Timing and high precision GNSS modules

P

	Timing modules							High precision GNSS, dead reckoning, and correction modules							
	RCB-F9T	ZED-F9T	LEA-F9T	LEA-M8F	LEA-M8T	NEO-M8T	NEO-F10T	NEO-F9P	NEO-M8P	NEO-D9C	NEO-D9S	ZED-F9P	ZED-F9H	ZED-F9K	ZED-F9R
Grade															
Automotive										•	•			•	
Professional		•	•	•	•	•	•	•	•	•	•	•	•		•
Standard	•														
Physical															
Image															
Size [mm]	31.7 x 67.2	17.0 x 22.4 x 2.4				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	•	•	•	•	•	•	•	•	•			•	•	•	•
Concurrent GNSS	4	4	4	2	3	3	4	4	2	2	1	4	4	4	4
Multi-band	▽	▽	■				•	•				•	•	•	•
QZSS L6 band										•					
Satellite L-band											•				
Interfaces															
UART	1	2	1	1	1	1	1	2	1	2	2	2	2	2	2
USB		1	1	1	1	1		1	1	1	1	1	1	1	1
SPI		1	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	1
Features															
Programmable (flash)	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Data logging	•	•	•		•	•		•	•			•	•		
Carrier phase output	•	•	•		•	•	•	•	•			•			•
Additional SAW	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Additional LNA			•	•		•		•	•						
RTC crystal	•	•	•		•	•	•	•	•	•	•	•	•	•	•
Oscillator	T	T	T	V	T	T	T	T	T	T	T	T	T	T	T
RTK rover								•	•			•		•	•
RTK base station								•	•			⌘			
Moving base									•			•			
Survey-in & fixed mode	•	•	•	•	•	•	•	•	•			•			
Built-in sensor														•	•
Time pulse output	2	2	2	1	2	2	1	1	1			1	1	1	1
Time mark input		2	2	2	2	2	1	1	1			1	1	1	1
Frequency output				•											
Power supply															
2.7 V – 3.6 V	•	•	•		•	•	•	•	•	•	•	•	•	•	•
3.0 V – 3.6 V				•											

▽ = Versions available for L1/L2/E5b or L1/L5/E5a band support
■ = L1/L2/E5b and L1/L5/E5a band support

⌘ = For some product versions

T = TCXO V = VCTCXO

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GNSS chips

	Dead reckoning / high precision GNSS chips					Standard precision GNSS chips					
	UBX-F9940-KA-DR	UBX-F9140-KA-DR	UBX-M9140-KA-DR	UBX-M9340-KB	UBX-M8030-KA-DR	UBX-M10050-KB	UBX-M9140-KA	UBX-M9140-KB	UBX-M8030-KA	UBX-M8030-KT	UBX-G8020-KT
Grade											
Automotive	•	•	•		*		*		*		
Professional				•		•		•		•	•
Standard											
Physical											
Image											
Size [mm]	5.0 x 5.0 x 0.59					4.0 x 4.0 x 0.55	5.0 x 5.0 x 0.59				
Package & pins	QFN40					QFN28	QFN40				
GNSS											
GPS / QZSS	•	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•	•
Galileo	•	•	•	•	•	•	•	•	•	•	
BeiDou	•	•	•	•	•	•	•	•	•	•	
NavIc		•									
Concurrent GNSS	4	6	4	4	3	4	4	4	3	3	1
Multi-band	•	•	•								
Interfaces											
UART	2	2	1	2	1	1	2	2	1	1	1
USB	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)	2	1	1	1	1	1	1	1	1	1	1
Features											
Programmable (flash)	•	•		•	•		S	S	S	S	
Dual output			•		•						
Additional SAW		•									
Data logging							S	S	S	S	S
Data batching						•	•	•			
RTC crystal	S	S	S	S	S	S	S	S	S	S	S
Oscillator	T	T	T	T	C/T	C/T	T	T	C/T	C/T	C/T
Antenna supply and supervisor	S			S	S	S	S	S	S	S	S
RTK rover	•										
Sensor-based spoofing detection			•								
Low-latency sensor data			100 Hz								
Position and attitude			50 Hz								
Time pulse output	2	1	1	2	2	1	2	2	2	2	2
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	•	•									
1.8 V – 3.6 V			•								
2.25 V – 3.6 V					•		•	•			

* = Operating temperature -40 °C to +105 °C
cm = Only supported in continuous mode

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

S = Supported, may require ext. components

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Standard precision GNSS modules

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	Standard precision GNSS SiP modules								Standard precision GNSS modules							
	MIA-M10C	MIA-M10Q	ZOE-M8B	ZOE-M8G	ZOE-M8Q	EVA-M8M	EVA-M8Q	EVA-8M	MAX-M10S	MAX-M10M	MAX-M8C	MAX-M8Q	MAX-M8W	MAX-8C	MAX-8Q	LEA-M8S
Grade																
Automotive																
Professional	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Standard																
Physical																
Image																
Size [mm]	4.5 x 4.5 x 1.0		4.5 x 4.5 x 1.0			7.0 x 7.0 x 1.1			9.7 x 10.1 x 2.5							17.0 x 22.4 x 2.4
Package & pins	S-LGA 53		S-LGA 51			LGA 43			LCC 18							LCC 28
GNSS																
GPS / QZSS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Galileo	•	•	cm	•	•	•	•		•	•	•	•	•			•
BeiDou	•	•	•	•	•	•	•		•	•	•	•	•			•
Concurrent GNSS	4	4	3	3	3	3	3	1	4	4	3	3	3	1	1	3
Interfaces																
UART	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
USB						1	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	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	C	T	T	T	T	C	T	C	T	C	C	T	T	C	T	T
Built-in antenna supply and supervisor													•			•
Time pulse output	1	1		1	1	1	1	1	1	1	1	1	1	1	1	1
Power supply																
1.3 V – 1.98 V	•															
1.71 V – 1.89 V			•	•												
1.76 V – 3.6 V		•														
1.8 V – 5.5 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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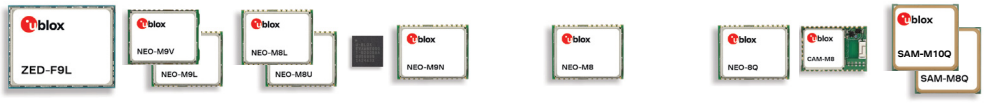
u-blox

Standard precision and dead reckoning GNSS modules

	Dead reckoning GNSS modules						Standard precision GNSS modules and antenna modules										
	ZED-F9L	NEO-M9V	NEO-M9L	NEO-M8L	NEO-M8U	EVA-M8E	NEO-M9N	NEO-M8J	NEO-M8M	NEO-M8N	NEO-M8Q	NEO-M8Q-01A	NEO-8Q	CAM-M8C	CAM-M8Q	SAM-M10Q	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				7 x 7 x 1.1	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	LGA 54	LCC 24				LGA 43	LCC 24							LCC 31		LGA 20	
GNSS																	
GPS / QZSS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
GLONASS	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Galileo	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	•
BeiDou	•	•	•	•	•	•	•	•	•	•	•	•		•	•	•	
NavIC	•																
Concurrent GNSS	6	4	4	3	3	3	4	3	3	3	3	3	1	3	3	4	3
Multi-band L1/L5	•																
Interfaces																	
UART	2	1	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1
USB	1	1	1	1	1	1	1	1	1	1	1	1	1				
SPI	1	1	1	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	1	1	1	1	1
Features																	
Programmable (flash)	•	•	•	•	•	E	•	•		•							
Data logging		•	•	•	•	E	•	•		•							
Data batching			•				•									•	
Additional SAW	•	•					•	•		•	•		•	•	•	•	•
Additional LNA		•					•	•		•	•		•	•	•	•	•
RTC crystal	•	•	•	•	•	o	•	•	•	•	•	•	•	♦	•	•	•
Oscillator	T	T	T	C/T	C	T	T	C	C	T	T	T	T	C	T	T	T
Built-in antenna supply and supervisor		S	S	S	S												
Built-in antenna														•	•	•	•
Built-in sensor		•	•	•	•												
Time pulse output	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Power supply																	
1.65 V – 3.6 V									•					•			
2.7 V – 3.6 V	•	•		•	•	•	•	•		•	•	•	•		•	•	•
3.0 V – 3.6 V			•	•													

o = Optional, or requires external components
♦ = Yes, but with higher backup current
E = External flash required

* = Operating temperature -40 °C to +105 °C
S = Supported, may require ext. components

C/T = Crystal and TCXO supported
C = Crystal, T = TCXO

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