-
SW15	USB-SW	S	✔			-	-	-	-	-
SW16	SDHI0/JTAG2-A	C	✔	-		-	-	-	-	-
JP2	SDHI0/JTAG2-B	C	✔	-		-	-	-	-	-
SW28	VDDQVA_SD0	S	OFF	-	-	-	-	-	-	-
SW17	LVDS	C		✔	-	-	-	-	-	-
SW20	TACTSW0	C	Tactile SW	-	-	-	-	-	-	-
SW21	TACTSW1	C	Tactile SW	-	-	-	-	-	-	-
SW22	TACTSW2	C	Tactile SW	-	-	-	-	-	-	-
SW23	ACCSW	C		-	✔ (OFF)	-	-	-	-	-
SW27	PRESET#	C	Push SW	-	-	-	-	-	-	-
SW29	MIPI-SW	S	ON	ON	-	-	-	-	-	-
SW30	PHYAD	C	OFF	OFF	-	-	-	-	-	-
SW31	GPIO/USB	S	ON	ON	OFF	OFF	OFF	OFF	-	-

C: Component side of the board, S: Solder side of the board

2.1.1. SW1 (Selects QSPI Connection A) Specifications

The combination of settings for SW1, SW2, SW3, and SW13 determines the device to be connected to the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP. For the combinations of switch settings, see Table 2.1.5. SW1 selects whether to connect the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP to the SPI flash memory (U5) or to the EX-SPI connectors (CN3 and CN4).
The following shows the initial setting at shipment.

[SW1]



Function

No	Function	OFF	ON
1	QSPI1_SSL connection	Disconnects SPI flash or EX-SPI connector	**Connects SPI flash or EX-SPI connector**
2	QSPI1_SPCLK connection		
3	QSPI0_SPCLK connection		
4	QSPI0_IO2 connection		
5	QSPI0_MOSI_IO0 connection		
6	QSPI0_MISO_IO1 connection		

Figure 2.1.1 SW1 Settings

Table 2.1.2 Selection of QSPI Connection A

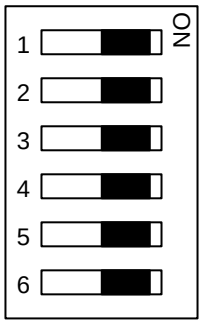
Settings of Pins 1 to 6	Functions
All on	• **The QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP are connected to the SPI flash memory (U5) or EX-SPI connectors (CN3 and CN4). (Initial setting)**
All off	• The QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP are connected to neither the SPI flash memory (U5) nor to the EX-SPI connectors (CN3 and CN4). • This setting should be made when the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP is to be used.

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.1.2. SW2 (Selects QSPI Connection B) Specifications

The combination of settings for SW1, SW2, SW3, and SW13 determines the device to be connected to the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP. For the combinations of switch settings, see Table 2.1.5. SW2 selects whether to connect the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP to the SPI flash memory (U5) or to the EX-SPI connectors (CN3 and CN4). The following shows the initial setting at shipment.

[SW2]



Function

No	Function	OFF	ON
1	QSPI0_SSL connection	Disconnects SPI flash or EX-SPI connector	**Connects SPI flash or EX-SPI connector**
2	QSPI1_MOSI_IO0 connection		
3	QSPI0_IO3 connection		
4	QSPI1_IO3 connection		
5	QSPI1_MISO_IO1 connection		
6	QSPI1_IO2 connection		

Figure 2.1.2 SW2 Settings

Table 2.1.3 Selection of QSPI Connection B

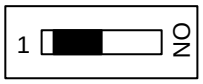
Settings of Pins 1 to 6	Functions
All on	• **The QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP are connected to the SPI flash memory (U5) or EX-SPI connectors (CN3 and CN4). (Initial setting)**
All off	• The QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP are connected to neither the SPI flash memory (U5) nor to the EX-SPI connectors (CN3 and CN4). • This setting should be made when the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP is to be used.

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.1.3. SW3 (Selects QSPI Connection C) Specifications

The combination of settings for SW1, SW2, SW3, and SW13 determines the device to be connected to the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP. For the combinations of switch settings, see Table 2.1.5. SW3 selects whether to connect the QSPI0_SSL pin of the R-CarH3-SiP/M3-SiP to the QSPI0_SSL_FLASH pin of the in-package HyperFlash memory. The following shows the initial setting at shipment.

[SW3]



Function

Function	OFF	ON
QSPI0_SSL_FLASH connection	**Disconnects**	Connects

Figure 2.1.3 SW3 Settings

Table 2.1.4 Selection of QSPI Connection C

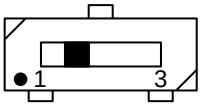
Setting	Functions
On	• The QSPI0_SSL pin of the R-CarH3-SiP/M3-SiP is connected to the QSP0_SSL_FLASH pin of the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP. • This setting should be made when the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP is to be used.
Off	• **The QSPI0_SSL pin of the R-CarH3-SiP/M3-SiP is not connected to the QSP0_SSL_FLASH pin of the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP. (Initial setting)** • **This setting should be made when the SPI flash memory (U5) or EX-SPI connectors (CN3 and CN4) on the Salvator-XS board are to be used.**

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.1.4. SW13 (Selects QSPI Connection D) Specifications

The combination of settings for SW1, SW2, SW3, and SW13 determines the device to be connected to the QSPI0 and QSPI1 pins of the R-CarH3-SiP/M3-SiP. For the combinations of switch settings, see Table 2.1.5. SW13 selects a device to be connected to the QSPI0_SSL pin of the R-CarH3-SiP/M3-SiP. When SW13 is set to the pin 1 side, the QSPI0_SSL pin is connected to the SPI flash memory (U5). When SW13 is set to pin 3 side, the QSPI0_SSL pin is connected to the EX-SPI connector (CN3). The following shows the initial setting at shipment.

[SW13]



Function

Function	Pin 1 side	Pin 3 side
QSPI0_SSL connection	**SPI flash memory**	EX-SPI connector

Figure 2.1.4 SW13 Settings

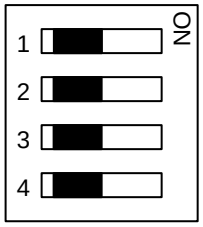
Table 2.1.5 Device Selection of QSPI0 and QSPI1

SW1	SW2	SW3	SW13	Device connected to the QSPI0	Device connected to the QSPI1
All ON	All ON	OFF	Pin 1	128-Mbit SPI flash memory (U5)	EX-SPI connector (CN4)
All ON	All ON	OFF	Pin 3	EX-SPI connector (CN3)	EX-SPI connector (CN4)
All OFF	All OFF	ON	Pin 1	In-package HyperFlash memory of the R-CarH3-SiP/M3-SiP	

2.1.5. SW4 (Software Switch) Specifications

SW4 can be used as a general-purpose input switch. This slide switch is connected to the GPIO of the R-CarH3-SiP/M3-SiP. When a bit in the 'POSNEG' register is equal to '1' (active low configuration) and moreover a bit in the switch is off, the corresponding bit in the GPIO general input register becomes '0.' When a bit in the switch is on, the corresponding bit becomes '1.'
For details, refer to the section on the general-purpose input/output ports (GPIO) in the R-Car Series, 3rd Generation User's Manual: Hardware. The following shows the initial setting at shipment.

[SW4]



Function

No	Function	OFF	ON
1	Software switch bit 0. GP5_17/MSIOF0_SCK	**0**	1
2	Software switch bit 1. GP5_20/MSIOF0_TXD	**0**	1
3	Software switch bit 2. GP5_22/MSIOF0_RXD	**0**	1
4	Software switch bit 3. GP5_23/MLB_CLK	**0**	1

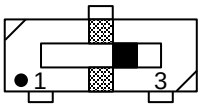
Figure 2.1.5 SW4 Settings

Note: Before using SW4 as a general-purpose input switch, set the GPSR5 register of the R-CarH3-SiP/M3-SiP to select the GPIO function. Then, set the pull enable registers 4 and 5 (PUEN4 and PUEN5) to enable pulling up or down and set the PUD control registers 4 and 5 (PUD4 and PUD5) to enable pulling up. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.
The GP5_23 function connected to the software switch and the MLB_CLK function is multiplexed on the same pin due to the specifications of the pin function controller (PFC) of the R-CarH3-SiP/M3-SiP. Accordingly, when the MLB_CLK function is in use on the board connected to the EXIO connector A (CN6), be sure to set pin 4 of SW4 to off.

2.1.6. SW5 (Selects GP2_07/PWM1_A Connection) Specifications

SW5 selects a device to be connected to the GP2_07/PWM1_A pin of the R-CarH3-SiP/M3-SiP. Regardless of the setting of SW5, the GP2_07/PWM1_A pin is always connected to the EXIO connector D (CN28). The following shows the initial setting at shipment.

[SW5]



Function

Function	Pin 1 side	Pin 2 side (Neutral)	Pin 3 side
GPIO/PWM1 selection	External memory connector	EXIO connector D	**LTC2644**

Figure 2.1.6 SW5 Settings

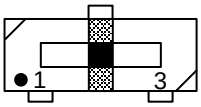
Table 2.1.6 Selection of GP2_07/PWM1_A Connection

Setting	Functions
Pin 1 side	• The GP2_07/PWM1_A pin of the R-CarH3-SiP/M3-SiP is connected to the external memory connector (CN2).
Pin 2 side (neutral)	• The GP2_07/PWM1_A pin of the R-CarH3-SiP/M3-SiP is only connected to the EXIO connector D (CN28). • This setting should be made when using the function assigned to the GP2_07/PWM1_A pin on the board connected to the EXIO connector D (CN28).
Pin 3 side	**• The GP2_07/PWM1_A pin of the R-CarH3-SiP/M3-SiP is connected to the INA pin (pin 9) of LTC2644 (U29) (initial setting).** **• This setting should be made when adjusting the brightness of the LCD by using the PWM1_A function.**

2.1.7. SW6 (Selects GP2_08/PWM2_A Connection) Specifications

SW6 selects a device to be connected to the GP2_08/PWM2_A pin of the R-CarH3-SiP/M3-SiP. Regardless of the setting of SW6, the GP2_08/PWM2_A pin is always connected to the EXIO connector D (CN28). The following shows the initial setting at shipment.

[SW6]



Function

Function	Pin 1 side	Pin 2 side (Neutral)	Pin 3 side
GPIO/PWM2 selection	External memory connector	**EXIO connector D**	BD9571

Figure 2.1.7 SW6 Settings

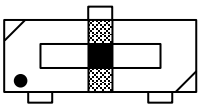
Table 2.1.7 Selection of GP2_08/PWM2_A Connection

Setting	Functions
Pin 1 side	• The GP2_08/PWM2_A pin of the R-CarH3-SiP/M3-SiP is connected to the external memory connector (CN2).
Pin 2 side (Neutral)	**• The GP2_08/PWM2_A pin of the R-CarH3-SiP/M3-SiP is only connected to the EXIO connector D (CN28).** **• This setting should be made when using the function assigned to the GP2_08/PWM2_A pin on the board connected to the EXIO connector D (CN28). (Initial setting)**
Pin 3 side	• The GP2_08/PWM2_A pin of the R-CarH3-SiP/M3-SiP is connected to the SYNC pin (pin 66) of the BD9571 (U72).

2.1.8. SW7 (Selects DDRBKUP Connection A) Specifications

SW7 selects a device to be connected to the GP1_08/A8 pin of the R-CarH3-SiP/M3-SiP. Regardless of the setting of SW7, the GP1_08/A8 pin is always connected to the external memory connector (CN2) and to EXIO connector D (CN28). The following shows the initial setting at shipment.

[SW7]



Function

Function	Pin 1 side	Pin 2 side (Neutral)	Pin 3 side
GP1_08/A8 selection	BKUP_TRG	**External memory connector and EXIO connector D**	SYS_TRG

Figure 2.1.8 SW7 Settings

Table 2.1.8 Selection of DDRBKUP Connection A

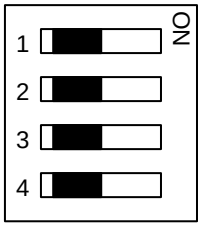
Setting	Functions
Pin 1 side	• The GP1_08/A8 pin of the R-CarH3-SiP/M3-SiP is connected to the BUKP_TRG signal. • This setting is used when the BUKP_TRG signal is to be input to a GPIO pin (GP1_08).
Pin 2 side (Neutral)	**• The GP1_08/A8 pin of the R-CarH3-SiP/M3-SiP is only connected to the external memory connector (CN2) and EXIO connector D (CN28).** **• This setting should be made when using the GP1_08/A8 pin as the A8 function of the LBSC. (Initial setting)**
Pin 3 side	• The GP1_08/A8 pin of the R-CarH3-SiP/M3-SiP is connected to the SYS_TRG signal. • This setting is used when the SYS_TRG signal is to be input to a GPIO pin (GP1_08).

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.1.9. SW8 (Selects DDRBKUP Connection B) Specifications

SW8 selects a device to be connected to the GP1_09/A9, GP1_11/A11, and GP1_20/CS0# pins of the R-CarH3-SiP/M3-SiP. Regardless of the setting of SW8, the GP1_09/A9, GP1_11/A11, and GP1_20/CS0# pins are always connected to the external memory connector (CN2) and EXIO connector D (CN28). The following shows the initial setting at shipment.

[SW8]



Function

No	Function	OFF	ON
1	GP1_09/A9 selection	**Selects LBSC function**	Selects GPIO function
2	GP1_11/A11 selection		
3	GP1_20/CS0# selection		
4	---	**---**	---

Figure 2.1.9 SW8 Settings

Table 2.1.9 Selection of DDRBKUP Connection B

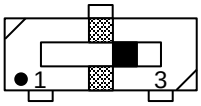
Pins 1 to 3	Functions
All on	• The GP1_09/A9, GP1_11/A11, and GP1_20/CS0# pins of the R-CarH3-SiP/M3-SiP are respectively connected to the BKUP_REQB, BOOST, and DVFS_PGD signals. • This setting is used when the BKUP_REQB and BOOST signals are to be output through GPIO pins (GP1_09 and GP1_11). • This setting is used when the DVFS_PGD signal is to be input to a GPIO pin (GP1_20).
All off	**• The GP1_09/A9, GP1_11/A11, and GP1_20/CS0# pins of the R-CarH3-SiP/M3-SiP are only connected to the external memory connector (CN2) and EXIO connector D (CN28).** **• This setting should be made when the GP1_09/A9, GP1_11/A11, and GP1_20/CS0# pins are used as the A9, A11, and CS0# functions of the LBSC. (Initial setting)**

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.1.10. SW9 (TRST#) Specifications

SW9 selects whether to pull up or down the TRST# pin of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW9]



Function

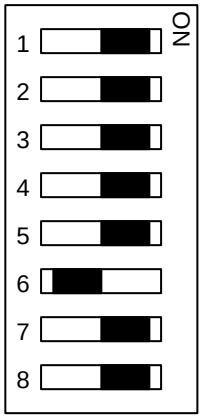
Function	Pin 1 side	Pin 2 (Neutral)	Pin 3 side
TRST# setting	Pulled up	Reserved	**Pulled down**

Figure 2.1.10 SW9 Settings

2.1.11. SW10 (Mode Setting A) Specifications

SW10 sets the levels on the mode pins (MD7, MD6, MD19, MD17, MD4, MD3, MD2, and MD1) of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW10]



Function

No	Function	OFF	ON
1	MD7 pin setting	1	**0**
2	MD6 pin setting	1	**0**
3	MD19 pin setting	1	**0**
4	MD17 pin setting	1	**0**
5	MD4 pin setting	1	**0**
6	MD3 pin setting	**1**	0
7	MD2 pin setting	1	**0**
8	MD1 pin setting	1	**0**

Figure 2.1.11 SW10 Settings

Table 2.1.10 Selection of Master Boot Processor (MD7 and MD6)

Pin 1 Setting	Pin 2 Setting	Functions
On (0)	**On (0)**	**MD7 = 0, MD6 = 0: Booted through CPU0 in Cortex-A57. (Initial setting)**
On (0)	Off (1)	MD7 = 0, MD6 = 1: Booted through CPU0 in Cortex-A53.
Off (1)	On (0)	MD7 = 1, MD6 = 0: Reserved
Off (1)	Off (1)	MD7 = 1, MD6 = 1: Booted through Cortex-R7.

Table 2.1.11 Selection of DDR clock frequency (MD19 and MD17)

Pin 3 Setting	Pin 4 Setting	Functions
On (0)	**On (0)**	**MD19 = 0, MD17 = 0: DDR3200 <TBD> (Initial setting)**
On (0)	Off (1)	MD19 = 0, MD17 = 1: DDR2133 <TBD>
Off (1)	On (0)	MD19 = 1, MD17 = 0: Reserved
Off (1)	Off (1)	MD19 = 1, MD17 = 1: DDR1600 <TBD>

Table 2.1.12 Selection of Boot Device (MD4, MD3, MD2, and MD1)

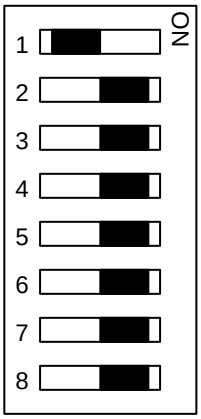
Pin 5 MD4	Pin 6 MD3	Pin 7 MD2	Pin 8 MD1	Functions
On (0)	On (0)	On (0)	On (0)	MD4 = 0, MD3 = 0, MD2 = 0, MD1 = 0: External ROM boot (area 0) • Booting is from the device allocated to the area 0 (CS0#). • Booting is from the NOR flash memory on the flash memory board when a flash memory board such as an R0P0400C0001FS is connected to CN2 (external memory connector).
On (0)	On (0)	Off (1)	On (0)	MD4 = 0, MD3 = 0, MD2 = 1, MD1 = 0: HyperFlash ROM boot at 160 MHz using DMA. • Booting is from the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP.
On (0)	On (0)	Off (1)	Off (1)	MD4 = 0, MD3 = 0, MD2 = 1, MD1 = 1: HyperFlash ROM boot at 80 MHz using DMA. • Booting is from the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP.
On (0)	**Off (1)**	**On (0)**	**On (0)**	**MD4 = 0, MD3 = 1, MD2 = 0, MD1 = 0: Serial flash ROM boot at single read 40 MHz using DMA. • Booting is from the SPI flash memory (U5) on the Salvator-XS board. (Initial setting)**
On (0)	Off (1)	On (0)	Off (1)	MD4 = 0, MD3 = 1, MD2 = 0, MD1 = 1: eMMC boot at 25 MHz with 1-bit bus width and using DMA (optional) • Booting is from the eMMC memory (U22) on the Salvator-XS board.
Off (1)	On (0)	Off (1)	On (0)	MD4 = 1, MD3 = 0, MD2 = 1, MD1 = 0: HyperFlash ROM at 160 MHz (320 Mbps) using XIP mode. • Booting is from the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP.
Off (1)	On (0)	Off (1)	Off (1)	MD4 = 1, MD3 = 0, MD2 = 1, MD1 = 1: HyperFlash ROM at 80 MHz using XIP mode. • Booting is from the in-package HyperFlash memory of the R-CarH3-SiP/M3-SiP.
Off (1)	Off (1)	On (0)	Off (1)	MD4 = 1, MD3 = 1, MD2 = 0, MD1 = 1: eMMC boot at 50 MHz with 8-bit bus width and using DMA • Booting is from the eMMC memory (U22) on the Salvator-XS board.
Off (1)	Off (1)	Off (1)	Off (1)	MD4 = 1, MD3 = 1, MD2 = 1, MD1 = 1: SCIF downloading mode
Other than above				Setting prohibited

Note: The related switches are SW1, SW2, SW3, and SW13.

2.1.12. SW11 (Mode Setting B) Specifications

SW11 sets the levels on the mode pins (MD5, MD0, MD10, MD21, MD20, MD11, MDT1, and MDT0) of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW11]



Function

No	Function	OFF	ON
1	MD5 pin setting	**1**	0
2	MD0 pin setting	1	**0**
3	MD10 pin setting	1	**0**
4	MD21 pin setting	1	**0**
5	MD20 pin setting	1	**0**
6	MD11 pin setting	1	**0**
7	MDT1 pin setting	1	**0**
8	MDT0 pin setting	1	**0**

Figure 2.1.12 SW11 Settings

Table 2.1.13 Reserved (MD5)

Pin 1 Setting	Functions
On (0)	MD5 = 0: Setting prohibited
Off (1)	**MD5 = 1: (Initial setting)**

Setting of pin 1 (MD5) is reserved for evaluation by Renesas Electronics. Do not change the initial setting (OFF).

Table 2.1.14 Selection of Free-Running Mode or Step-Up Mode (MD0)

Pin 2 Setting	Functions
On (0)	**MD0 = 0: Free-running mode (Initial setting)**
Off (1)	MD0 = 1: Step-up mode <TBD> This setting should not be made.

Table 2.1.15 Selection of JTAG/JTAG2/JTAG3 (MD10, MD21, MD20, MD11, MDT1, and MDT0)

Pin 3 MD10	Pin 4 MD21	Pin 5 MD20	Pin 6 MD11	Pin 7 MDT1	Pin 8 MDT0	Functions
On (0)	**On (0)**	**On (0)**	**On (0)**	**On (0)**	**On (0)**	**MD10 = 0, MD21 = 0, MD20 = 0, MD11 = 0, MDT1 = 0, MDT0 = 0: JTAG = No function, JTAG2 (SDHI0), JTAG3 (SDHI1) = Normal function (Initial setting)**

The debugging through the JTAG, JTAG2 (SDHI0), or JTAG3 (SDHI1) is possible by the combination of MD10, MD[21:20], MD11, and MDT[1:0] settings in the R-CarH3-SiP/M3-SiP. For the selectable debugging functions, see Table 2.1.16.

The Salvator-XS board incorporates a JTAG connector (CN1) and SD card slot (CN13) for the JTAG2 (SDHI0) interface, which allows use of the JTAG and JTAG2 interfaces. The Salvator-XS board does not incorporate an SD card slot for the JTAG3 (SDHI1) interface.

Table 2.1.16 List of Selectable Debugging Functions

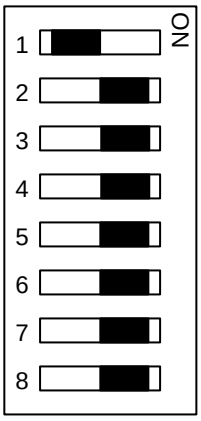
Pin 3 MD10	Pin 4:Pin 5 MD[21:20]	Pin 6 MD11	Pin 7:Pin 8 MDT[1:0]	JTAG CN1	JTAG2 (SDHI0) CN13	JTAG3 (SDHI1)
On	On:On	*	*	-	Normal function	Normal function
On	Off:On	On	*	CoreSight	Normal function	Normal function
On	Off:On	Off	On:On	CoreSight	ADSP	Normal function
On	Off:On	Off	On:Off	CoreSight	Reserved	Normal function
On	Off:On	Off	Off:On	CoreSight	Normal function	ADSP
On	Off:On	Off	Off:Off	CoreSight	Normal function	Reserved
On	Off:Off	On	*	Reserved	Normal function	Normal function
On	Off:Off	Off	On:On	Reserved	CoreSight	Normal function
On	Off:Off	Off	On:Off	Reserved	ADSP	Normal function
On	Off:Off	Off	Off:On	Reserved	Normal function	CoreSight
On	Off:Off	Off	Off:Off	Reserved	Normal function	ADSP
Off	Off:Off	On	*	ADSP	Normal function	Normal function

*: don't care, –: No connection with TAP controller

2.1.13. SW12 (Mode Setting C) Specifications

SW12 sets the levels on the mode pins (MD15, MD18, MD14, MD13, MD25, MD23, MD12, and MD28) of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW12]



Function

No	Function	OFF	ON
1	MD15 pin setting	**1**	0
2	MD18 pin setting	1	**0**
3	MD14 pin setting	1	**0**
4	MD13 pin setting	1	**0**
5	MD25 pin setting	1	**0**
6	MD23 pin setting	1	**0**
7	MD12 pin setting	1	**0**
8	MD28 pin setting	1	**0**

Figure 2.1.13 SW12 Settings

Table 2.1.17 Selection of AArch32 or AArch64 (MD15)

Pin 1 Setting	Functions
On (0)	MD15 = 0: AArch32
Off (1)	**MD15 = 1: AArch64 (Initial setting)**

Table 2.1.18 Selection of CLKOUT frequency (MD18)

Pin 2 Setting	Functions
On (0)	**MD18 = 0: The CLKOUT frequency of the LBSC is 66.6 MHz. (Initial setting)**
Off (1)	MD18 = 1: The CLKOUT frequency of the LBSC is 44.4 MHz.

Table 2.1.19 Selection of PLL Initial Multiplication Ratio (MD14 and MD13)

Pin 3 Setting	Pin 4 Setting	Functions
On (0)	**On (0)**	**MD14 = 0, MD13 = 0: EXTAL input = 16.64 MHz, EXTAL divider = x 1/1 (Initial setting)**
On (0)	Off (1)	MD14 = 0, MD13 = 1: EXTAL input = 20.00 MHz, EXTAL divider = x 1/1
Off (1)	On (0)	MD14 = 1, MD13 = 0: EXTAL input = 25.00 MHz, EXTAL divider = x 1/1
Off (1)	Off (1)	MD14 = 1, MD13 = 1: EXTAL input = 33.33 MHz, EXTAL divider = x 1/2

The Salvator-XS board incorporates a crystal oscillator (X4, 16.64 MHz). Do not change the setting at shipment (MD14 = 0, MD13 = 0).

Table 2.1.20 Selection of Field BIST Control (MD25)

Pin 5 Setting	Functions
On (0)	**MD25 = 0: Field BIST is not activated. (Initial setting)**
Off (1)	MD25 = 1: Field BIST is activated.

Table 2.1.21 Reserved (MD23)

Pin 6 Setting	Functions
On (0)	**MD23 = 0: (Initial setting)**
Off (1)	MD23 = 1: Setting prohibited

Setting of pin 6 (MD23) is reserved for evaluation by Renesas Electronics. Do not change its setting from the initial position (ON).

Table 2.1.22 Selection of PCIE1 PHY or SATA PHY (MD12) [only for the R-CarH3-SiP]

Pin 7 Setting	Functions
On (0)	**MD12 = 0: Selects PCIE1 PHY. (Initial setting)**
Off (1)	MD12 = 1: Selects SATA PHY.

Table 2.1.23 Reserved (MD12) [only for the R-CarM3-SiP]

Pin 7 Setting	Functions
On (0)	**MD12 = 0: (Initial setting)**
Off (1)	MD12 = 1: Setting prohibited

Pin 7 (MD12) is reserved for use in evaluation by Renesas Electronics on Salvator-XS boards incorporating the R-CarM3-SiP. Do not change its setting from the initial position (ON).

Table 2.1.24 Selection of Clock Source of RCLK (MD28) [only for the R-CarH3-SiP]

Pin 8 Setting	Functions
On (0)	**MD28 = 0: Selects frequency division of the signal on the R-CaH3-SiP's EXTAL pin. (Initial setting)**
Off (1)	MD28 = 1: Selects the signal on the R-CarH3-SiP's EXTALR pin.

Table 2.1.25 Reserved (MD28) [only for the R-CarM3-SiP]

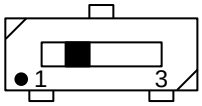
Pin 8 Setting	Functions
On (0)	**MD28 = 0: (Initial setting)**
Off (1)	MD28 = 1: Setting prohibited

Pin 8 (MD28) is reserved for use in evaluation by Renesas Electronics on Salvator-XS boards incorporating the R-CarM3-SiP. Do not change its setting from the initial position (ON).

2.1.14. SW14 (Selects Master or Slave Mode for the SSI7 and SSI8) Specifications

SW14 switches the transmission and reception circuits on the Salvator-XS board so that the circuit mode of the SSI7 and SSI8 matches the transmission and reception modes (master or slave) of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW14]



Function

Function	Pin 1 side	Pin 3 side
Master mode/slave mode selection	**Master mode (SSI_WS78 and SSI_SCK78 are for output)**	Slave mode (SSI_WS78 and SSI_SCK78 are for input)

Figure 2.1.14 SW14 Settings

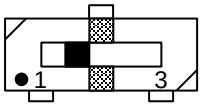
Table 2.1.26 Selection of Master Mode or Slave Mode for SSI7 and SSI8

Setting	Functions
Pin 1 side	• **This setting should be made when the SSI7 and SSI8 are in master mode, i.e. the SSI_WS78 and SSI_SCK78 pins of the R-CarH3-SiP/M3-SiP are outputs. (Initial setting)** • **The DIR pin of the SN74AVC4T245PW (U8) on the Salvator-XS board is set to the high level (logical 1).**
Pin 3 side	• This setting should be made when the SSI7 and SSI8 are in slave mode, i.e. the SSI_WS78 and SSI_SCK78 pins of the R-CarH3-SiP/M3-SiP are inputs. • The DIR pin of the SN74AVC4T245PW (U8) on the Salvator-XS board is set to the low level (logical 0).

2.1.15. SW15 (Selects Host, Function, or On-The-Go of USB2.0 Interface 0) Specifications

SW15 switches the USB circuit on the Salvator-XS board so that its mode matches that of USB2.0 interface 0 of the R-CarH3-SiP/M3-SiP. The mode can be selected from among USB Host, Function, and On-The-Go. The following shows the initial setting at shipment.

[SW15]



Function

Function	Pin 1 side	Pin 2 side (Neutral)	Pin 3 side
USB2.0 interface 0 mode selection	**USB Host (USB0_PWEN)**	USB Function	USB On-The-Go (GP6_24)

Figure 2.1.15 SW15 Settings

Table 2.1.27 Selection of Host, Function, or On-The-Go for USB Interface 0

Setting	Functions
Pin 1 side	• **USB interface 0 is used as a USB host interface. (Initial setting)** • **The USB0_PWEN pin of the R-CarH3-SiP/M3-SiP is connected to the EN pin of the USB power switch BD82065FVJ (U13).** • **Setting the level on the USB0_PWEN pin to high (1) switches on the supply of VBUS power from the Salvator-XS board. Setting it to low (0) stops the supply of VBUS power.** • **When the VBUS overcurrent is detected by the USB power switch, the USB0_OVC pin of the R-CarH3-SiP/M3-SiP becomes low (0).**
Pin 2 side	• USB interface 0 is used as a USB function. • The VBUS logic on the USB micro AB connector (CN9) is signaled to the VBUS0 pin of the R-CarH3-SiP/M3-SiP.
Pin 3 side	• USB interface 0 is used as a USB On-The-Go interface. • The GP6_24 pin of the R-CarH3-SiP/M3-SiP is connected to the OFFVBUS# pin of the USB charge pump and comparators (MAX3355EEUD, U12). • Setting the level on the GP6_24 pin to low (0) stops the supply of VBUS power from the MAX3355. Setting the level on the GP6_24 pin to high (1) while the ID value of the USB cable is 0 switches on the supply of VBUS power by the MAX3355. • See Table 2.1.28 for connection between the R-CarH3-SiP/M3-SiP and MAX3355.

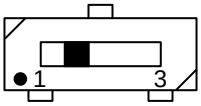
Table 2.1.28 Connections between the R-CarH3-SiP/M3-SiP and the MAX3355

R-CarH3-SiP/M3-SiP	MAX3355EEUD
GP6_24/USB0_PWEN	OFFVBUS# (pin 4)
USB20_ID0	ID_OUT (pin 3)
GP6_05/SSI_SCK34	STATUS1 (pin 5)
GP6_06/SSI_WS34	STATUS2 (pin 6)
GP6_16/SSI_SDATA6	SHDN# (pin 11)

2.1.16. SW16 (SDHI0/JTAG2 Setting A) Specifications

SW16 selects whether to pull up the SD0_CMD/TRST2 pin of the R-CarH3-SiP/M3-SiP for the SDHI0 or pull down the pin for the JTAG2. Setting of SW28 and JP2 must be changed when setting of SW16 is changed to the pin 3 side to pull down the pin for JTAG2. The following shows the initial setting at shipment.

[SW16]



Function

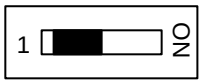
Function	Pin 1 side	Pin 3 side
Setting of pulling up or down	**SDHI0 (pulled up)**	JTAG2 (pulled down)

Figure 2.1.16 SW16 Settings

2.1.17. SW28 (SDHI0/JTAG2 Interface Voltage Setting) Specifications

GPIO pins (GP5_01, GP5_03, GP5_09, and GP3_14) set the SDHI0, SDHI1, SDHI2, and SDHI3 interface voltages (VDDQVA_SD0, VDDQVA_SD1, VDDQVA_SD2, and VDDQVA_SD3) on the Salvator-XS board to 3.3 V or 1.8 V. When the JTAG2 interface is in use, switch SW28 on to set VDDQVA_SD0 to 1.8 V. The settings of SW16 and JP2 must also be changed.
The following shows the initial setting at shipment.

[SW28]



Function

Function	OFF	ON
SDHI0 interface voltage setting (VDDQVA_SD0)	**SDHI0 (controlled by GP5_01)**	JTAG2 (always 1.8 V)

Figure 2.1.17 SW28 Settings

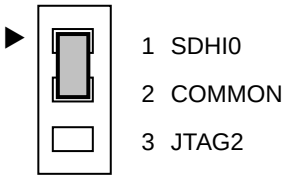
Table 2.1.29 Setting of Interface Voltage for SDHI0/JTAG2

Setting	Functions
On	• The SD card slot (CN13) is used as the JTAG2. • The SDHI0 interface voltage is forcibly set to 1.8 V. • Retain the state of GP5_01 immediately after the previous power-on-reset (GPIO input and pull-up enabled).
Off	**• The SD card slot (CN13) is used as the SDHI0. (Initial setting)** **• Uses the GP5_01 setting to select the interface voltage (VDDQVA_SD0) of the SDHI0.** **When GP5_01 is set to 1, VDDQVA_SD0 is set to 3.3 V.** **When GP5_01 is set to 0, VDDQVA_SD0 is set to 1.8 V.**

2.1.18. JP2 (SDHI0/JTAG2 Setting B) Specifications

JP2 switches the power voltage supplied to pin 4 (Vdd) of the SD card slot (CN13) between 3.3 V for the SHDI0 and 1.8 V for the JTAG2 interface. The settings of SW16 and SW28 must also be changed when the setting of JP2 is changed to the pin 3 side for JTAG2.
The following shows the initial setting at shipment.

[JP2]



Function

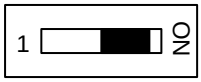
JP2	**1-2 short**	**Used for SDHI0**
	2-3 short	Used for JTAG2

Figure 2.1.18 JP2 Jumper Pin Setting

2.1.19. SW17 (Selects Scanning Direction of the LCD) Specifications

SW17 selects the direction of scanning for the LCD to be connected to the LVDS signal output connector (CN18). Connect an LCD to CN18 which allows the level on pin 20 (SC) of CN18 to change the direction of scanning.
The following shows the initial setting at shipment.

[SW17]



Function

Function	OFF	ON
Scan direction setting	Reverse direction	**Normal direction**

Figure 2.1.19 SW17 Settings

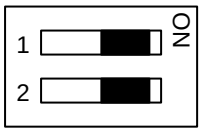
Table 2.1.30 Selection of LCD Scanning Direction

Setting	Functions
On	**• Normal direction (initial setting)** **• Scanning starts from the top-left corner of the LCD and proceeds to the right and from top to bottom.** **• Pin 20 (SC) of the LVDS signal output connector (CN18) is set to the low level (0).**
Off	• Reverse direction • Scanning starts from the bottom-right corner of the LCD and proceeds to the left and from bottom to top. • Pin 20 (SC) of the LVDS signal output connector (CN18) is set to the high level (1).

2.1.20. SW29 (Selects MIPI CSI-2 Device) Specifications

SW29 selects a device to be connected to the channels 0 and 1 of the CSI2 of the R-CarH3-SiP/M3-SiP. The following shows the initial setting at shipment.

[SW29]



Function

No	Function	OFF	ON
1	CSI2 channel 0 selection	EXIO connector C with 4 lanes	**ADV7482W transmitter A with 4 lanes**
2	CSI2 channel 1 selection	EXIO connector C with 2 lanes	**ADV7482W transmitter B with 1 lane**

Figure 2.1.20 SW29 Settings

Table 2.1.31 Selection of the Device to be connected to the Channels 0 and 1 of CSI2

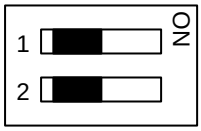
Pin 1 Setting	Functions
On	• **The ADV7482W transmitter A with 4 lanes (U31) is connected to the CSI2 channel 0 of the R-CarH3-SiP/M3-SiP. (Initial setting)**
Off	• The EXIO connector C with 4 lanes (CN29) is connected to the CSI2 channel 0 of the R-CarH3-SiP/M3-SiP.

Pin 2 Setting	Functions
On	• **The ADV7482W transmitter B with 1 lane (U31) is connected to the CSI2 channel 1 of the R-CarH3-SiP/M3-SiP. (Initial setting)**
Off	• The EXIO connector C with 2 lanes (CN29) is connected to the CSI2 channel 1 of the R-CarH3-SiP/M3-SiP.

2.1.21. SW30 (Setting of Gigabit Ethernet PHY Address) Specifications

SW30 sets the PHY address of the KSZ9031RNXVA Gigabit Ethernet transceiver (U78). The following shows the initial setting at shipment.

[SW30]



Function

No	Function	OFF	ON
1	PHYAD1 pin setting	**0**	1
2	PHYAD0 pin setting	**0**	1

Figure 2.1.21 SW30 Settings

Table 2.1.32 Setting of Gigabit Ethernet PHY Address

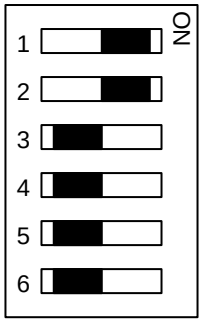
Pin 1 Setting	Pin 2 Setting	Functions
Off (0)	**Off (0)**	**Gigabit Ethernet PHY address[2:0] = 000b (Initial setting)**
Off (0)	On (1)	Gigabit Ethernet PHY address[2:0] = 001b
On (1)	Off (0)	Gigabit Ethernet PHY address[2:0] = 010b
On (1)	On (1)	Gigabit Ethernet PHY address[2:0] = 011b

The value of bit 2 of the PHY address is fixed to 0 because it is pulled down (by R757) on the Salvator-XS board.

2.1.22. SW31 (Selects GPIO/USB Connection) Specifications

SW31 selects the device to be connected to four GPIO pins (GP6_30, GP6_31, GP6_04, and GP6_21) of the R-CarH3-SiP/M3-SiP. The following shows the initial settings at shipment. Do not change the setting from this if the board incorporates the R-CarM3-SiP.

[SW31]



Function

No	Function	OFF	ON
1	GP6_30 connection A	Disconnects	**Connects GP6_30 to INTRQ1**
2	GP6_31 connection A	Disconnects	**Connects GP6_31 to INTRQ2**
3	GP6_30 connection B	**Disconnects**	Connects GP6_30 to EN pin
4	GP6_31 connection B	**Disconnects**	Connects GP6_31 to OC# pin
5	GP6_04 connection	**Disconnects**	Connects GP6_04 to INTRQ1
6	GP6_21 connection	**Disconnects**	Connects GP6_21 to INTRQ2

Figure 2.1.22 SW31 Settings

Table 2.1.33 Selection of GPIO and USB Connections

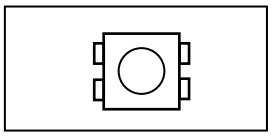
Setting of Pins 1 and 2	Setting of Pins 3 and 4	Setting of Pins 5 and 6	Functions
On	**Off**	**Off**	• **The GP6_30 and GP6_31 pins of the R-CarH3-SiP/M3-SiP are respectively connected to the INTRQ1 and INTRQ2 pins of the ADV7482W (U31).** • **The PWEN and OVC pins in the USB2.0 interface 3 of the R-CarH3-SiP are not connected to the BD82065FVJ (U96). (Initial setting)**
Off	On	Off	• The GPIO pins (GP6_30, GP6_31, GP6_04, and GP6_21) of the R-CarH3-SiP are connected to the INTRQ1 and INTRQ2 pins of the ADV7482W (U31). • The PWEN and OVC pins in the USB2.0 interface 3 of the R-CarH3-SiP are connected to the BD82065FVJ (U96). This setting should be made when USB 2.0 interface 3 of the R-CarH3-SiP is to be used. • This setting is prohibited on Salvator-XS boards incorporating the R-CarM3-SiP.
Off	On	On	• The GP6_04 and GP6_21 pins of the R-CarH3-SiP are connected to the INTRQ1 and INTRQ2 pins of the ADV7482W (U31). • The PWEN and OVC pins in the USB2.0 interface 3 of the R-CarH3-SiP are connected to the BD82065FVJ (U96). This setting should be made when USB 2.0 interface 3 of the R-CarH3-SiP is to be used. • This setting is prohibited on Salvator-XS boards incorporating the R-CarM3-SiP.
Other than above			Setting prohibited

In addition to the above setting, the pin function setting must be made in the peripheral function select register (IPSR) of the R-CarH3-SiP/M3-SiP. For details, refer to the section on the pin function controller (PFC) in the R-Car Series, 3rd Generation User's Manual: Hardware.

2.2. Push-Switch Specifications

2.2.1. SW27 (System Reset Switch) Specifications

Pushing SW27 resets the R-CarH3-SiP/M3-SiP.



SW27 (white)

Push: System reset

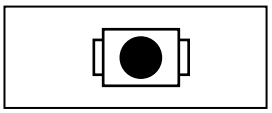
Figure 2.2.1 SW27 System Reset Switch

Table 2.2.1 System Reset Switch

SW Setting	Functions
Push	Resets the R-CarH3-SiP/M3-SiP. A reset signal is applied to the power-on reset pin (PRESET#) of the R-CarH3-SiP/M3-SiP. As a result, the R-CarH3-SiP/M3-SiP outputs a reset signal (PRESETOUT#) to peripheral devices.

2.2.2. SW20, SW21, and SW22 (Tactile Switches) Specifications

Three tactile switches (SW20, SW21, and SW22) are mounted on the Salvator-XS board. Pressing any of these switches makes the level on the corresponding GPIO pin of the R-CarH3-SiP/M3-SiP low (0) by default. To make the level on the GPIO pin high (1) when a switch is pressed, set the corresponding bit of the POSNEG register to 1. For details, refer to the section on the general-purpose input/output ports (GPIO) in the R-Car Series, 3rd Generation User's Manual: Hardware.



SW20, SW21, SW22 (black)
Push: Sets '0' to GPx_y

Figure 2.2.2 Tactile Switches (SW20, SW21, and SW22)

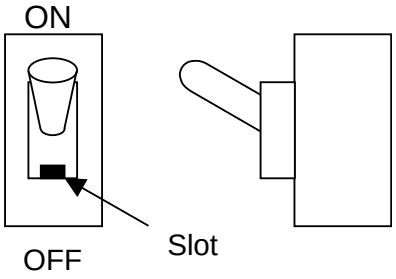
Table 2.2.2 Correspondence between Tactile Switch Number and GPIO pin

Tactile Switch	GPIO pin of the R-CarH3-SiP/M3-SiP
SW20	GP6_11/SSI_SCK5
SW21	GP6_12/SSI_WS5
SW22	GP6_13/SSI_SDATA5

2.3. Toggle Switch Specifications

2.3.1. SW23 (Board Power-Supply Circuit Control) Specifications

The power-supply circuit on the Salvator-XS board is controlled by using SW23 (accessory (ACC) switch).



SW23

On: ACC power-supply is on.

Off: ACC power-supply is off.

Figure 2.3.1 SW23 Accessory Power-Supply Switch

Table 2.3.1 Accessory Power-Supply Switch

SW23 Setting	Functions
Towards the 'ON' marking	Turns on the Salvator-XS board accessory power. As a result, the power-supply voltage is supplied to the system.

When the switch is pushed to 'ON,' the switching regulator (such as U47: MAX16933 and others) starts generating the power.

R-CarH3-SiP/M3-SiP System Evaluation Board
Salvator-XS (RTP0RC7795SIPB0012S)
Setup Manual

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