

UBX-M8030-Kx-DR



u-blox M8 ADR GNSS chips



Standard



Professional



Automotive

Continuous accurate navigation under all signal conditions

- Speed and sensor information from vehicle
- Support for directly connected 3D sensors
- Continuous navigation during signal loss
- Automatic configuration of wheel-tick/speed input
- Real-time positioning up to 30 Hz rate
- GPS/QZSS, GLONASS, BeiDou, Galileo
- Operating temperature range -40 °C to +105 °C for the automotive grade chip



5.00 × 5.00 × 0.59 mm

Product description

The M8030-KT-DR and automotive-grade M8030-KA-DR chips offer u-blox's fourth generation Automotive Dead Reckoning (ADR) technology designed to meet the needs of the latest interactive navigation systems and displays. The performance of these products benefits from experience in demanding, first-fit passenger car applications, the latest multi-axis sensor technology and advancements in u-blox's multi-GNSS signal processing, particularly in highly urban environments.

u-blox's latest ADR technology introduces a new High Navigation Rate class of positioning outputs. The intelligent combination of GNSS and sensor measurements enables accurate, real-time position, speed, and heading information at rates up to 30 Hz, as essential for smooth and responsive interactive display.

u-blox's ADR chips support Dead Reckoning with single and differential wheel-ticks, gyroscope, and accelerometer sensors, and they incorporate map-matching feedback where available. The latest generation supports wheel ticks and 3D sensors connected directly to the receiver, which provides a useful saving in eBOM and the benefits of reduced latency. Flexible automatic configuration reduces the number of product variants required to support multiple applications.

The M8030 family includes u-blox's latest generation GNSS technology, which adds Galileo to the multi-constellation reception that already includes GPS, GLONASS, BeiDou and QZSS. These chips provide high sensitivity and fast GNSS signal acquisition and tracking.

The UBX-M8030-Kx chips are qualified according to AEC-Q100, and are manufactured in ISO/TS 16949 certified sites.

Product selector

Model	Package	Category	GNSS				Supply	Interfaces				Features				Grade			
	Package	Standard Precision GNSS High Precision GNSS Dead Reckoning Timing	GPS/QZSS	GLONASS	Galileo	BeiDou	Number of concurrent GNSS	1.4 V – 3.6 V	UART	USB	SPI	DDC (I ² C compliant)	Programmable (Flash)	Data logging	RTC crystal	Oscillator	Antenna supply and supervisor	Timepulse	Standard Professional Automotive
UBX-M8030-KT-DR	QFN40	ADR, E	•	•	•	•	3	•	•	•	•	•	•	S	C/T	S	2	•	
UBX-M8030-KA-DR*	QFN40	ADR, E	•	•	•	•	3	•	•	•	•	•	•	S	C/T	S	2	•	

C/T = Crystal and TCXO supported / S = supported, may require external components / * = Operating temperature -40 °C to +105 °C / ADR = Automotive Dead Reckoning / E = External Flash required



Features

Receiver type	72-channel u-blox M8 engine GPS/QZSS L1 C/A, GLONASS L10F, BeiDou B1I, Galileo E1B/C SBAS L1 C/A: WAAS, EGNOS, MSAS, GAGAN	
Time to first fix ¹		
Cold starts:	26 s	
Aided start:	2 s	
Hot start:	1 s	
Sensitivity ¹		
Tracking & Nav:	-160 dBm	
Reacquisition:	-160 dBm	
Cold start:	-148 dBm	
Hot start:	-157 dBm	
Nav. update rate	Up to 30 Hz	
Velocity accuracy	0.05 m/s	
Heading accuracy	0.3 degrees	
Position accuracy	Autonomous:	2.0 m CEP
	with SBAS:	1.5 m CEP
Sensor configuration	Wheel ticks, gyro, accelerometer differential wheel ticks, map-match feedback	
Multi-GNSS Assistance	AssistNow GNSS Online AssistNow GNSS Offline (up to 35 days) AssistNow Autonomous (up to 6 days)	
Oscillator	Supports Crystal or TCXO	
LNA and outband filtering	On-chip LNA	
RTC input	32.768 kHz (optional), RTC can be derived from GNSS Crystal or TCXO	
Antenna supervision	Short and open circuit detection supported with external circuit	
DC/DC converter	Built-in, external component required	
Anti Jamming	Active CW detection and removal	
SQL flash supported	Required for ADR AssistNow Offline, AssistNow Autonomous improved performance, and data logger	

1 = GPS + GLONASS

2 = Limited by FW for best DR performance

Package

UBX-M8030-KA-DR/UBX-M8030-KT-DR: 40 Pin QFN:
5.00 x 5.00 x 0.59 mm

Environmental data, quality & reliability

Operating temp.	-40 °C to +85 °C (UBX-M8030-KT-DR) -40 °C to +105 °C (UBX-M8030-KA-DR)
Storage temp.	-40 °C to +125 °C
Humidity	JEDEC MSL 1
RoHS compliant (lead-free) and green (no halogens)	

ADR performance and requirements

u-blox ADR supports standard sensor configurations: Rear wheel sensors, front wheel sensors, four wheel sensors, gyro + speedpulse + accelerometer (optional).

Sensor option		Typical position error
Front wheels	(2D)	14%
Rear wheels	(2D)	12%
Four wheels	(2D)	10%
Gyro + speedpulse	(2D)	3%
Gyro + speedpulse + accelerometer	(3D)	3%

Electrical data

Supply voltage	1.4 V to 3.6 V
Digital I/O voltage level	1.65 V to 3.6 V
Power consumption (continuous mode)	18 mA @ 3.0 V (single GNSS) 22 mA @ 3.0 V (concurrent GNSS)
Backup Supply	1.4 V to 3.6 V

Interfaces

Serial interfaces	1 UART 1 USB V2.0 full speed 12 Mbit/s 1 DDC (I ² C compliant) 1 DDC (I ² C compliant) sensor interface 1 SPI
Digital I/O	Configurable time pulse 1 EXTINT interrupt inputs 10 PIO for antenna supervision
Memory	SQL interface

Support products

Contact nearest u-blox representative.

Product variants

UBX-M8030-KT-DR	u-blox M8 3D ADR chip, Professional Grade
UBX-M8030-KA-DR	u-blox M8 3D ADR chip, Automotive Grade

Further information

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

For more product details and ordering information, see the [product data sheet](#).

Legal Notice:

u-blox reserves all rights to this document and the information contained herein. Products, names, logos and designs described herein may in whole or in part be subject to intellectual property rights. Reproduction, use, modification or disclosure to third parties of this document or any part thereof without the express permission of u-blox is strictly prohibited.

The information contained herein is provided "as is". No warranty of any kind, either express or implied, is made in relation to the accuracy, reliability, fitness for a particular purpose or content of this document. This document may be revised by u-blox at any time. For most recent documents, please visit www.u-blox.com.
Copyright © 2018, u-blox AG