

AC784xx_DFP SPM

4.1.0

Generated by Doxygen 1.8.13

Contents

| | | |
|----------|---|----------|
| 1 | Class Index | 1 |
| 1.1 | Class List | 1 |
| 2 | File Index | 2 |
| 2.1 | File List | 2 |
| 3 | Class Documentation | 3 |
| 3.1 | Spm_ConfigType Struct Reference | 3 |
| 3.1.1 | Detailed Description | 3 |
| 3.1.2 | Member Data Documentation | 3 |
| 3.1.2.1 | LvdCallback | 3 |
| 3.1.2.2 | LvdLevel | 4 |
| 3.1.2.3 | LvrLevel | 4 |
| 3.1.2.4 | SleepTimeoutAction | 4 |
| 3.1.2.5 | SpmCallback | 4 |
| 3.1.2.6 | StandbyWakeupSource | 5 |
| 4 | File Documentation | 6 |
| 4.1 | AC784xx_API_Reference_Manual_SPM.pdf File Reference | 6 |
| 4.2 | AC784xx_Spm_Reg.h File Reference | 6 |
| 4.2.1 | Detailed Description | 7 |
| 4.2.2 | Function Documentation | 7 |
| 4.2.2.1 | Spm_Reg_ClearACKTimeOutFlag() | 7 |
| 4.2.2.2 | Spm_Reg_ClearStandbyWakeupStatus() | 8 |
| 4.2.2.3 | Spm_Reg_EnableSPLL() | 8 |
| 4.2.2.4 | Spm_Reg_EnableVHSI() | 8 |

| | | |
|----------|-----------------------------------|----|
| 4.2.2.5 | Spm_Reg_EnableXOSC() | 9 |
| 4.2.2.6 | Spm_Reg_EnableXOSCBypassMode() | 9 |
| 4.2.2.7 | Spm_Reg_GetACKTimeoutFlag() | 10 |
| 4.2.2.8 | Spm_Reg_GetLVDThreshold() | 10 |
| 4.2.2.9 | Spm_Reg_GetLVRThreshold() | 11 |
| 4.2.2.10 | Spm_Reg_GetModuleSleepACKStatus() | 11 |
| 4.2.2.11 | Spm_Reg_GetPowerControlMode() | 12 |
| 4.2.2.12 | Spm_Reg_GetPowerMode() | 12 |
| 4.2.2.13 | Spm_Reg_GetSleepAbortFlag() | 13 |
| 4.2.2.14 | Spm_Reg_GetSPLLEnable() | 13 |
| 4.2.2.15 | Spm_Reg_GetSPLLStatus() | 13 |
| 4.2.2.16 | Spm_Reg_GetStandbyWakeupEn() | 14 |
| 4.2.2.17 | Spm_Reg_GetStandbyWakeupStatus() | 14 |
| 4.2.2.18 | Spm_Reg_GetVHSIEnable() | 15 |
| 4.2.2.19 | Spm_Reg_GetVHSIStatus() | 15 |
| 4.2.2.20 | Spm_Reg_GetXOSCEnable() | 15 |
| 4.2.2.21 | Spm_Reg_GetXOSCStatus() | 16 |
| 4.2.2.22 | Spm_Reg_SelectACKTimeoutAction() | 16 |
| 4.2.2.23 | Spm_Reg_SelectLVDThreshold() | 16 |
| 4.2.2.24 | Spm_Reg_SelectLVRThreshold() | 17 |
| 4.2.2.25 | Spm_Reg_SetPowerMode() | 17 |
| 4.2.2.26 | Spm_Reg_SetStandbyWakeupEn() | 18 |
| 4.3 | Spm_Hal.c File Reference | 18 |
| 4.3.1 | Detailed Description | 19 |
| 4.3.2 | Macro Definition Documentation | 19 |
| 4.3.2.1 | REG_DEBUG_MODE_ADDR | 19 |
| 4.3.2.2 | REG_PWR_MGR_SPLL_ADDR | 19 |
| 4.3.2.3 | REG_PWR_MGR_XOSC_ADDR | 19 |
| 4.3.2.4 | SPM_TIMEOUT_VALUE | 20 |
| 4.3.3 | Function Documentation | 20 |
| 4.3.3.1 | ISR() [1/2] | 20 |

| | | |
|---------|------------------------------------|----|
| 4.3.3.2 | ISR() [2/2] | 20 |
| 4.3.3.3 | Spm_Hal_ClearStandbyWakeupStatus() | 20 |
| 4.3.3.4 | Spm_Hal_GetCurrentPowerMode() | 21 |
| 4.3.3.5 | Spm_Hal_GetStandbyWakeupStatus() | 21 |
| 4.3.3.6 | Spm_Hal_Init() | 22 |
| 4.3.3.7 | Spm_Hal_SetPowerMode() | 22 |
| 4.4 | Spm_Hal.h File Reference | 23 |
| 4.4.1 | Detailed Description | 23 |
| 4.4.2 | Macro Definition Documentation | 24 |
| 4.4.2.1 | LVD_IRQ_CONTROL_INTERNAL | 24 |
| 4.4.2.2 | SPM_IRQ_CONTROL_INTERNAL | 24 |
| 4.4.2.3 | STB_IRQ_CONTROL_INTERNAL | 24 |
| 4.4.3 | Enumeration Type Documentation | 24 |
| 4.4.3.1 | Spm_PowerModeType | 24 |
| 4.4.3.2 | Spm_SleepTimeoutActionType | 25 |
| 4.4.3.3 | Spm_StbWakeupEnableType | 25 |
| 4.4.3.4 | Spm_ThresholdType | 25 |
| 4.4.4 | Function Documentation | 25 |
| 4.4.4.1 | Spm_Hal_ClearStandbyWakeupStatus() | 26 |
| 4.4.4.2 | Spm_Hal_GetCurrentPowerMode() | 26 |
| 4.4.4.3 | Spm_Hal_GetStandbyWakeupStatus() | 27 |
| 4.4.4.4 | Spm_Hal_Init() | 27 |
| 4.4.4.5 | Spm_Hal_SetPowerMode() | 28 |

Chapter 1

Class Index

1.1 Class List

Here are the classes, structs, unions and interfaces with brief descriptions:

| | |
|--|---|
| Spm_ConfigType | |
| SPM module configuration structure | 3 |

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

| | |
|---|----|
| AC784xx_API_Reference_Manual_SPM.pdf | 6 |
| AC784xx_Spm_Reg.h This file provides extern Low level Spm register api | 6 |
| Spm_Hal.c This file provides Hal Spm api | 18 |
| Spm_Hal.h This file provides extern Hal Spm api | 23 |

Chapter 3

Class Documentation

3.1 Spm_ConfigType Struct Reference

SPM module configuration structure.

```
#include <Spm_Hal.h>
```

Public Attributes

- [Spm_SleepTimeoutActionType](#) SleepTimeoutAction
- [Spm_ThresholdType](#) LvdLevel
- [Spm_ThresholdType](#) LvrLevel
- uint32 [StandbyWakeupSource](#)
- [Hal_CallbackType](#) [SpmCallback](#)
- [Hal_CallbackType](#) [LvdCallback](#)

3.1.1 Detailed Description

SPM module configuration structure.

Definition at line 130 of file Spm_Hal.h.

3.1.2 Member Data Documentation

3.1.2.1 LvdCallback

```
Hal_CallbackType Spm_ConfigType::LvdCallback
```

LVD interrupt callback

Definition at line 158 of file Spm_Hal.h.

3.1.2.2 LvdLevel

`Spm_ThresholdType Spm_ConfigType::LvdLevel`

LVD threshold

Definition at line 133 of file Spm_Hal.h.

3.1.2.3 LvrLevel

`Spm_ThresholdType Spm_ConfigType::LvrLevel`

LVR threshold

Definition at line 134 of file Spm_Hal.h.

3.1.2.4 SleepTimeoutAction

`Spm_SleepTimeoutActionType Spm_ConfigType::SleepTimeoutAction`

what action after sleep timeout

Definition at line 132 of file Spm_Hal.h.

3.1.2.5 SpmCallback

`Hal_CallbackType Spm_ConfigType::SpmCallback`

SPM interrupt callback

Definition at line 157 of file Spm_Hal.h.

3.1.2.6 StandbyWakeupSource

uint32 Spm_ConfigType::StandbyWakeupSource

< StandbyWakeupSource value

- BIT0-1:PA12 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT2-3:PB0 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT4-5:PB1 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT6-7:PB12 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT8-9:PD3 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT10-11:PC2 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT12-13:PC3 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT14-15:PC6 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT16-17:PC7 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT18-19:PC16 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT20-21:PC17 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT22-23:PD6 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT24-25:PD7 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT26-27:PE4 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT28-29:PE5 wakeup enable type, the value range is Spm_StbWakeupEnableType
- BIT30-31:RTC wakeup enable type, the value range is Spm_StbWakeupEnableType without SPM_STP_WAKEUP_P_FALLINGStandby Mode Wakeup Enable

Definition at line 156 of file Spm_Hal.h.

The documentation for this struct was generated from the following file:

- [Spm_Hal.h](#)

Chapter 4

File Documentation

4.1 AC784xx_API_Reference_Manual_SPM.pdf File Reference

4.2 AC784xx_Spm_Reg.h File Reference

This file provides extern Low level Spm register api.

```
#include "Device_Register.h"
```

Functions

- LOCAL_INLINE void [Spm_Reg_SetPowerMode](#) (uint32 Mode)
Set the power mode.
- LOCAL_INLINE uint32 [Spm_Reg_GetPowerMode](#) (void)
Get the current power mode.
- LOCAL_INLINE uint32 [Spm_Reg_GetPowerControlMode](#) (void)
Get the power control mode.
- LOCAL_INLINE void [Spm_Reg_EnableXOSCBypassMode](#) (boolean IsEnable)
Enable or disable XOSC bypass mode.
- LOCAL_INLINE boolean [Spm_Reg_GetVHSEnable](#) (void)
Get VHSE Enable.
- LOCAL_INLINE void [Spm_Reg_EnableVHSI](#) (boolean IsEnable)
Enable or disable VHSI.
- LOCAL_INLINE boolean [Spm_Reg_GetVHSIStatus](#) (void)
Get VHSI status.
- LOCAL_INLINE boolean [Spm_Reg_GetXOSCEnable](#) (void)
Get XOSC Enable.
- LOCAL_INLINE void [Spm_Reg_EnableXOSC](#) (boolean IsEnable)
Enable or disable XOSC.
- LOCAL_INLINE boolean [Spm_Reg_GetXOSCStatus](#) (void)
Get XOSC status.
- LOCAL_INLINE boolean [Spm_Reg_GetSPLLEnable](#) (void)
Get SPLLE Enable.
- LOCAL_INLINE void [Spm_Reg_EnableSPLL](#) (boolean IsEnable)
Enable or disable SPLL.

- LOCAL_INLINE boolean [Spm_Reg_GetSPLLStatus](#) (void)
Get SPLL status.
- LOCAL_INLINE uint32 [Spm_Reg_GetModuleSleepACKStatus](#) (void)
Get sleep ack status.
- LOCAL_INLINE void [Spm_Reg_SelectACKTimeoutAction](#) (uint32 IsReset)
Select reset or interrupt after ack time out.
- LOCAL_INLINE uint32 [Spm_Reg_GetACKTimeoutFlag](#) (void)
Get ack timeout flag.
- LOCAL_INLINE void [Spm_Reg_ClearACKTimeOutFlag](#) (void)
Clear ack timeout flag.
- LOCAL_INLINE uint32 [Spm_Reg_GetStandbyWakeupEn](#) (void)
Get standby wakeup Eanble.
- LOCAL_INLINE void [Spm_Reg_SetStandbyWakeupEn](#) (uint32 En)
Set standby wakeup status.
- LOCAL_INLINE uint32 [Spm_Reg_GetStandbyWakeupStatus](#) (void)
Get standby wakeup status.
- LOCAL_INLINE void [Spm_Reg_ClearStandbyWakeupStatus](#) (void)
Clear standby wakeup status.
- LOCAL_INLINE void [Spm_Reg_SelectLVDThreshold](#) (uint32 Threshold)
Select lvd threshold.
- LOCAL_INLINE uint32 [Spm_Reg_GetLVDThreshold](#) (void)
Select lvd threshold.
- LOCAL_INLINE void [Spm_Reg_SelectLVRThreshold](#) (uint32 Threshold)
Select lvr threshold.
- LOCAL_INLINE uint32 [Spm_Reg_GetLVRThreshold](#) (void)
Select lvd threshold.
- LOCAL_INLINE uint32 [Spm_Reg_GetSleepAbortFlag](#) (void)
Get sleep abort flag.

4.2.1 Detailed Description

This file provides extern Low level Spm register api.

4.2.2 Function Documentation

4.2.2.1 Spm_Reg_ClearACKTimeOutFlag()

```
LOCAL_INLINE void Spm_Reg_ClearACKTimeOutFlag (
    void )
```

Clear ack timeout flag.

Note

Function ID: DES_MCU_API_432

Returns

void

Definition at line 485 of file AC784xx_Spm_Reg.h.

4.2.2.2 Spm_Reg_ClearStandbyWakeupStatus()

```
LOCAL_INLINE void Spm_Reg_ClearStandbyWakeupStatus (
    void )
```

Clear standby wakeup status.

Note

Function ID: DES_MCU_API_436

Returns

void

Definition at line 543 of file AC784xx_Spm_Reg.h.

4.2.2.3 Spm_Reg_EnableSPLL()

```
LOCAL_INLINE void Spm_Reg_EnableSPLL (
    boolean IsEnable )
```

Enable or disable SPLL.

Note

Function ID: DES_MCU_API_427

Parameters

| | | |
|----|-----------------|---|
| in | <i>IsEnable</i> | enable state |
| | | <ul style="list-style-type: none">• true: enable SPLL• false: disable SPLL |

Returns

void

Definition at line 392 of file AC784xx_Spm_Reg.h.

4.2.2.4 Spm_Reg_EnableVHSI()

```
LOCAL_INLINE void Spm_Reg_EnableVHSI (
    boolean IsEnable )
```

Enable or disable VHSI.

Note

Function ID: DES_MCU_API_421

Parameters

| in | <i>IsEnable</i> | enable state |
|----|-----------------|---|
| | | <ul style="list-style-type: none">• true: enable VHSI• false: disable VHSI |

Returns

void

Definition at line 278 of file AC784xx_Spm_Reg.h.

4.2.2.5 Spm_Reg_EnableXOSC()

```
LOCAL_INLINE void Spm_Reg_EnableXOSC (  
    boolean IsEnable )
```

Enable or disable XOSC.

Note

Function ID: DES_MCU_API_424

Parameters

| in | <i>IsEnable</i> | enable state |
|----|-----------------|---|
| | | <ul style="list-style-type: none">• true: enable XOSC• false: disable XOSC |

Returns

void

Definition at line 335 of file AC784xx_Spm_Reg.h.

4.2.2.6 Spm_Reg_EnableXOSCBypassMode()

```
LOCAL_INLINE void Spm_Reg_EnableXOSCBypassMode (  
    boolean IsEnable )
```

Enable or disable XOSC bypass mode.

Note

Function ID: DES_MCU_API_412

Parameters

| in | <i>IsEnable</i> | enable state |
|----|-----------------|---|
| | | <ul style="list-style-type: none">• true: enable XOSC bypass• false: disable XOSC bypass |

Returns

void

Definition at line 107 of file AC784xx_Spm_Reg.h.

4.2.2.7 Spm_Reg_GetACKTimeoutFlag()

```
LOCAL_INLINE uint32 Spm_Reg_GetACKTimeoutFlag (  
    void )
```

Get ack timeout flag.

Note

Function ID: DES_MCU_API_431

Returns

ack timeout flag.

Definition at line 475 of file AC784xx_Spm_Reg.h.

4.2.2.8 Spm_Reg_GetLVDThreshold()

```
LOCAL_INLINE uint32 Spm_Reg_GetLVDThreshold (  
    void )
```

Select lvd threshold.

Note

Function ID: DES_MCU_API_438

Returns

Threshold: Voltage threshold value for LVD

- 0 : SPM_LOW
- 1 : SPM_HIGH

Definition at line 568 of file AC784xx_Spm_Reg.h.

4.2.2.9 Spm_Reg_GetLVRThreshold()

```
LOCAL_INLINE uint32 Spm_Reg_GetLVRThreshold (
    void )
```

Select lvd threshold.

Note

Function ID: DES_MCU_API_440

Returns

Threshold: Voltage threshold value for LVD

- 0 : SPM_LOW
- 1 : SPM_HIGH

Definition at line 593 of file AC784xx_Spm_Reg.h.

4.2.2.10 Spm_Reg_GetModuleSleepACKStatus()

```
LOCAL_INLINE uint32 Spm_Reg_GetModuleSleepACKStatus (
    void )
```

Get sleep ack status.

Note

Function ID: DES_MCU_API_429

Returns

sleep ack status value

- BIT0:SLEEP_ACK_I2C0
- BIT2:SLEEP_ACK_SPI0
- BIT3:SLEEP_ACK_SPI1
- BIT4:SLEEP_ACK_SPI2
- BIT5:SLEEP_ACK_CAN0
- BIT6:SLEEP_ACK_CAN1
- BIT7:SLEEP_ACK_CAN2
- BIT8:SLEEP_ACK_CAN3
- BIT9: SLEEP_ACK_CAN4
- BIT10: SLEEP_ACK_CAN5
- BIT11:SLEEP_ACK_UART0
- BIT12:SLEEP_ACK_UART1
- BIT13:SLEEP_ACK_UART2
- BIT14:SLEEP_ACK_UART3
- BIT15: SLEEP_ACK_UART4
- BIT16: SLEEP_ACK_UART5

- BIT17: SLEEP_ACK_DMA0
- BIT18: SLEEP_ACK_EIO
- BIT19: SLEEP_ACK_FLASH
- BIT20: SLEEP_ACK_I2C2
- BIT21: SLEEP_ACK_SPI3
- BIT22: SLEEP_ACK_SPI4
- BIT23: SLEEP_ACK_UART6
- BIT24: SLEEP_ACK_UART7
- BIT25: SLEEP_ACK_SENT
- BIT30: SLEEP_ACK_CACHE

Definition at line 451 of file AC784xx_Spm_Reg.h.

4.2.2.11 Spm_Reg_GetPowerControlMode()

```
LOCAL_INLINE uint32 Spm_Reg_GetPowerControlMode (  
    void )
```

Get the power control mode.

Note

Function ID: DES_MCU_API_411

Returns

the power control mode register value

Definition at line 94 of file AC784xx_Spm_Reg.h.

4.2.2.12 Spm_Reg_GetPowerMode()

```
LOCAL_INLINE uint32 Spm_Reg_GetPowerMode (  
    void )
```

Get the current power mode.

Note

Function ID: DES_MCU_API_410

Returns

the current power mode register value

Definition at line 84 of file AC784xx_Spm_Reg.h.

4.2.2.13 Spm_Reg_GetSleepAbortFlag()

```
LOCAL_INLINE uint32 Spm_Reg_GetSleepAbortFlag (  
    void )
```

Get sleep abort flag.

Note

Function ID: DES_MCU_API_442

Returns

AbortFlag:

- 0 : invalid flag
- 1 : Sleep process was exited due to an interrupt occurred

Definition at line 620 of file AC784xx_Spm_Reg.h.

4.2.2.14 Spm_Reg_GetSPLLEnable()

```
LOCAL_INLINE boolean Spm_Reg_GetSPLLEnable (  
    void )
```

Get SPLLEnable.

Note

Function ID: DES_MCU_API_426

Returns

The SPLLEnable status

- true : SPLLEnable enable
- false: SPLLEnable disable

Definition at line 370 of file AC784xx_Spm_Reg.h.

4.2.2.15 Spm_Reg_GetSPLLStatus()

```
LOCAL_INLINE boolean Spm_Reg_GetSPLLStatus (  
    void )
```

Get SPLL status.

Note

Function ID: DES_MCU_API_428

Returns

The SPLL status

- true : SPLL valid
- false: SPLL invalid

Definition at line 406 of file AC784xx_Spm_Reg.h.

4.2.2.16 Spm_Reg_GetStandbyWakeupEn()

```
LOCAL_INLINE uint32 Spm_Reg_GetStandbyWakeupEn (
    void )
```

Get standby wakeup Eanble.

Note

Function ID: DES_MCU_API_433

Returns

uint32: standby wakeup Eanble

Definition at line 495 of file AC784xx_Spm_Reg.h.

4.2.2.17 Spm_Reg_GetStandbyWakeupStatus()

```
LOCAL_INLINE uint32 Spm_Reg_GetStandbyWakeupStatus (
    void )
```

Get standby wakeup status.

Note

Function ID: DES_MCU_API_435

Returns

uint32: standby wakeup status

- BIT0:SPM_WAKEUP_STATUS_PA12
- BIT1:SPM_WAKEUP_STATUS_PB0
- BIT2:SPM_WAKEUP_STATUS_PB1
- BIT3:SPM_WAKEUP_STATUS_PB12
- BIT4:SPM_WAKEUP_STATUS_PD3
- BIT5:SPM_WAKEUP_STATUS_PC2
- BIT6:SPM_WAKEUP_STATUS_PC3
- BIT7:SPM_WAKEUP_STATUS_PC6
- BIT8:SPM_WAKEUP_STATUS_PC7
- BIT9:SPM_WAKEUP_STATUS_PC16
- BIT10:SPM_WAKEUP_STATUS_PC17
- BIT11:SPM_WAKEUP_STATUS_PD6
- BIT12:SPM_WAKEUP_STATUS_PD7
- BIT13:SPM_WAKEUP_STATUS_PE4
- BIT14:SPM_WAKEUP_STATUS_PE5
- BIT15:SPM_WAKEUP_STATUS_RTC
- BIT16:SPM_WAKEUP_STATUS_FIAG

Definition at line 533 of file AC784xx_Spm_Reg.h.

4.2.2.18 Spm_Reg_GetVHSIEnable()

```
LOCAL_INLINE boolean Spm_Reg_GetVHSIEnable (
    void )
```

Get VHSI Enable.

Note

Function ID: DES_MCU_API_420

Returns

The VHSI status

- true : VHSI enable
- false: VHSI disable

void

Definition at line 256 of file AC784xx_Spm_Reg.h.

4.2.2.19 Spm_Reg_GetVHSIStatus()

```
LOCAL_INLINE boolean Spm_Reg_GetVHSIStatus (
    void )
```

Get VHSI status.

Note

Function ID: DES_MCU_API_422

Returns

The VHSI status

- true : VHSI valid
- false: VHSI invalid

Definition at line 292 of file AC784xx_Spm_Reg.h.

4.2.2.20 Spm_Reg_GetXOSCEnable()

```
LOCAL_INLINE boolean Spm_Reg_GetXOSCEnable (
    void )
```

Get XOSC Enable.

Note

Function ID: DES_MCU_API_423

Returns

The XOSC status

- true : XOSC enable
- false: XOSC disable

Definition at line 313 of file AC784xx_Spm_Reg.h.

4.2.2.21 Spm_Reg_GetXOSCStatus()

```
LOCAL_INLINE boolean Spm_Reg_GetXOSCStatus (
    void )
```

Get XOSC status.

Note

Function ID: DES_MCU_API_425

Returns

The XOSC status

- true : XOSC valid
- false: XOSC invalid

Definition at line 349 of file AC784xx_Spm_Reg.h.

4.2.2.22 Spm_Reg_SelectACKTimeoutAction()

```
LOCAL_INLINE void Spm_Reg_SelectACKTimeoutAction (
    uint32 IsReset )
```

Select reset or interrupt after ack time out.

Note

Function ID: DES_MCU_API_430

Parameters

| in | <i>IsReset</i> | action after ack timeout. |
|----|----------------|---|
| | | <ul style="list-style-type: none">• 0: interrupt• 1: cpu reset |

Returns

void

Definition at line 464 of file AC784xx_Spm_Reg.h.

4.2.2.23 Spm_Reg_SelectLVDThreshold()

```
LOCAL_INLINE void Spm_Reg_SelectLVDThreshold (
    uint32 Threshold )
```

Select lvd threshold.

Note

Function ID: DES_MCU_API_437

Parameters

| <i>in</i> | <i>Threshold</i> | Voltage threshold value for LVD |
|-----------|------------------|--|
| | | <ul style="list-style-type: none">• 0 : SPM_LOW• 1 : SPM_HIGH |

Returns

void

Definition at line 556 of file AC784xx_Spm_Reg.h.

4.2.2.24 Spm_Reg_SelectLVRThreshold()

```
LOCAL_INLINE void Spm_Reg_SelectLVRThreshold (  
    uint32 Threshold )
```

Select lvr threshold.

Note

Function ID: DES_MCU_API_439

Parameters

| <i>in</i> | <i>Threshold</i> | Voltage threshold value for LVR -0 : SPM_LOW -1 : SPM_HIGH |
|-----------|------------------|--|
|-----------|------------------|--|

Returns

void

Definition at line 581 of file AC784xx_Spm_Reg.h.

4.2.2.25 Spm_Reg_SetPowerMode()

```
LOCAL_INLINE void Spm_Reg_SetPowerMode (  
    uint32 Mode )
```

Set the power mode.

Note

Function ID: DES_MCU_API_409

Parameters

| | | |
|-----------|-------------|---------------------------|
| <i>in</i> | <i>Mode</i> | power mode register value |
|-----------|-------------|---------------------------|

Returns

void

Definition at line 71 of file AC784xx_Spm_Reg.h.

4.2.2.26 Spm_Reg_SetStandbyWakeupEn()

```
LOCAL_INLINE void Spm_Reg_SetStandbyWakeupEn (
    uint32 En )
```

Set standby wakeup status.

Note

Function ID: DES_MCU_API_434

Parameters

| | | |
|-----------|-----------|--------------|
| <i>in</i> | <i>En</i> | enable state |
|-----------|-----------|--------------|

Returns

void

Definition at line 506 of file AC784xx_Spm_Reg.h.

4.3 Spm_Hal.c File Reference

This file provides Hal Spm api.

```
#include "Spm_Hal.h"
#include "Core_Hal.h"
#include "AC784xx_Spm_Reg.h"
#include "AC784xx_Ckgen_Reg.h"
```

Macros

- `#define SPM_TIMEOUT_VALUE` (50000U)
- `#define REG_DEBUG_MODE_ADDR` 0x40008030UL
- `#define REG_PWR_MGR_SPLL_ADDR` 0x4000803CUL
- `#define REG_PWR_MGR_XOSC_ADDR` 0x40008048UL

Functions

- [ISR](#) (LVD_IRQHandler)
Lvd interrupt.
- [ISR](#) (SPM_IRQHandler)
Spm Sleep time out interrupt.
- void [Spm_Hal_Init](#) (const [Spm_ConfigType](#) *ConfigPtr)
Initialize Spm module.
- [Spm_PowerModeType](#) [Spm_Hal_GetCurrentPowerMode](#) (void)
Get Current power mode.
- [Hal_StatusType](#) [Spm_Hal_SetPowerMode](#) ([Spm_PowerModeType](#) Mode)
Set power mode.
- uint32 [Spm_Hal_GetStandbyWakeupStatus](#) (void)
Get standby wakeup status.
- void [Spm_Hal_ClearStandbyWakeupStatus](#) (void)
Clear standby wakeup status.

4.3.1 Detailed Description

This file provides Hal Spm api.

4.3.2 Macro Definition Documentation

4.3.2.1 REG_DEBUG_MODE_ADDR

```
#define REG_DEBUG_MODE_ADDR 0x40008030UL
```

Definition at line 59 of file Spm_Hal.c.

4.3.2.2 REG_PWR_MGR_SPLL_ADDR

```
#define REG_PWR_MGR_SPLL_ADDR 0x4000803CUL
```

Definition at line 60 of file Spm_Hal.c.

4.3.2.3 REG_PWR_MGR_XOSC_ADDR

```
#define REG_PWR_MGR_XOSC_ADDR 0x40008048UL
```

Definition at line 61 of file Spm_Hal.c.

4.3.2.4 SPM_TIMEOUT_VALUE

```
#define SPM_TIMEOUT_VALUE (50000U)
```

Definition at line 56 of file Spm_Hal.c.

4.3.3 Function Documentation

4.3.3.1 ISR() [1/2]

```
ISR (
    LVD_IRQHandler )
```

Lvd interrupt.

Note

Function ID: DES_MCU_API_507

Definition at line 446 of file Spm_Hal.c.

4.3.3.2 ISR() [2/2]

```
ISR (
    SPM_IRQHandler )
```

Spm Sleep time out interrupt.

Note

Function ID: DES_MCU_API_508

Definition at line 417 of file Spm_Hal.c.

4.3.3.3 Spm_Hal_ClearStandbyWakeupStatus()

```
void Spm_Hal_ClearStandbyWakeupStatus (
    void )
```

Clear standby wakeup status.

Note

Function ID: DES_MCU_API_505

Returns

void

Definition at line 408 of file Spm_Hal.c.

4.3.3.4 Spm_Hal_GetCurrentPowerMode()

```
Spm_PowerModeType Spm_Hal_GetCurrentPowerMode (
    void )
```

Get Current power mode.

Note

Function ID: DES_MCU_API_502

Returns

Current power mode.

- SPM_MODE_RUN
- SPM_MODE_VLPR
- SPM_MODE_STOP1
- SPM_MODE_STOP2
- SPM_MODE_VLPS
- SPM_MODE_STANDBY

Definition at line 157 of file Spm_Hal.c.

4.3.3.5 Spm_Hal_GetStandbyWakeupStatus()

```
uint32 Spm_Hal_GetStandbyWakeupStatus (
    void )
```

Get standby wakeup status.

Note

Function ID: DES_MCU_API_504

Returns

the reset status.

- BIT0:SPM_WAKEUP_STATUS_PA12
- BIT1:SPM_WAKEUP_STATUS_PB0
- BIT2:SPM_WAKEUP_STATUS_PB1
- BIT3:SPM_WAKEUP_STATUS_PB12
- BIT4:SPM_WAKEUP_STATUS_PD3
- BIT5:SPM_WAKEUP_STATUS_PC2
- BIT6:SPM_WAKEUP_STATUS_PC3
- BIT7:SPM_WAKEUP_STATUS_PC6
- BIT8:SPM_WAKEUP_STATUS_PC7
- BIT9:SPM_WAKEUP_STATUS_PC16
- BIT10:SPM_WAKEUP_STATUS_PC17
- BIT11:SPM_WAKEUP_STATUS_PD6
- BIT12:SPM_WAKEUP_STATUS_PD7
- BIT13:SPM_WAKEUP_STATUS_PE4
- BIT14:SPM_WAKEUP_STATUS_PE5
- BIT15:SPM_WAKEUP_STATUS_RTC
- BIT16:SPM_WAKEUP_STATUS_FIAG

Definition at line 398 of file Spm_Hal.c.

4.3.3.6 Spm_Hal_Init()

```
void Spm_Hal_Init (
    const Spm_ConfigType * ConfigPtr )
```

Initialize Spm module.

Note

Function ID: DES_MCU_API_501

Parameters

| | | |
|----|-----------|-------------------|
| in | ConfigPtr | Spm Configuration |
|----|-----------|-------------------|

Returns

void

Definition at line 96 of file Spm_Hal.c.

4.3.3.7 Spm_Hal_SetPowerMode()

```
Hal_StatusType Spm_Hal_SetPowerMode (
    Spm_PowerModeType Mode )
```

Set power mode.

Note

Function ID: DES_MCU_API_503

Parameters

| | | |
|----|------|---|
| in | Mode | power mode. <ul style="list-style-type: none">• SPM_MODE_RUN• SPM_MODE_VLPR• SPM_MODE_STOP1• SPM_MODE_STOP2• SPM_MODE_VLPS• SPM_MODE_STANDBY |
|----|------|---|

Returns

Set power mode pass or failed.

Definition at line 181 of file Spm_Hal.c.

4.4 Spm_Hal.h File Reference

This file provides extern Hal Spm api.

```
#include "Device_Register.h"
```

Classes

- struct [Spm_ConfigType](#)
SPM module configuration structure.

Macros

- #define [SPM_IRQ_CONTROL_INTERNAL](#) (STD_ON)
- #define [LVD_IRQ_CONTROL_INTERNAL](#) (STD_ON)
- #define [STB_IRQ_CONTROL_INTERNAL](#) (STD_ON)

Enumerations

- enum [Spm_PowerModeType](#) {
 [SPM_MODE_RUN](#) = 0U, [SPM_MODE_STOP1](#) = 2U, [SPM_MODE_VLPS](#) = 4U, [SPM_MODE_STANDBY](#) = 5U,
 [SPM_MODE_MAX](#) = 6U }
Power mode.
- enum [Spm_SleepTimeoutActionType](#) { [SPM_INTERRUPT](#) = 0U, [SPM_RESET](#) }
- enum [Spm_ThresholdType](#) { [SPM_LOW](#) = 0U, [SPM_HIGH](#) }
- enum [Spm_StbWakeupEnableType](#) { [SPM_STP_WAKEUP_DISABLE](#) = 0U, [SPM_STP_WAKEUP_RISING](#), [SPM_STP_WAKEUP_FALLING](#), [SPM_STP_WAKEUP_DUAL_EDGES](#) }
- *Standby wakeup enable type.*

Functions

- void [Spm_Hal_Init](#) (const [Spm_ConfigType](#) *ConfigPtr)
Initialize Spm module.
- [Spm_PowerModeType](#) [Spm_Hal_GetCurrentPowerMode](#) (void)
Get Current power mode.
- Hal_StatusType [Spm_Hal_SetPowerMode](#) ([Spm_PowerModeType](#) Mode)
Set power mode.
- uint32 [Spm_Hal_GetStandbyWakeupStatus](#) (void)
Get standby wakeup status.
- void [Spm_Hal_ClearStandbyWakeupStatus](#) (void)
Clear standby wakeup status.

4.4.1 Detailed Description

This file provides extern Hal Spm api.

4.4.2 Macro Definition Documentation

4.4.2.1 LVD_IRQ_CONTROL_INTERNAL

```
#define LVD_IRQ_CONTROL_INTERNAL (STD_ON)
```

Definition at line 62 of file Spm_Hal.h.

4.4.2.2 SPM_IRQ_CONTROL_INTERNAL

```
#define SPM_IRQ_CONTROL_INTERNAL (STD_ON)
```

Definition at line 59 of file Spm_Hal.h.

4.4.2.3 STB_IRQ_CONTROL_INTERNAL

```
#define STB_IRQ_CONTROL_INTERNAL (STD_ON)
```

Definition at line 65 of file Spm_Hal.h.

4.4.3 Enumeration Type Documentation

4.4.3.1 Spm_PowerModeType

```
enum Spm\_PowerModeType
```

Power mode.

Enumerator

| | |
|------------------|--|
| SPM_MODE_RUN | |
| SPM_MODE_STOP1 | |
| SPM_MODE_VLPS | |
| SPM_MODE_STANDBY | |
| SPM_MODE_MAX | |

Definition at line 70 of file Spm_Hal.h.

4.4.3.2 Spm_SleepTimeoutActionType

enum `Spm_SleepTimeoutActionType`

Enter sleep timeout action.

Enumerator

| | |
|---------------|----------------------------------|
| SPM_INTERRUPT | sleep timeout triggers interrupt |
| SPM_RESET | sleep timeout mcu will reset |

Definition at line 88 of file Spm_Hal.h.

4.4.3.3 Spm_StbWakeupEnableType

enum `Spm_StbWakeupEnableType`

Standby wakeup enable type.

Enumerator

| | |
|---------------------------|--|
| SPM_STP_WAKEUP_DISABLE | |
| SPM_STP_WAKEUP_RISING | |
| SPM_STP_WAKEUP_FALLING | |
| SPM_STP_WAKEUP_DUAL_EDGES | |

Definition at line 117 of file Spm_Hal.h.

4.4.3.4 Spm_ThresholdType

enum `Spm_ThresholdType`

Low voltage detect threshold type.

Enumerator

| | |
|----------|--------------------------|
| SPM_LOW | Select low voltage gear |
| SPM_HIGH | Select high voltage gear |

Definition at line 108 of file Spm_Hal.h.

4.4.4 Function Documentation

4.4.4.1 Spm_Hal_ClearStandbyWakeupStatus()

```
void Spm_Hal_ClearStandbyWakeupStatus (
    void )
```

Clear standby wakeup status.

Note

Function ID: DES_MCU_API_505

Returns

void

Definition at line 408 of file Spm_Hal.c.

4.4.4.2 Spm_Hal_GetCurrentPowerMode()

```
Spm_PowerModeType Spm_Hal_GetCurrentPowerMode (
    void )
```

Get Current power mode.

Note

Function ID: DES_MCU_API_502

Returns

Current power mode.

- SPM_MODE_RUN
- SPM_MODE_VLPR
- SPM_MODE_STOP1
- SPM_MODE_STOP2
- SPM_MODE_VLPS
- SPM_MODE_STANDBY

Definition at line 157 of file Spm_Hal.c.

4.4.4.3 Spm_Hal_GetStandbyWakeupStatus()

```
uint32 Spm_Hal_GetStandbyWakeupStatus (
    void )
```

Get standby wakeup status.

Note

Function ID: DES_MCU_API_504

Returns

the reset status.

- BIT0:SPM_WAKEUP_STATUS_PA12
- BIT1:SPM_WAKEUP_STATUS_PB0
- BIT2:SPM_WAKEUP_STATUS_PB1
- BIT3:SPM_WAKEUP_STATUS_PB12
- BIT4:SPM_WAKEUP_STATUS_PD3
- BIT5:SPM_WAKEUP_STATUS_PC2
- BIT6:SPM_WAKEUP_STATUS_PC3
- BIT7:SPM_WAKEUP_STATUS_PC6
- BIT8:SPM_WAKEUP_STATUS_PC7
- BIT9:SPM_WAKEUP_STATUS_PC16
- BIT10:SPM_WAKEUP_STATUS_PC17
- BIT11:SPM_WAKEUP_STATUS_PD6
- BIT12:SPM_WAKEUP_STATUS_PD7
- BIT13:SPM_WAKEUP_STATUS_PE4
- BIT14:SPM_WAKEUP_STATUS_PE5
- BIT15:SPM_WAKEUP_STATUS_RTC
- BIT16:SPM_WAKEUP_STATUS_FIAG

Definition at line 398 of file Spm_Hal.c.

4.4.4.4 Spm_Hal_Init()

```
void Spm_Hal_Init (
    const Spm_ConfigType * ConfigPtr )
```

Initialize Spm module.

Note

Function ID: DES_MCU_API_501

Parameters

| | | |
|----|------------------|-------------------|
| in | <i>ConfigPtr</i> | Spm Configuration |
|----|------------------|-------------------|

Returns

void

Definition at line 96 of file Spm_Hal.c.

4.4.4.5 Spm_Hal_SetPowerMode()

```
Hal_StatusType Spm_Hal_SetPowerMode (
    Spm_PowerModeType Mode )
```

Set power mode.

Note

Function ID: DES_MCU_API_503

Parameters

| in | Mode | power mode. |
|----|------|---|
| | | <ul style="list-style-type: none">• SPM_MODE_RUN• SPM_MODE_VLPR• SPM_MODE_STOP1• SPM_MODE_STOP2• SPM_MODE_VLPS• SPM_MODE_STANDBY |

Returns

Set power mode pass or failed.

Definition at line 181 of file Spm_Hal.c.

Index

AC784xx_API_Reference_Manual_SPM.pdf, 6
AC784xx_Spm_Reg.h, 6
 Spm_Reg_ClearACKTimeOutFlag, 7
 Spm_Reg_ClearStandbyWakeupStatus, 7
 Spm_Reg_EnableSPLL, 8
 Spm_Reg_EnableVHSI, 8
 Spm_Reg_EnableXOSCBypassMode, 9
 Spm_Reg_EnableXOSC, 9
 Spm_Reg_GetACKTimeOutFlag, 10
 Spm_Reg_GetLVDThreshold, 10
 Spm_Reg_GetLVRThreshold, 10
 Spm_Reg_GetModuleSleepACKStatus, 11
 Spm_Reg_GetPowerControlMode, 12
 Spm_Reg_GetPowerMode, 12
 Spm_Reg_GetSPLLEnable, 13
 Spm_Reg_GetSPLLStatus, 13
 Spm_Reg_GetSleepAbortFlag, 12
 Spm_Reg_GetStandbyWakeupEn, 13
 Spm_Reg_GetStandbyWakeupStatus, 14
 Spm_Reg_GetVHSIEnable, 14
 Spm_Reg_GetVHSIStatus, 15
 Spm_Reg_GetXOSCEnable, 15
 Spm_Reg_GetXOSCStatus, 15
 Spm_Reg_SelectACKTimeoutAction, 16
 Spm_Reg_SelectLVDThreshold, 16
 Spm_Reg_SelectLVRThreshold, 17
 Spm_Reg_SetPowerMode, 17
 Spm_Reg_SetStandbyWakeupEn, 18

ISR
 Spm_Hal.c, 20

LVD_IRQ_CONTROL_INTERNAL
 Spm_Hal.h, 24
LvdCallback
 Spm_ConfigType, 3
LvdLevel
 Spm_ConfigType, 3
LvrLevel
 Spm_ConfigType, 4

REG_DEBUG_MODE_ADDR
 Spm_Hal.c, 19
REG_PWR_MGR_SPLL_ADDR
 Spm_Hal.c, 19
REG_PWR_MGR_XOSC_ADDR
 Spm_Hal.c, 19

SPM_IRQ_CONTROL_INTERNAL
 Spm_Hal.h, 24
SPM_TIMEOUT_VALUE
 Spm_Hal.c, 19
STB_IRQ_CONTROL_INTERNAL
 Spm_Hal.h, 24
SleepTimeoutAction
 Spm_ConfigType, 4
Spm_ConfigType, 3
 LvdCallback, 3
 LvdLevel, 3
 LvrLevel, 4
 SleepTimeoutAction, 4
 SpmCallback, 4
 StandbyWakeupSource, 4
Spm_Hal.c, 18
 ISR, 20
 REG_DEBUG_MODE_ADDR, 19
 REG_PWR_MGR_SPLL_ADDR, 19
 REG_PWR_MGR_XOSC_ADDR, 19
 SPM_TIMEOUT_VALUE, 19
 Spm_Hal_ClearStandbyWakeupStatus, 20
 Spm_Hal_GetCurrentPowerMode, 20
 Spm_Hal_GetStandbyWakeupStatus, 21
 Spm_Hal_Init, 21
 Spm_Hal_SetPowerMode, 22
Spm_Hal.h, 23
 LVD_IRQ_CONTROL_INTERNAL, 24
 SPM_IRQ_CONTROL_INTERNAL, 24
 STB_IRQ_CONTROL_INTERNAL, 24
 Spm_Hal_ClearStandbyWakeupStatus, 25
 Spm_Hal_GetCurrentPowerMode, 26
 Spm_Hal_GetStandbyWakeupStatus, 26
 Spm_Hal_Init, 27
 Spm_Hal_SetPowerMode, 28
 Spm_PowerModeType, 24
 Spm_SleepTimeoutActionType, 24
 Spm_StbWakeupEnableType, 25
 Spm_ThresholdType, 25
Spm_Hal_ClearStandbyWakeupStatus
 Spm_Hal.c, 20
 Spm_Hal.h, 25
Spm_Hal_GetCurrentPowerMode
 Spm_Hal.c, 20
 Spm_Hal.h, 26
Spm_Hal_GetStandbyWakeupStatus
 Spm_Hal.c, 21
 Spm_Hal.h, 26
Spm_Hal_Init
 Spm_Hal.c, 21
 Spm_Hal.h, 27
Spm_Hal_SetPowerMode
 Spm_Hal.c, 22
 Spm_Hal.h, 28
Spm_PowerModeType
 Spm_Hal.h, 24
Spm_Reg_ClearACKTimeOutFlag

- AC784xx_Spm_Reg.h, [7](#)
- Spm_Reg_ClearStandbyWakeupStatus
 - AC784xx_Spm_Reg.h, [7](#)
- Spm_Reg_EnableSPLL
 - AC784xx_Spm_Reg.h, [8](#)
- Spm_Reg_EnableVHSI
 - AC784xx_Spm_Reg.h, [8](#)
- Spm_Reg_EnableXOSCBypassMode
 - AC784xx_Spm_Reg.h, [9](#)
- Spm_Reg_EnableXOSC
 - AC784xx_Spm_Reg.h, [9](#)
- Spm_Reg_GetACKTimeoutFlag
 - AC784xx_Spm_Reg.h, [10](#)
- Spm_Reg_GetLVDThreshold
 - AC784xx_Spm_Reg.h, [10](#)
- Spm_Reg_GetLVRThreshold
 - AC784xx_Spm_Reg.h, [10](#)
- Spm_Reg_GetModuleSleepACKStatus
 - AC784xx_Spm_Reg.h, [11](#)
- Spm_Reg_GetPowerControlMode
 - AC784xx_Spm_Reg.h, [12](#)
- Spm_Reg_GetPowerMode
 - AC784xx_Spm_Reg.h, [12](#)
- Spm_Reg_GetSPLLEnable
 - AC784xx_Spm_Reg.h, [13](#)
- Spm_Reg_GetSPLLStatus
 - AC784xx_Spm_Reg.h, [13](#)
- Spm_Reg_GetSleepAbortFlag
 - AC784xx_Spm_Reg.h, [12](#)
- Spm_Reg_GetStandbyWakeupEn
 - AC784xx_Spm_Reg.h, [13](#)
- Spm_Reg_GetStandbyWakeupStatus
 - AC784xx_Spm_Reg.h, [14](#)
- Spm_Reg_GetVHSIEnable
 - AC784xx_Spm_Reg.h, [14](#)
- Spm_Reg_GetVHSIStatus
 - AC784xx_Spm_Reg.h, [15](#)
- Spm_Reg_GetXOSCEnable
 - AC784xx_Spm_Reg.h, [15](#)
- Spm_Reg_GetXOSCStatus
 - AC784xx_Spm_Reg.h, [15](#)
- Spm_Reg_SelectACKTimeoutAction
 - AC784xx_Spm_Reg.h, [16](#)
- Spm_Reg_SelectLVDThreshold
 - AC784xx_Spm_Reg.h, [16](#)
- Spm_Reg_SelectLVRThreshold
 - AC784xx_Spm_Reg.h, [17](#)
- Spm_Reg_SetPowerMode
 - AC784xx_Spm_Reg.h, [17](#)
- Spm_Reg_SetStandbyWakeupEn
 - AC784xx_Spm_Reg.h, [18](#)
- Spm_SleepTimeoutActionType
 - Spm_Hal.h, [24](#)
- Spm_StbWakeupEnableType
 - Spm_Hal.h, [25](#)
- Spm_ThresholdType
 - Spm_Hal.h, [25](#)
- SpmCallback
 - Spm_ConfigType, [4](#)
- StandbyWakeupSource
 - Spm_ConfigType, [4](#)