

UBX-M8030-Kx-DR

Standard Professional Automotive

POSITIONING

u-blox M8 3D Dead Reckoning GNSS chips

Highlights

- 100% coverage using ADR technology
- 3D positioning
- Concurrent reception of GPS/QZSS, GLONASS, BeiDou
- Galileo ready
- Up to 20 Hz position update rate
- Pin compatible with UBX-M8030-Kx
- Available in professional and automotive grade



UBX-M8030-KA-DR
5.0 x 5.0 x 0.59 mm



UBX-M8030-KT-DR
5.0 x 5.0 x 0.59 mm

Product description

UBX-M8030-Kx-DR is u-blox' industry-proven off-the-shelf Automotive Dead Reckoning (ADR) solution. u-blox ADR combines concurrent GNSS and sensor digital data using a tightly coupled Kalman filter. This improves position accuracy during periods of unavailable or degraded GNSS signals.

ADR supports a variety of sensor combinations, such as wheel ticks, single-axis / 3-axis gyroscope, and single-axis / 3-axis accelerometer. The accelerometer sensor support improves performance during altitude changes without a GNSS signal, such as in tunnels, overpasses, or underground parking.




ADR receives sensor data from the vehicle bus via the host processor. This reduces hardware costs since no extra sensors

are required for dead reckoning functionality. ADR is designed for simple integration and easy configuration of different sensor options (e.g. DR with or without gyroscope) and vehicle variants, and is completely self-calibrating. The chips also provide improved support for map matching.

The UBX-M8030-KA-DR and UBX-M8030-KT-DR chips provide flash-based 3D-ADR features. The DR chips are pin compatible with standard UBX-M8030 chips.

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

Product selector

Model	Package	Type	Supply	Interfaces	Features	Grade
	Package	GPS / QZSS GLONASS Galileo BeiDou Timing Dead Reckoning Precise Point Positioning Raw Data	1.4 V – 3.6 V	UART USB SPI DDC (I ² C compliant)	Programmable (Flash) Data logging RTC crystal Internal oscillator Antenna supply and supervisor	Standard Professional Automotive
UBX-M8030-KA-DR/ UBX-M8030-KT-DR	QFN40	• • R • F	•	• • • •	S S S C/T S	  

S = supported, may require external components
F = Flash required

R = Galileo ready
C/T = Crystal and TCXO supported

Features

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 (with future Flash firmware)
Time to first fix	
Cold start:	26 s
Aided starts:	2 s
Hot starts:	1 s
Sensitivity	
Tracking & Nav.:	-160 dBm ¹
Reacquisition:	-160 dBm
Cold start:	-148 dBm
Hot start:	-156 dBm
Operational limits	
Max nav. update rate	20 Hz
Max. velocity	500 m/s
Velocity accuracy	0.05 m/s
Heading accuracy	0.3 degrees
Horizont. pos. accuracy	2.0 m CEP
Sensor alignment	Pitch, roll, yaw alignment by command
Wheeltick	Supports low wheel ticks (1 tick < 50 cm travel distance)
Map Matching	Aid for improved navigation
Multi-GNSS Assistance	AssistNow Online AssistNow Offline (up to 35 days) AssistNow Autonomous (up to 3 days)
Oscillator	Supports GNSS 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 Limited by FW for best DR performance

Interfaces

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

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Packages

UBX-M8030-KA-DR/	40 Pin QFN:
UBX-M8030-KT-DR:	5.0 x 5.0 x 0.59 mm

Environmental data, quality & reliability

Operating temp.	-40°C to +85°C
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	1.4V to 3.6V
Digital I/O voltage	1.65V to 3.6V
Power Consumption	20 mA @ 3.0 V (single GNSS) 26 mA @ 3.0 V (concurrent GNSS)
Backup Supply	1.4V to 3.6V

Support products

Contact nearest u-blox representative.

Product variants

UBX-M8030-KA-DR/	u-blox M8 3D ADR chip
UBX-M8030-KT-DR	

Further information

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

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