



SigmaStar Camera Timer User Guide

Version 0.1



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REVISION HISTORY

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0.1	<ul style="list-style-type: none">Initial release	12/18/2019



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1. USAGE

1.1. Enabling Timer

1. Enable Timer engine – set "TIMER_EN" to 1.
2. Trigger counter – set "TIMER_TRIG" to 1.
3. Read timer from register "TIMER_CAP[31:0]."

1.2. Setting Maximum Timer

1. Set the value to "TIMER_MAX[31:0]."
2. Enable Timer.
3. If counter is over the "TIMER_MAX[31:0]", then "TIMER_HIT" will assert.

2. REGISTER TABLE

2.1. TIMER0 Register (Bank = 30)

TIMER0 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
10h (3020h)	REG3020	7:0	Default : 0x00	Access : R/W
	-	7:2	Reserved.	
	TIMER_TRIG	1	set: Enable timer counting one time (from 0 to max, then stop). clear: By reset itself OR set reg_timer_en.	
	TIMER_EN	0	set: Enable timer counting rolled (from 0 to max, then rolled). clear: By reset itself OR set reg_timer_trig.	
10h (3021h)	REG3021	7:0	Default : 0x00	Access : R/W
	-	7:1	Reserved.	
	TIMER_INT_EN	0	set: Enable interrupt. clear: By reset itself.	
11h (3022h)	REG3022	7:0	Default : 0x00	Access : RO
	-	7:1	Reserved.	
	TIMER_HIT	0	assert: When counter enabled and matches reg_timer_max. deassert: By write 1 OR set reg_timer_en, reg_timer_once, reg_timer_max.	
12h (3024h)	REG3024	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[7:0]	7:0	Timer maximum value.	
12h (3025h)	REG3025	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[15:8]	7:0	See description of '3024h'.	
13h (3026h)	REG3026	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[23:16]	7:0	See description of '3024h'.	
13h (3027h)	REG3027	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[31:24]	7:0	See description of '3024h'.	
14h (3028h)	REG3028	7:0	Default : 0x00	Access : RO
	TIMER_CAP[7:0]	7:0	Timer current value.	

TIMER0 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
			Note: With non-32-bit-data system, please read from LSB.	
14h (3029h)	REG3029	7:0	Default : 0x00	Access : RO
	TIMER_CAP[15:8]	7:0	See description of '3028h'.	
15h (302Ah)	REG302A	7:0	Default : 0x00	Access : RO
	TIMER_CAP[23:16]	7:0	See description of '3028h'.	
15h (302Bh)	REG302B	7:0	Default : 0x00	Access : RO
	TIMER_CAP[31:24]	7:0	See description of '3028h'.	

2.2. TIMER1 Register (Bank = 30)

TIMER1 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
20h (3040h)	REG3040	7:0	Default : 0x00	Access : R/W
	-	7:2	Reserved.	
	TIMER_TRIG	1	set: Enable timer counting one time (from 0 to max, then stop). clear: By reset itself OR set reg_timer_en.	
	TIMER_EN	0	set: Enable timer counting rolled (from 0 to max, then rolled). clear: By reset itself OR set reg_timer_trig.	
20h (3041h)	REG3041	7:0	Default : 0x00	Access : R/W
	-	7:1	Reserved.	
	TIMER_INT_EN	0	set: Enable interrupt. clear: By reset itself.	
21h (3042h)	REG3042	7:0	Default : 0x00	Access : RO
	-	7:1	Reserved.	
	TIMER_HIT	0	assert: When counter enabled and matches reg_timer_max. deassert: By write 1 OR set reg_timer_en, reg_timer_once, reg_timer_max.	
22h (3044h)	REG3044	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[7:0]	7:0	Timer maximum value.	
22h (3045h)	REG3045	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[15:8]	7:0	See description of '3044h'.	
23h (3046h)	REG3046	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[23:16]	7:0	See description of '3044h'.	
23h (3047h)	REG3047	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[31:24]	7:0	See description of '3044h'.	
24h (3048h)	REG3048	7:0	Default : 0x00	Access : RO
	TIMER_CAP[7:0]	7:0	Timer current value. Note: With non-32-bit-data system, please read from LSB.	
24h (3049h)	REG3049	7:0	Default : 0x00	Access : RO
	TIMER_CAP[15:8]	7:0	See description of '3048h'.	
25h	REG304A	7:0	Default : 0x00	Access : RO



TIMER1 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
(304Ah)	TIMER_CAP[23:16]	7:0	See description of '3048h'.	
25h	REG304B	7:0	Default : 0x00	Access : RO
(304Bh)	TIMER_CAP[31:24]	7:0	See description of '3048h'.	

2.3. TIMER2 Register (Bank = 30)

TIMER2 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
30h (3060h)	REG3060	7:0	Default : 0x00	Access : R/W
	-	7:2	Reserved.	
	TIMER_TRIG	1	set: Enable timer counting one time (from 0 to max, then stop). clear: By reset itself OR set reg_timer_en.	
	TIMER_EN	0	set: Enable timer counting rolled (from 0 to max, then rolled). clear: By reset itself OR set reg_timer_trig.	
30h (3061h)	REG3061	7:0	Default : 0x00	Access : R/W
	-	7:1	Reserved.	
	TIMER_INT_EN	0	set: Enable interrupt. clear: By reset itself.	
31h (3062h)	REG3062	7:0	Default : 0x00	Access : RO
	-	7:1	Reserved.	
	TIMER_HIT	0	assert: When counter enabled and matches reg_timer_max. deassert: By write 1 OR set reg_timer_en, reg_timer_once, reg_timer_max.	
32h (3064h)	REG3064	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[7:0]	7:0	Timer maximum value.	
32h (3065h)	REG3065	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[15:8]	7:0	See description of '3064h'.	
33h (3066h)	REG3066	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[23:16]	7:0	See description of '3064h'.	
33h (3067h)	REG3067	7:0	Default : 0xFF	Access : R/W
	TIMER_MAX[31:24]	7:0	See description of '3064h'.	
34h (3068h)	REG3068	7:0	Default : 0x00	Access : RO
	TIMER_CAP[7:0]	7:0	Timer current value. Note: With non-32-bit-data system, please read from LSB.	
34h (3069h)	REG3069	7:0	Default : 0x00	Access : RO
	TIMER_CAP[15:8]	7:0	See description of '3068h'.	
35h	REG306A	7:0	Default : 0x00	Access : RO



TIMER2 Register (Bank = 30)				
Index (Absolute)	Mnemonic	Bit	Description	
(306Ah)	TIMER_CAP[23:16]	7:0	See description of '3068h'.	
35h	REG306B	7:0	Default : 0x00	Access : RO
(306Bh)	TIMER_CAP[31:24]	7:0	See description of '3068h'.	