



EAPI User Guide

Revision History

Revision	Date	Author	Changes
1_0	18 th November 2015	MM	First release
1_1	15 th January 2016	MM	Add COMe-A41-BT6 support
1_2	23 th February 2017	MM	Add COMe-A98-BT6, COMe-B09-BT6, SBC-A44-plTX , SBC-A80-plTX support
1_3	5 th September 2017	MM	Add Q7-B03 support
1_4	2 nd March 2018	MM	Add 'Reset Causes' functions for COMe-A98-BT6 Add COMe-A75-BT6, COMe-A72-BT6, COMe-C08-BT6 support Change backlight range from 0-100 to 0-255 Remove WEC7 support

1. Introduction

The EAPI library should be applicable to the following SECO modules:

Q7 Modules:

- Q7-881
- Q7-963
- Q7-978
- Q7-974
- Q7-A36
- uQ7-A76-J
- Q7-B03

In addition to these, EAPI library supports also the following SECO modules:

- COMe-948-BT6
- COMe-953-BT6
- COMe-A41-BT6

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- COMe-A98-BT6
- COMe-B09-BT6
- COMe-B75-BT6
- COMe-B72-BT6
- COMe-C08-BT6
- SBC-949-pITX
- SBC-992-pITX
- SBC-A44-pITX
- SBC-A80-pITX

The exported functions follow the Qseven(R) Specifications v.1.20, furthermore, EAPI library provide other functions for specific board features that EAPI standard doesn't contemplate.

2. Files description

The package contains files described below:

EAPI_User_Guide.pdf	This document
COM_EAPI_R1_0.pdf	Q7 standard library documentation (http://www.picmg.org/pdf/COM_EAPI_R1_0.pdf)
BIN\linux_32\libEAPI.a	EAPI SECO Library for Linux (x86 devices)
BIN\linux_32\EAPI_Test	EAPI SECO sample software for Linux (x86 devices)
BIN\linux_64\libEAPI.a	EAPI SECO Library for Linux (x64 devices)
BIN\linux_64\EAPI_Test	EAPI SECO sample software for Linux (x64 devices)
BIN\Win_32\Eapi.dll	EAPI SECO Dll for Windows XP/Vista/7/8/10/XPe/WES2009/WES7/WES8 (x86 devices)
BIN\Win_32\Eapi.lib	EAPI SECO Library for Windows XP/Vista/7/8/10/XPe/WES2009/WES7/WES8 (x86 devices)
BIN\Win_32\EAPI.exe	EAPI SECO sample software for XP/Vista/7/8/10/XPe/WES2009/WES7/WES8 (x86 devices)
BIN\Win_64\Eapi.dll	EAPI SECO Dll for Windows XP/Vista/7/8/10/WES7/WES8 (x64 devices)
BIN\Win_64\Eapi.lib	EAPI SECO Library for Windows XP/Vista/7/8/10/WES7/WES8 (x64 devices)
BIN\Win_64\EAPI.exe	EAPI SECO sample software for XP/Vista/7/8/10/WES7/WES8 (x64 devices)
Project\EAPI_WIN\EAPI_WIN.vcproj	EAPI SECO project for sample software for XP/Vista/7/8/10/XPe/WES2009/WES7/WES8 with Visual Studio 2008
Sources\Dll\Eapi.h	EAPI SECO header for Qseven standard functions
Sources\Dll\Eapi_Seco.h	EAPI SECO header for SECO functions
Sources\include*	EAPI SECO header for Qseven standard functions
Sources\Linux\main.cpp	EAPI SECO sample software source code for Linux
Sources\WIN*	EAPI SECO sample software source code for XP/Vista/7/8/10/XPe/WES2009/WES7/WES8

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3. EAPI supported Functions

EAPI Functions	Q7-881	Q7-963	Q7-978	Q7-974	Q7-A36	uQ7-A76-J	Q7-B03	COMe-948-BT6	COMe-953-BT6	COMe-A41-BT6	COMe-A98-BT6	COMe-B09-BT6	COMe-B75-BT6	COMe-B72-BT6	COMe-C08-BT6	SBC-949-pITX	SBC-992-pITX	SBC-A44-pITX	SBC-A80-pITX
EasiBoardGetName																			
EAPI_ID_BOARD_MANUFACTURER_STR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_NAME_STR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_REVISION_STR	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_BOARD_SERIAL_STR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_BIOS_REVISION_STR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_HW_REVISION_STR	-	-	-	-	-	-	-	-	✓	-	✓	✓	✓	✓	✓	-	-	✓	-
EAPI_ID_BOARD_PLATFORM_TYPE_STR	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_GET_EAPI_SPEC_VERSION	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_BOOT_COUNTER_VAL	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-	✓	-
EAPI_ID_BOARD_RUNNING_TIME_METER_VAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_BOARD_PNPID_VAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_BOARD_PLATFORM_REV_VAL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_BOARD_DRIVER_VERSION_VAL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_BOARD_LIB_VERSION_VAL	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EasiBoardGetValue																			
EAPI_ID_HWMON_CPU_TEMP	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_HWMON_CHIPSET_TEMP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_SYSTEM_TEMP	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_VCORE	-	-	-	-	-	-	-	✓	✓	-	✓	✓	✓	✓	✓	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_2V5	-	-	-	-	-	-	-	✓	-	-	✓	✓	✓	✓	✓	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_3V3	-	-	-	-	-	-	-	-	✓	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_VBAT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_5V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_5VSB	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_VOLTAGE_12V	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EAPI_ID_HWMON_FAN_CPU	-	-	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EAPI_ID_HWMON_FAN_SYSTEM	-	-	✓	✓	✓	✓	✓	✓	✓	-	✓	✓	✓	✓	✓	-	-	-	-
EapiVgaGetBacklightEnable	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EapiVgaSetBacklightEnable	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
EapiVgaGetBacklightBrightness	✓	✓	✓	✓ ₇	✓ ₇	✓ ₇	✓	✓	✓	✓ ₇	✓	✓	✓	✓	✓	✓	-	✓	✓
EapiVgaSetBacklightBrightness	✓	✓	✓	✓ ₇	✓ ₇	✓ ₇	✓	✓	✓	✓ ₇	✓	✓	✓	✓	✓	✓	-	✓	✓
EapiWDogGetCap	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EapiWDogStart	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EapiWDogTrigger	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EapiWDogStop	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
EapiI2CGetBusCap (I2C_EXTERNAL)	✓ ₁	✓ ₁	✓	✓ ₆	✓ ₆	✓ ₆	-	✓	✓	✓ ₆	✓	✓	✓	✓	✓	-	-	-	✓ ₉

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EapiI2CWriteReadRaw (I2C_EXTERNAL)	√ ₁	√ ₁	√	√ ₆	√ ₆	√ ₆	-	√	√	√ ₆	√	√	√	√	√	-	-	-	√ ₉
EapiI2CReadTransfer (I2C_EXTERNAL)	√ ₁	√ ₁	√	√ ₆	√ ₆	√ ₆	-	√	√	√ ₆	√	√	√	√	√	-	-	-	√ ₉
EapiI2CWriteTransfer (I2C_EXTERNAL)	√ ₁	√ ₁	√	√ ₆	√ ₆	√ ₆	-	√	√	√ ₆	√	√	√	√	√	-	-	-	√ ₉
EapiI2CProbeDevice (I2C_EXTERNAL)	√ ₁	√ ₁	√	√ ₆	√ ₆	√ ₆	-	√	√	√ ₆	√	√	√	√	√	-	-	-	√ ₉
EapiI2CGetBusCap (I2C_LVDS_1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	√ ₉
EapiI2CWriteReadRaw (I2C_LVDS_1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	√ ₉
EapiI2CReadTransfer (I2C_LVDS_1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	√ ₉
EapiI2CWriteTransfer (I2C_LVDS_1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	√ ₉
EapiI2CProbeDevice (I2C_LVDS_1)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	√	√ ₉
EapiGPIOGetDirectionCaps	√ ₂	√ ₂	√ ₂	√ ₅	√ ₅	√ ₅	-	√	√	√	√	√	√	√	√	-	-	√ ₈	√ ₉
EapiGPIOGetDirection	√ ₂	√ ₂	√ ₂	√ ₅	√ ₅	√ ₅	-	√	√	√	√	√	√	√	√	-	-	√ ₈	√ ₉
EapiGPIOSetDirection	√ ₂	√ ₂	√ ₂	√ ₅	√ ₅	√ ₅	-	-	-	-	-	-	-	-	-	-	-	√ ₈	√ ₉
EapiGPIOGetLevel	√ ₂	√ ₂	√ ₂	√ ₅	√ ₅	√ ₅	-	√	√	√	√	√	√	√	√	-	-	√ ₈	√ ₉
EapiGPIOSetLevel	√ ₂	√ ₂	√ ₂	√ ₅	√ ₅	√ ₅	-	√	√	√	√	√	√	√	√	-	-	√ ₈	√ ₉
EapiStorageCap	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
EapiStorageAreaRead	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
EapiStorageAreaWrite	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
EXTRA STANDARD FEATURES																			
EasiFanEnable	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	-	-	-	-
EasiFanDisable	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	-	-	-	-
EasiFanPWMGetCycle	-	-	√	√	√	√	√	-	-	-	√	√	√	√	√	-	-	-	-
EasiFanPWMSetCycle	√	√	√	√	√	√	√	-	-	-	√	√	√	√	√	-	-	-	-
EasiFanPWMGetDutyCycle	-	-	√	√	√	√	√	√	√	√	√	√	√	√	√	-	-	-	-
EasiFanPWMSetDutyCycle	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	-	-	-	-
EapiWDog_SetConfigAndStart	-	-	-	√	√	√	√	-	-	√	√	√	√	√	√	-	-	-	-
EapiGPIOSetCarrier	√	√	√	√	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-
EapiGPIOGetSerialCfg	√	√	√	√	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-
EapiGPIOSetSerialCfg	√	√	√	√	√	√	-	-	-	-	-	-	-	-	-	-	-	-	-
EapiGetResetCauses	-	-	-	-	-	-	-	-	-	-	√	√	√	√	√	-	-	-	-
EapiClearResetCauses	-	-	-	-	-	-	-	-	-	-	√	√	√	√	√	-	-	-	-

Notes:

- √₁ Not supported with Linux
- √₂ GPIO supported only on carrier with GPIO extender
- √₃ Speed reading only with 100% duty cycle
- √₄ Under Linux with kernel 3.8 or later, SP5100_TCO device must puts on BlackList
- √₅ GPIO supported only on carrier with GPIO extender, but not with SECOCQ7-3.5 carrier board under Windows 8.1 (32/64bit)
- √₆ Not supported under Windows 8.1 (32/64bit). With Linux (Ubuntu 15.04) 32/64bit, need to start I2C driver with **modprobe i2c-dev** command
- √₇ Not supported under Linux (Ubuntu 15.04) 32/64bit
- √₈ Supported only under Linux (Ubuntu 16.04) 32/64bit, WEC7, Windows 7 (with LPSS on PCI mode).
For Windows 8, 8.1, 10, use SW package downloadable from SECO web site.
Under Linux (Ubuntu 16.04) 32/64bit, are supported also GPIO08 (TS_INT#) and GPIO09 (TS_RST#)

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√₉ Supported only under Linux (Ubuntu 16.04) 32/64bit.
For Windows 8, 8.1, 10, use SW package downloadable from SECO web site.
Under Linux (Ubuntu 16.04) 32/64bit, are supported also GPIO08 (TS_INT#) and GPIO09 (TS_RST#)

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4. Supported OS

The following table contains supported Operating Systems for each SECO module:

Q7-881	WEC7, Linux (Ubuntu 10.04), Windows XP/7/Vista, XPe, WES2009, WES7
Q7-963	WEC7, Linux (Ubuntu 10.04), Windows XP/7/Vista, XPe, WES2009, WES7
Q7-978	WEC7, Linux (Ubuntu 12.04), Windows XP/7/Vista, XPe, WES2009, WES7
Q7-974	WEC7, Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8
Q7-A36	WEC7, Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8
uQ7-A76-J	WEC7, Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8
Q7-B03	Linux (Ubuntu 17.04), Windows 10
COMe-948-BT6	Linux (Ubuntu 15.04), Windows 7/8, WES7, WES8
COMe-953-BT6	Linux (Ubuntu 15.04), Windows 7/8, WES7, WES8
COMe-A41-BT6	WEC7, Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8
COMe-A98-BT6	Linux (Ubuntu 16.04), Windows 7/10, WES7
COMe-B09-BT6	Linux (Ubuntu 16.04), Windows 10
COMe-B75-BT6	Linux (Ubuntu 17.10), Windows 7/10, WES7
COMe-B72-BT6	Linux (Ubuntu 17.10), Windows 7/10, WES7
COMe-C08-BT6	Linux (Ubuntu 17.10 and kernel 4.15.0), Windows 10
SBC-949-pITX	WEC7, Linux (Ubuntu 12.04), Windows XP/7/Vista, XPe, WES2009, WES7
SBC-992-pITX	Linux (Ubuntu 13.04), Windows XP/7/Vista, XPe, WES2009, WES7
SBC-A44-pITX	WEC7, Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8
SBC-B80-pITX	Linux (Ubuntu 16.04), Windows 7/8/10, WES7, WES8

About Linux, we refer only to the tested distribution.

Working under Windows Vista, Windows 7 and WES 7, Windows 8 and WES 8, Windows 10, Linux you need to have **administrator privileges** for use EAPI SECO library.

Under Linux OS, using EApiBoardGetValue function calling EAPI_ID_HWMON_CPU_TEMP (where supported), you need to install '**msr-tools**' package for your distribution.

Under Linux OS, using I2C functions, with Bay Trail boards, you need to install '**i2c-tools**' package for your distribution.



5. Extra standard features

5.1 Fan Control Functions

The EApi library allows you to configure and control Fan speed by these functions.

With '**EApiFanEnable**' and '**EApiFanDisable**' function you can enabling and disabling PWM that control speed fan, '**EApiFanEnable**' function require also the Period (Cycle parameter) and the Duty Cycle (expressed in percent) for PWM.

'**EApiFanPWMGetCycle**', '**EApiFanPWMSetCycle**', '**EApiFanPWMGetDutyCycle**' and '**EApiFanPWMSetDutyCycle**' are used to get and set the Period and DutyCycle for PWM, they could be use not only for speed fan control but also for any kind of PWM system.

Our EAPI library integrate the following functions:

- EasiFanEnable
- EasiFanDisable
- EasiFanPWMGetCycle
- EasiFanPWMSetCycle
- EasiFanPWMGetDutyCycle
- EasiFanPWMSetDutyCycle

5.1.1 EapiFanEnable()

EApiStatus_t

EAPI_CALLTYPE

```
EapiFanEnable( __IN uint32_t Cycle,  
               __IN uint8_t DutyCycle);
```

Description:

Enable Fan PWM

Parameter:

Cycle

This parameter assumes different meaning depending on board is used on:

Q7-881 and Q7-963:

Number of steps (0-65535) of 3 MHz clock divided into 65535 single steps (46Hz-3MHz)

Q7-978, Q7-974, Q7-A36, uQ7-A76-J and Q7-B03:

Frequency value expressed in Hz (0-65535 Hz)

SBC-949-pITX, SBC-992-pITX and SBC-A44-pITX:

No external fan present

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COMe-953-BT6, COMe-948-BT6:

Not significant, there is a fixed frequency

COMe-A98-BT6, COMe-B09-BT6, COMe-B75-BT6, COMe-B72-BT6, and COMe-C08-BT6:

Frequency value expressed in Hz (0-65535 Hz)

Duty Cycle

Percent value (between 0 and 100)

Return Status Code:

Condition	Return Value
EAPI_STATUS_INVALID_PARAMETER	DutyCycle > 100 or Cycle > MAX_CYCLE_STEPS
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.1.2 EapiFanDisable()

EApiStatus_t

EAPI_CALLTYPE

EapiFanDisable(void);

Description:

Disable Fan PWM

Parameter:

None

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

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5.1.3 EapiFanPWMGetCycle()

EApiStatus_t

EAPI_CALLTYPE

EapiFanPWMGetCycle(__OUT uint32_t * Value);

Description:

Return current PWM cycle value

Parameter:

Value

Pointer to a buffer that receives the current PWM Cycle value

This parameter assumes different meaning depending on board is used on:

Q7-881 and Q7-963:

Number of steps (0-65535) of 3 MHz clock divided into 65535 single steps (46Hz-3MHz)

Q7-978, Q7-974, Q7-A36, uQ7-A76-J and Q7-B03:

Frequency value expressed in Hz (0-65535 Hz)

SBC-949-pITX, SBC-992-pITX and SBC-A44-pITX:

No external fan present

COMe-953-BT6, COMe-948-BT6:

Not significant, there is a fixed frequency

COMe-A98-BT6, COMe-B09-BT6, COMe-B75-BT6, COMe-B72-BT6, and COMe-C08-BT6:

Frequency value expressed in Hz (0-65535 Hz)

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.1.4 EapiFanPWMSetCycle()

EApiStatus_t

EAPI_CALLTYPE

EapiFanPWMSetCycle(__IN uint32_t Value);

Description:

Set the PWM cycle value

Parameter:

Value

PWM Cycle value to set

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**Return Status Code:**

Condition	Return Value
EAPI_STATUS_INVALID_PARAMETER	Cycle > MAX_CYCLE_STEPS
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.1.5 EapiFanPWMGetDutyCycle()**EApiStatus_t****EAPI_CALLTYPE****EapiFanPWMGetDutyCycle(__OUT uint32_t * Value);****Description:**

Return current PWM duty cycle value

Parameter:**Value**

Pointer to a buffer that receives the current PWM duty cycle value

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.1.6 EapiFanPWMSetDutyCycle()**EApiStatus_t****EAPI_CALLTYPE****EapiFanPWMSetDutyCycle(__OUT uint32_t * Value);****Description:**

Set the PWM duty cycle value

Parameter:**Value**

PWM duty cycle value to set

Return Status Code:www.seco.com

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Condition	Return Value
EAPI_STATUS_INVALID_PARAMETER	DutyCycle > 100
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

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5.2 Watch Dog Control Functions

5.2.1 EapiWDog_SetConfigAndStart()

EAPI_LIB_DEF

EApiStatus_t

EAPI_CALLTYPE

```
EapiWDog_SetConfigAndStart( __IN uint32_t delay_Timeout_msec,
                             __IN uint32_t event_Timeout_msec,
                             __IN uint32_t reset_Timeout_msec,
                             __IN uint32_t mode_Event,
                             __IN uint8_t mode_Timeout_unit,
                             __IN uint8_t mode_Delay_unit,
                             __IN uint8_t mode_Trigger_Type);
```

Description:

Configure and start Watch Dog setting additional parameter for Watch Dog not provided by EAPI standard definition.

Parameter:

delay_Timeout_msec

Initial delay for the watchdog timer in milliseconds. The first trigger must happen within (*delay* + EventTimeout) milliseconds, of calling **EapiWDog_SetConfigAndStart**

event_Timeout_msec

Watchdog timeout interval in milliseconds to trigger an event.

reset_Timeout_msec

Watchdog timeout interval in milliseconds to trigger a reset.

mode_Event

Set EAPI_WTD_MODE_SIGNAL to signalation on WDOUT / WDT signal:

Q7-978, Q7-974, Q7-A36, uQ7-A76-J, Q7-B03 on WDOUT signal on pin 72 on Q7 connector

COMe-953-BT6, COMe-948-BT6, COMe-A41-BT6, COMe-A98-BT6, COMe-B09-BT6, COMe-B75-BT6, COMe-B72-BT6, and COMe-C08-BT6: on WDT signal on pin B27 on ComEx connector

Set EAPI_WTD_MODE_PWRBTN_1SEC to Power button after 1 second

Set EAPI_WTD_MODE_PWRBTN_4SEC to Power button after 4 second

Set EAPI_WTD_MODE_SYSTEM_RESET to Reset

mode_Timeout_unit

Set EAPI_WTD_MODE_IN_MSEC to consider **reset_Timeout_msec** express in millisecond.

Set EAPI_WTD_MODE_TIMEOUT_IN_MINUTES to consider **reset_Timeout_msec** express in second.

mode_Delay_unit

Set EAPI_WTD_MODE_IN_MSEC to consider **delay_Timeout_msec** express in second.

Set EAPI_WTD_MODE_DELAY_IN_MINUTES to consider **delay_Timeout_msec** express in second.

mode_Trigger_Type

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Set EAPI_WTD_MODE_ENABLE_SW_TRIGGER to enable software trigger

Set EAPI_WTD_MODE_ENABLE_HW_TRIGGER to enable hardware trigger

Q7-978, Q7-974, Q7-A36, uQ7-A76-J and Q7-B03 on WDTRIG# signal on pin 70 of Q7 connector

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

Note that Watchdog Modes are mutually exclusive.

The Watchdog has been specified as a single stage Watchdog that resets the system when timed out.

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5.3 GPIO Control Functions

The EApi library allows you to work with GPIO extender present on SECO carrier boards and also to configure the serial port present on SECO picoITX carrier board (SECOCQ7-pITX-Xboard) as RS232 or RS485 or RS422.

5.3.1 EapiGPIOSetCarrier()

EApiStatus_t

EAPI_CALLTYPE

EapiGPIOSetCarrier(__IN uint8_t Carrier_ID);

Description:

Working with SECO Pico ITX carrier board as SECOCQ7-pITX-Xboard, is necessary to call once this function before using GPIO functions in order to set EAPI library to work with this carrier board

Parameter:

Carrier_ID

Set CARRIER_NONE to work without carrier board GPIO extender

Set CARRIER_M901 to work with **SECOCQ7-pITX-Xboard** carrier board GPIO extender

Set CARRIER_0A42 to work with **SECOCQ7-3.5** carrier board GPIO extender

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.3.2 EapiGPIOGetSerialCfg()

EApiStatus_t

EAPI_CALLTYPE

EapiGPIOGetSerialCfg(__OUT uint8_t * GPIO_SERIAL_MODE);

Description:

Return current serial port configuration for **SECOCQ7-pITX-Xboard** carrier board

Parameter:

GPIO_SERIAL_MODE

Pointer to a buffer that receives the current serial port configuration

Return Status Code:

Condition	Return Value
-----------	--------------

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EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.3.3 EapiGPIOSetSerialCfg()

EApiStatus_t

EAPI_CALLTYPE

EapiGPIOSetSerialCfg(__IN uint8_t GPIO_SERIAL_MODE);

Description:

Set the serial port configuration for **SECOCQ7-pITX-Xboard** carrier board

Parameter:

GPIO_SERIAL_MODE

Serial port configuration for **SECOCQ7-pITX-Xboard** carrier board value to set:

GPIO_SERIAL_MODE_RS232 for RS232

GPIO_SERIAL_MODE_RS422 for RS422

GPIO_SERIAL_MODE_RS485TX RS485 reciving mode

GPIO_SERIAL_MODE_RS485RX RS485 trasmitting mode

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.4 Reset Causes Functions

The EApi library allows you with '**EApiGetResetCauses**' and '**EApiClearResetCauses**' functions to get and clear reset causes.

There are three reset causes supported:

- Reset button pressed (RESET_CAUSE_RESET)
- WDT timeout expired (RESET_CAUSE_WDT)
- Power failure (RESET_CAUSE_PWFALL)

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5.4.1 EapiGetResetCauses()

EApiStatus_t

EAPI_CALLTYPE

EApiGetResetCauses(__IN uint32_t * ResetCauses);

Description:

Get reset causes value

Parameter:

ResetCauses

Pointer to a buffer that receives the reset causes mask.

RESET_CAUSE_RESET = (1 << 0) for reset button pressed

RESET_CAUSE_WDT = (1 << 1) for WDT timeout expired

RESET_CAUSE_PWFALL = (1 << 2) for power failure

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

5.4.2 EapiClearResetCauses()

EApiStatus_t

EAPI_CALLTYPE

EapiClearResetCauses(__OUT uint32_t ResetCauses);

Description:

Clear the selected reset causes.

Parameter:

ResetCauses

Reset causes mask to clear.

RESET_CAUSE_RESET = (1 << 0) for reset button pressed

RESET_CAUSE_WDT = (1 << 1) for WDT timeout expired

RESET_CAUSE_PWFALL = (1 << 2) for power failure

Return Status Code:

Condition	Return Value
EAPI_STATUS_UNSUPPORTED	Unsupported Function
EAPI_STATUS_SUCCESS	Success

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Appendix A - Functions pinout

I2C's functions drive I2C_Clock and I2C_Data on the following pins:

Q7-881	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
Q7-963	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
Q7-978	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
Q7-974	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
Q7-A36	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
uQ7-A76-J	I2C_CLK on Pin 66 and I2C_DAT on Pin 67 on Q7 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
Q7-B03	Not supported
SBC-949-pITX	Not supported
SBC-992-pITX	Not supported
SBC-A44-pITX	I2C_CLK on Pin 46 and I2C_DAT Pin 48 on LVDS connector (CN16) (Use EAPI_ID_I2C_LVDS_1ID for calling I2C functions)
SBC-A80-pITX	I2C_CLK on Pin 6 and I2C_DAT Pin 8 on CN10 connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions) I2C_CLK on Pin 60 and I2C_DAT Pin 58 on CN16 connector (Use EAPI_ID_I2C_LVDS_1ID for calling I2C functions)
COMe-953-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-948-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-A41-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-A98-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-B09-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-B75-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-B72-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)
COMe-C08-BT6	I2C_CLK on Pin B33 and I2C_DAT Pin B34 on ComE connector (Use EAPI_ID_I2C_EXTERNAL ID for calling I2C functions)

GPIO's functions drive GPIO on the following pins:

Q7-881	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
Q7-963	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
Q7-978	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
Q7-974	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
Q7-A36	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
uQ7-A76-J	Pin 2-10 on CN10 connector on SECOCQ7-pITX/Xboard carrier board all configurable as Input or Output
Q7-B03	Not supported
SBC-949-pITX	Not supported
SBC-992-pITX	Not supported
SBC-A44-pITX	Pin 3-4-5-6-7-8-9-10 on CN23 connector and pin 45-46 on LVDS connector (CN16)
SBC-A80-pITX	Pin 2-3-4-5-6-7-8-9- on CN32 connector and pin 4-5 on CN 10 connector
COMe-953-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector
COMe-948-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector
COMe-A41-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector
COMe-A98-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector
COMe-B09-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector
COMe-B75-BT6	Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector

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COMe-B72-BT6 *Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector*
COMe-C08-BT6 *Pin A54-A63-A67-A85 as Input and A93-B54-B57-B63 as Output on ComEx connector*

EApiBoardGetValue function for EAPI_ID_HWMON_FAN_CPU monitor following pin:

Q7-881	<i>Not supported</i>
Q7-963	<i>Not supported</i>
Q7-978	<i>Pin 3 on CN2 connector</i>
Q7-974	<i>Pin 3 on CN2 connector</i>
Q7-A36	<i>Pin 3 on CN2 connector</i>
uQ7-A76-J	<i>Pin 3 on CN2 connector</i>
Q7-B03	<i>Not supported</i>
SBC-949-pITX	<i>Pin 3 on CN9 connector</i>
SBC-992-pITX	<i>Pin 3 on CN6 connector</i>
SBC-A44-pITX	<i>Pin 3 on CN6 connector</i>
SBC-A80-pITX	<i>Pin 3 on CN20 connector</i>
COMe-953-BT6	<i>Pin 3 on CN3 connector</i>
COMe-948-BT6	<i>Pin 3 on CN7 connector</i>
COMe-A41-BT6	<i>Pin 3 on CN3 connector</i>
COMe-A98-BT6	<i>Pin 3 on CN4 connector</i>
COMe-B09-BT6	<i>Pin 3 on CN4 connector</i>
COMe-B75-BT6	<i>Pin 3 on CN4 connector</i>
COMe-B72-BT6	<i>Pin 3 on CN4 connector</i>
COMe-C08-BT6	<i>Pin 3 on CN4 connector</i>

EApiBoardGetValue function for EAPI_ID_HWMON_FAN_SYSTEM monitor following pin:

Q7-881	<i>Not supported</i>
Q7-963	<i>Not supported</i>
Q7-978	<i>FAN_TACHION Pin 195 on Q7 connector</i>
Q7-974	<i>FAN_TACHION Pin 195 on Q7 connector</i>
Q7-A36	<i>FAN_TACHION Pin 195 on Q7 connector</i>
uQ7-A76-J	<i>FAN_TACHION Pin 195 on Q7 connector</i>
Q7-B03	<i>FAN_TACHION Pin 195 on Q7 connector</i>
SBC-949-pITX	<i>Not supported</i>
SBC-992-pITX	<i>Not supported</i>
SBC-A44-pITX	<i>Not supported</i>
SBC-A80-pITX	<i>Not supported</i>
COMe-953-BT6	<i>Pin B102 on ComEx connector</i>
COMe-948-BT6	<i>Pin B102 on ComEx connector</i>
COMe-A41-BT6	<i>Pin B102 on ComEx connector</i>
COMe-A98-BT6	<i>Pin B102 on ComEx connector</i>
COMe-B09-BT6	<i>Pin B102 on ComEx connector</i>
COMe-B75-BT6	<i>Pin B102 on ComEx connector</i>

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COMe-B72-BT6	<i>Pin B102 on ComEx connector</i>
COMe-C08-BT6	<i>Pin B102 on ComEx connector</i>

EAPI fan control functions drive following pin:

Q7-881	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
Q7-963	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
Q7-978	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
Q7-974	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
Q7-A36	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
uQ7-A76-J	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
Q7-B03	<i>FAN_PWMOUT Pin 196 on Q7 connector</i>
SBC-949-plTX	<i>No external fan present</i>
SBC-992-plTX	<i>No external fan present</i>
SBC-A44-plTX	<i>No external fan present</i>
SBC-A80-plTX	<i>No external fan present</i>
COMe-953-BT6	<i>Pin B101 on ComEx connector</i>
COMe-948-BT6	<i>Pin B101 on ComEx connector</i>
COMe-A41-BT6	<i>Pin B101 on ComEx connector</i>
COMe-A98-BT6	<i>Pin B101 on ComEx connector</i>
COMe-B09-BT6	<i>Pin B101 on ComEx connector</i>
COMe-B75-BT6	<i>Pin B101 on ComEx connector</i>
COMe-B72-BT6	<i>Pin B101 on ComEx connector</i>
COMe-C08-BT6	<i>Pin B101 on ComEx connector</i>

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