PRODUCT DATASHEET

SGTM16-UW

ULTRA LOW POWER TIMING MODULE FOR UNDERWATER

PRODUCT OVERVIEW

SGTM16-UW is the least consuming precision clock module of Syrlinks. It uses a 50mW 16.384 EWOS and the SGTM16 can be used as a PPS time keeper in all highly battery-constraint underwater systems. The Module will automatically adjust the OCXO frequency and phase to the external PPS reference (under GNSS) with an record high precision at 10-11 level (0,02ppb). Once locked, it can be deployed in GNSS-denied environment (underwater) and will keep a precise synchronization in free-running mode for the embedded electronics. SGTM16 is ideal to reduce battery size and extend underwater mission time. Its thermal sensitivity is about ±50ppb but can be improved down to ±2ppb thanks to a specific firmware on demand.

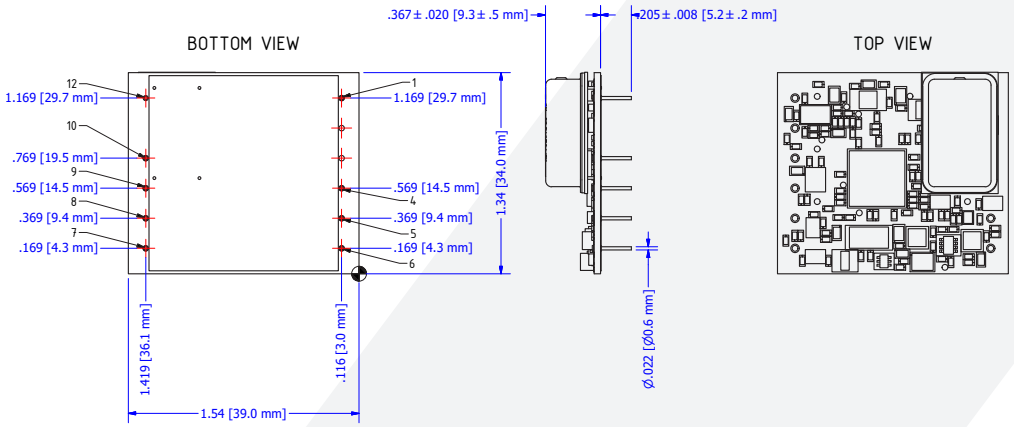
KEY FEATURES

- 16.384 MHz HCMOS output
- ±2 or ±50 ppb (typ.) with or without thermal compensation
- 90 mW @ 25°C (typ.)
- ±2 ppb/day after 30 days (typ.)
- Possible replacement of Chip Scale Atomic Clock

ORDERING INFORMATIONS IS AVAILABLE ON THE LAST PAGE

DIMENSIONS & PIN-OUT

PIN	FUNCTION
1	Vtune
4	Tune Enable
5	TX
6	RX
7	Vcc
8	GND
9	1PPS IN
10	1PPS OUT
12	RF OUT



For further information, please contact us: **sales@slx-timing.com** - **www.slx-timing.com** - Tel: +33 (0)2 99 00 94 52

SGTM16-UW

ULTRA LOW POWER TIMING MODULE FOR UNDERWATER

ELECTRICAL CHARACTERISTICS

PARAMETERS	UNIT	MIN	TYP.	MAX	NOTE	COMMENTS
Output Frequency	MHz		16.384		1	
Temperature Range						
Operating	°C	-10		+45		Stay functional at +50°C but stability may not be met
Storage	°C	-55		+95		
Supply Voltage	V	3.15	3.3	3.45		± 5% or 5V on request
Supply Current						
Warm up	mA			230	3	During 10s max @25°C / 20s max @ 5°C
Steady state / -10°C	mA		42	50	1	
Steady state / +5°C	mA		34	39	1	
Steady state / +25°C	mA		27	31	1	
Steady state / +45°C	mA		18	21	1	
Frequency Stability						
Initial frequency accuracy	ppm		±0.5	±1	1	+25°C referred to nominal frequency
Vs operating temperature range	ppb		±50	±90	1	peak to peak drift
	ppb		±2	±4	1	peak to peak drift
Vs supply voltage variation	ppm		±0.1	±0.2	2	3.3V ± 5%
Vs load	ppm		±0.1	±0.2	2	(10 kΩ//15 pF) ± 10%
Short-term *(τ=0.1s)*	10^{-11}		2	10	2	Allan deviation @16.384 MHz
(τ=1s)	10^{-11}		3	10	2	
Aging						
Per day	ppb		±2	±5	2	After 30 days
First year	ppm			±1.5	2	
After 10 years	ppm			±5	2	
Acceleration sensitivity	ppb/G		±1		2	Worst direction
Warm-Up Time	sec			10	3	To ±1 ppm of final frequency (1 hour) at 25°C
	sec			60	3	To ±100 ppb of final frequency (1 hour) at 25°C
Retrace	ppb			±10	3	24h work after 24 off
RF Output Level						
Load	pF		15		3	1 MΩ
Signal Level - Vh	V	2.4			3	
Signal Level - Vl	V			0.4	3	
Rise \ Fall Time	ns			8	3	10% - 80%
Duty Cycle	%	45		55	3	
1 PPS Output Parameters						
Load	pF		10		3	1 MΩ
Rise \ Fall Time	ns			8	3	10% - 80%
Signal Level - Vh	V	2.4			3	
Signal Level - Vl	V			0.4	3	
Level	V	0		Vcc	3	
1 PPS Input Parameters						
Format			Rising edge			
Load	MΩ		1		3	
Logic low level	V	< 0.4			3	
Logic high level	V			2.4 to VCC	3	

NOTES

1. Parameter inspected at 100%
2. Parameter inspected by sampling
3. Parameter guaranteed by design & characterization

SGTM16-UW

ULTRA LOW POWER TIMING MODULE FOR UNDERWATER

PARAMETERS	UNIT	MIN	TYP.	MAX	NOTE	COMMENTS
Serial Communications						
▪ Protocol			RS-232		3	
▪ Format	V	0		Vcc		CMOS
▪ Baud Rate			57600		3	
1 PPS accuracy 1σ	ns		±32			
Holdover stability	µs	±100		±600		over 24h (at +25°C)
Weight	grams		10			

ENVIRONMENTAL CONDITIONS

Soldering instructions	Hand soldering with recommended pins temperature: 235°C ±5°C, t=10s ±05s *(260°C max for 5s max)* Reflow soldering and other soldering methods are prohibited
Mounting instructions	Pin receptacles mounted into PCB can be used. Reference example : 0338-0-15-XX-15-XX-10-0
PCB cleaning/washing	Not washable

OCXO HERMETICITY

Metallic housing hermetically sealed
Fine Leaks and Gross Leaks tests performed 100%

ORDERING INFORMATION

SGTM 16 - 3V3 - A - H1 - XX

FREQUENCY (MHz)

CODE	SPECIFICATION
16	16.384

POWER SUPPLY

CODE	SPECIFICATION
3V3	3V3

OUTPUT

CODE	SPECIFICATION
H	HCMOS

SW OPTIONS

CODE	SPECIFICATION
CO	Compensation OFF
CT	Thermal Compensation

RESONATOR TYPE

CODE	SPECIFICATION
Blank	AT-cut

TEMPERATURE RANGE

CODE	SPECIFICATION
A	-10°C/+45°C

PACKAGE

CODE	SPECIFICATION
1	DIL14 Low

For further information, please contact us: **sales@slx-timing.com** - **www.slx-timing.com** - Tel: +33 (0)2 99 00 94 52