Timing and high precision GNSS modules

P

	Timing modules					High precision GNSS, dead reckoning, and correction modules						
	RCB-F9T	ZED-F9T	LEA-M8F	LEA-M8T	NEO-M8T	NEO-M8P-0	NEO-M8P-2	NEO-D9S	ZED-F9P	ZED-F9H	ZED-F9K	ZED-F9R
Grade												
Automotive								•			•	
Professional		•	•	•	•	•	•	•	•	•		•
Standard	•											
Physical												
Image		ZED-F9T	LEA-M8			NEO-M8P	NEO-D9S		ZED-F9			
Size [mm]	31.7 x 67.2	17 x 22 x 2.4	17.0 x 22.4			12.2 x 16.0 x 2.4			17 x 22 x 2.4			
Package & pins	8 pins	LGA 54	LCC 28			LCC 24			LGA 54			
GNSS												
GPS / QZSS	•	•	•	•	•	•	•		•	•	•	•
GLONASS	•	•	•	•	•	•	•		•	•	•	•
Galileo	•	•		•	•				•	•	•	•
BeiDou	•	•	•	•	•	•	•		•	•	•	•
Number of concurrent GNSS	4	4	2	3	3	2	2		4	4	4	4
Multi-band	•	•							•	•	•	•
Interfaces												
UART	1	2	1	1	1	1	1	2	2	2	2	2
USB		1	1	1	1	1	1	1	1	1	1	1
SPI		1	1	1	1	1	1	1	1	1	1	1
DDC (I2C compliant)		1	1	1	1	1	1	1	1	1	1	1
Features												
Programmable (flash)	•	•	•	•	•	•	•	•	•	•	•	•
Data logging	•	•		•	•	•	•		•	•		
Carrier phase output	•	•		•	•	•	•		•			•
Additional SAW	•	•	•	•	•	•	•	•	•	•	•	•
Additional LNA			•	•	•	•	•					
RTC crystal	•	•		•	•	•	•	•	•	•	•	•
Oscillator	T	T	V	T	T	T	T	T	T	T	T	T
RTK rover						•	•		•		•	•
RTK base station							•		•			
Moving base						•	•		•			
Survey-in and fixed mode	•	•	•	•	•		•		•			
Built-in sensor											•	•
Time pulse	2	2	1	2	2	1	1		1	1	1	1
Time mark input		2	2	2	2	1	1		1	1	1	1
Frequency output			•									
Power supply												
2.7 V – 3.6 V	•	•		•	•	•	•	•	•	•	•	•
3.0 V – 3.6 V			•									

T = TCXO   V = VCTCXO

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Positioning chips and dead reckoning modules

	Dead reckoning GNSS modules and chips					Standard precision GNSS chips							
	EVA-M8E	NEO-M8L	NEO-M8U	UBX-M8030-KA-DR	UBX-M8030-KT-DR	UBX-M10050-KB	UBX-M9140-KA	UBX-M9140-KB	UBX-M8230-CT	UBX-M8030-CT	UBX-M8030-KA	UBX-M8030-KT	UBX-G8020-KT
Grade													
Automotive		•		*			*				*		
Professional	•	•	•		•	•		•				•	•
Standard									•	•			
Physical													
Image													
Size [mm]	7 x 7 x 1.1	12.2 x 16.0 x 2.4		5.0 x 5.0 x 0.59		4.0 x 4.0 x 0.55	5.0 x 5.0 x 0.59		2.99 x 3.21 x 0.36	5.0 x 5.0 x 0.59			
Package & pins	LGA 43	LCC 24		QFN40		QFN28	QFN40		WL-CSP47	QFN40			
GNSS													
GPS / QZSS	•	•	•	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•	•	•	•
Galileo	•	•	•	•	•	•	•	•	cm	•	•	•	
BeiDou	•	•	•	•	•	•	•	•	•	•	•	•	
Number of concurrent GNSS	3	3	3	3	3	4	4	4	3	3	3	3	1
Interfaces													
UART	1	1	1	1	1	•	2	2	1	1	1	1	1
USB	1	1	1	1	1		1	1		1	1	1	1
SPI	1	1	1	1	1	•	1	1	1	1	1	1	1
DDC (I2C compliant)	1	1	1	1	1	•	1	1	1	1	1	1	1
Features													
Programmable (flash)	E	•	•	•	•		S	S		S	S	S	
Data logging	E	•	•	•	•		S	S	S	S	S	S	S
Data batching						•	•	•	•				
RTC crystal	o	•	•	S	S	S	S	S	S	S	S	S	S
Oscillator	T	C/T	C	C/T	C/T	C/T	T	T	T	C/T	C/T	C/T	C/T
Antenna supply & supervisor		S	S	S	S	S	S	S		S	S	S	S
Time pulse	1	1	1	2	2	1	2	2		2	2	2	2
Built-in sensor		•	•										
Power supply													
1 V – 1.8 V						•							
1.4 V – 3.6 V				•	•				•	•	•	•	•
1.65 V – 2.0 V							•	•					
1.65 V – 3.6 V													
2.25 V – 3.6 V							•	•					
2.7 V – 3.6 V	•	•	•										
3.0 V – 3.6 V		•											

* = Operating temperature -40 °C to +105 °C
cm = Only supported in continuous mode
 o = Optional, or requires external components

C/T = Crystal and TCXO supported
 T = TCXO (supported in chip)
 C = Crystal

S = Supported, may require ext. components
E = External flash required

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Standard precision GNSS modules

	Standard precision GNSS SiP modules						Standard precision GNSS modules					
	ZOE-M8B	ZOE-M8G	ZOE-M8Q	EVA-M8M	EVA-M8Q	EVA-8M	MAX-M10S	MAX-M8C	MAX-M8Q	MAX-M8W	MAX-8C	MAX-8Q
Grade												
Automotive												
Professional	•	•	•	•	•	•	•	•	•	•	•	•
Standard												
Physical												
Image												
Size [mm]	4.5 x 4.5 x 1.0			7.0 x 7.0 x 1.1			9.7 x 10.1 x 2.5					
Package & pins	S-LGA 51			LGA 43			LCC 18					
GNSS												
GPS / QZSS	•	•	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•	•	•
Galileo	cm	•	•	•	•		•	•	•	•		
BeiDou	•	•	•	•	•		•	•	•	•		
Number of concurrent GNSS	3	3	3	3	3	1	4	3	3	3	1	1
Interfaces												
UART	1	1	1	1	1	1	1	1	1	1	1	1
USB				1	1	1						
SPI	1	1	1	1	1	1						
DDC (I2C compliant)	1	1	1	1	1	1	1	1	1	1	1	1
Features												
Programmable (flash)		E	E	E	E							
Data logging	E	E	E	E	E	E						
Data batching	•						•					
Additional SAW	•	•	•				•					
Additional LNA	•	•	•				•					
RTC crystal	o	o	o	o	o	o	•	♦	•	•	♦	•
Oscillator	T	T	T	C	T	C	T	C	T	T	C	T
Built-in antenna supply & supervisor										•		
Time pulse		1	1	1	1	1	1	1	1	1	1	1
Power supply												
1.71 V – 1.89 V	•	•										
1.65 V – 3.6 V				•		•		•			•	
2.7 V – 3.6 V			•		•		•		•	•		•

cm = Only supported in continuous mode
E = External flash required
o = Optional, or requires external components
♦ = Yes, but with higher backup current
C = Crystal
T = TCXO

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Standard precision GNSS modules

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	Standard precision GNSS modules							Standard precision GNSS antenna modules		
	LEA-M8S	**NEO-M9N**	**NEO-M8M**	**NEO-M8N**	**NEO-M8Q**	**NEO-M8Q-01A**	**NEO-8Q**	**CAM-M8C**	**CAM-M8Q**	**SAM-M8Q**
Grade										
Automotive						*				
Professional	•	•	•	•	•		•	•	•	•
Standard										
Physical										
Image										
Size [mm]	17.0 x 22.4 x 2.4	12.2 x 16.0 x 2.4						9.6 x 14.0 x 1.95		15.5 x 15.5 x 6.3
Package & pins	LCC 28	LCC 24						LCC 31		LGA 20
GNSS										
GPS / QZSS	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•
Galileo	•	•	•	•	•	•		•	•	•
BeiDou	•	•	•	•	•	•		•	•	
Number of concurrent GNSS	3	4	3	3	3	3	1	3	3	3
Interfaces										
UART	1	1	1	1	1	1	1	1	1	1
USB	1	1	1	1	1	1	1			
SPI		1	1	1	1	1	1	1	1	
DDC (I2C compliant)	1	1	1	1	1	1	1	1	1	1
Features										
Programmable (flash)		•		•						
Data logging		•		•						
Additional SAW	•	•		•	•		•	•	•	•
Additional LNA		•		•	•		•	•	•	•
RTC crystal	•	•	•	•	•	•	•	♦	•	•
Oscillator	T	T	C	T	T	T	T	C	T	T
Built-in antenna								•	•	•
Built-in antenna supply & supervisor	•									
Time pulse	1	1	1	1	1	1	1	1	1	1
Power supply										
1.65 V – 3.6 V			•					•		
2.7 V – 3.6 V	•	•		•	•	•	•		•	•

* = Operating temperature -40 °C to +105 °C   ♦ = Yes, but with higher backup current   C = Crystal / T = TCXO

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