UBX-M8030-KT-FT

| Standard | Professional | Automotive |

u-blox M8 time & frequency reference GNSS chip

Highlights

- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Direct control of system reference oscillator disciplined by GNSS
- Accurate measurement and control of external oscillators
- Industry leading acquisition sensitivity and single-satellite timing
- Automatic hold-over
- Prepared for integration with external PTP, Sync-E and network listen

UBX-M8030-KT-FT:
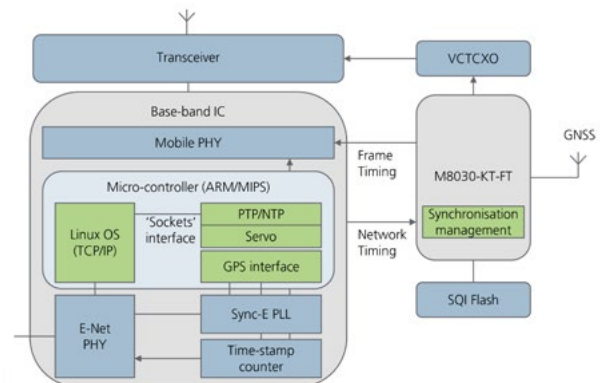5.00 x 5.00 x 0.59 mm

Product description

u-blox time and frequency products provide multi-GNSS synchronization for cost-sensitive network edge equipment including Femto wireless base-stations. The M8030-KT-FT IC provides a complete GNSS receiver and reference frequency control function. This single-chip RF and baseband IC requires few external components: just a low-cost SQI Flash for program and parameter storage and passive components.

The M8030-KT-FT can control a system reference VCTCXO directly via its in-built PWM DAC, providing both frequency and phase coherence with the best available source of synchronization. Additional remote oscillators may be controlled via a second DAC (DDC) or via the host system. External sources of synchronization are supported through time-pulse and frequency inputs and a message interface. This allows measurements from macro-sniff, Sync-E, or packet timing to be combined with measurements from GNSS.

u-blox time and frequency products include timing integrity alarms that report phase and frequency uncertainty both during normal operation and hold-over. They feature a high dynamic range radio with both analog and digital interference mitigation supporting their inclusion as an integral part of a local area base station design.

Example application (Residential Femto Cell)

In a Femto-Cell application, the M8030-KT-FT can make fine adjustments to the master reference frequency oscillator to precisely align the Femto-cell transmit framing with a phase reference from GNSS or PTP. In the absence of a reliable source of synchronization, the M8030-KT-FT automatically manages hold-over based on the stability of the oscillator selected, allowing the Femto-cell to continue transmissions. The M8030-KT-FT estimates phase and frequency uncertainty continuously during hold-over so the host system can decide when to discontinue transmission.

Product selector

Model	Package	Type								Supply	Interfaces				Features						Grade		
	Package	GPS / QZSS	GLONASS	Galileo	BeiDou	Timing	Dead Reckoning	Precise Point Positioning	Raw Data	3.0 V – 3.6 V	UART	USB	SPI	DDC (I²C compliant)	Programmable (Flash)	Data logging	RTC crystal	Oscillator	Antenna supply & supervisor	VCTCXO support	Standard	Professional	Automotive
UBX-M8030-KT-FT	QFN40	•	•	R	•	•				•	•	D	•	•	S			V		•			

S = supported, requires external components
V = VCTCXO support

R = Galileo ready
D = Utility and development use only

u-blox

Features – GNSS

Receiver type	72-channel u-blox M8 engine
	GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1
	SBAS L1 C/A: WAAS, EGNOS, MSAS
	Galileo-ready E1B/C (firmware upgrade required)

		GPS	**GLONASS**
Accuracy		2.5 m CEP	< 4 m CEP
Time to fix	Cold starts:	26 s	30 s
	Hot/Aided starts:	1 s	3 s
Sensitivity	Tracking:	–165 dBm	–165 dBm
	Cold start (aided):	–157 dBm	–148 dBm
	(autonomous):	–148 dBm	–145 dBm
	Reacquisition:	–160 dBm	–157 dBm
Assistance	AssistNow Online		
	OMA SUPL & 3GPP compliant interface		
Oscillator	Supports VCTCXO		
LNA	Built-in		
Anti jamming	Active CW detection and removal		
Supported antennas	Active and passive		
External SQI Flash	Required for firmware storage and upgrade		

Features – synchronization

Frequency control:	PWM DAC to control external VCTCXO	
Frequency control (primary oscillator)	GNSS locked:	< 5 ppb
	Frequencies:	19.2, 26, 30.72 MHz
	Hold-over:	Determined by oscillator
Frequency control (additional oscillator option)	GNSS locked:	< 5 ppb
	Frequencies:	10, 13, 19.2, 20, 26, 30.72, 40 MHz
	Hold-over:	Determined by oscillator
Phase control	Clear sky:	< 20 ns
	Indoor:	< 500 ns typ.
Time-pulse input	Resolution:	< 50 ns
Time-pulse output	Jitter:	< 2 ns

Electrical data

Supply voltage	3.0 V to 3.6 V
Power Consumption	30 mA @ 3.3 V

Package

UBX-M8030-KT-FT:	40 Pin QFN,
	5.00 x 5.00 x 0.59 mm

Environmental data, quality & reliability

Operating temp.	–20°C to +70°C
Storage temp.	–40°C to +125°C
Humidity	JEDEC MSL 1

RoHS compliant (lead-free) and green (no halogens)

Manufactured in ISO/TS 16949 certified production sites

Interfaces

Serial interfaces	SPI or UART and DDC (I²C compliant)
	USB v2.0 full speed (ext. voltage regulator)
Protocols	NMEA, UBX binary, RTCM
External DAC	Dedicated DDC (master)
Timing interfaces	Timepulse output
	2x timepulse/frequency inputs

Support products

u-blox M8 Evaluation Kits:

Easy-to-use kits to get familiar with u-blox M8 positioning technology, evaluate functionality, and visualize GNSS performance.

EVK-M8F:	u-blox M8 GNSS Evaluation Kit for Time and Frequency reference

Product variants

UBX-M8030-KT-FT	u-blox M8 GNSS chip, Time & Frequency reference, 40 Pin QFN

Further information

For contact information, see www.u-blox.com/contact-us.

For more product details and ordering information, see the product data sheet.