DVR EXPRESS®

CORE 2 MAX

GPS OPTIONS

Adds GNSS time synchronization and position logging to Core 2 MAX

		Supported Constellations			Supported Frequencies			
Receiver	**Description**	**GPS**	**GLONASS**	**BEIDOU**	**L1**	**L2**	**B1**	**B2**
G01	Entry-level GPS receiver, L1, 1Hz	X			X			
G02	Entry-level GPS/GLONASS receiver, L1, 1Hz	X	X		X			
G03	GPS receiver, L1, 20Hz	X			X			
G04	GPS/GLONASS receiver, L1, 20Hz	X	X		X			
G05	GPS/BEIDOU receiver, L1/B1, 20Hz	X		X	X		X	
G06	GPS/GLONASS/BEIDOU receiver, L1/B1, 20Hz	X	X	X	X		X	
G07	GPS receiver, L1/L2, 20Hz	X			X	X		
G08	GPS/GLONASS receiver, L1/L2, 20Hz	X	X		X	X		
G09	GPS/BEIDOU receiver, L1/L2/B1/B2, 20Hz	X		X	X	X	X	X
G10	GPS/GLONASS/BEIDOU receiver, L1/L2/B1/B2, 20Hz	X	X	X	X	X	X	X

Common Features:

RECEIVER	G01-G02	G03-G10
GPS Timing Accuracy	20ns RMS	20ns RMS
Position Accuracy	L1: 1.5m, SBAS: 0.6m	L1: 1.5m, L1/L2: 1.2m, SBAS: 0.6m
Channels	14	555
Signal Reacquisition	L1: 1.0s	L1: 0.5s / L2: 1.0s
Time to First Fix	Cold: 65s / Hot: 35s	Cold: 40s / Hot: 19s
Data Rate	1Hz	20Hz
Video Timestamp Accuracy	+/- 4µs	+/- 1µs

EXAMPLE SYSTEM

FEATURES INCLUDE:

- Synchronizes video timestamps to within 4µs of GPS time
- Multiple receiver options support a variety of GNSS constellations and frequencies

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QUICK REFERENCE

GNSS (Global Satellite Navigation System):
GNSS refers to any satellite-based geo-spatial positioning system. A GNSS constellation involves multiple satellites orbiting over the Earth with the ability to transmit signals to an Earth-based receiver. Once the receiver "locks" to enough satellites, it can accurately determine its current position and time. Depending on the number of satellites and their distribution, coverage of a GNSS can be global or region-specific.

GPS (Global Positioning System):
GPS is a GNSS with global coverage operated by the U.S. Department of Defense. The constellation includes 31 satellites using two frequencies referred to as L1 and L2.

GLONASS (Global Navigation Satellite System):
GLONASS is a GNSS with global coverage operated by Russia, with comparable precision to GPS. The constellation includes 24 satellites using two frequencies referred to as L1 and L2. GLONASS' orbit makes it especially suited for usage in high latitudes (north or south), where locking to a GPS signal can be problematic.

BeiDou Navigation Satellite System (BDS):
BDS is a GNSS with regional coverage operated by China. The constellation includes 21 satellites that cover the Asia-Pacific region. Future plans include expansion to 30 satellites by 2020, allowing global coverage. Two frequencies are used - B1 and B2.

Receiver:
A GNSS receiver is a hardware option available when ordering a Core 2 MAX digital video recorder. When paired with an appropriate antenna and RF cable (sold separately) this device receives and digitally processes signals from GNSS satellites. Depending on the selected receiver, one or more frequencies from one or more constellations (including GPS, GLONASS and BDS) can be received. This results in an accurate time reference for the timestamps applied to all video frames during recording. As well, a stream of accurate position data (up to 20 updates per second), can be recorded along with the video.

GPS Timing Accuracy:
Refers to the accuracy of the precise clock used by the GNSS receiver.

Position Accuracy:
Refers to the accuracy of the position data determined by the receiver. Typically stated as a radius, the position accuracy can be improved from the basic single-frequency accuracy by the use of additional frequencies and/or support for additional GNSS constellations. As well, further improvements can be had with the use of correction services such as SBAS.

SBAS (Satellite-based Augmentation System)
A system that provides correction data to GNSS receivers to further improve position accuracy. A system may provide correction information applicable to a wide area or a smaller regional area. Multiple ground stations, located at accurately-surveyed points, receive GNSS signals and calculate the position error. This is transmitted to a satellite network which then broadcasts the data to any SBAS-capable receivers. An example SBAS is the Wide Area Augmentation System (WAAS) operated by the U.S. Federal Aviation Administration.

Channels:
A GNSS receiver searches for satellites on multiple signal channels simultaneously, attempting to lock to as many satellites as possible to compute the best solution for the position of the receiver. The number of channels a receiver supports affects how fast the receiver can lock to enough satellites to achieve a solution, as well as the Time to First Fix and Signal Reacquisition rates.

Signal Reacquisition:
The time it takes a GNSS receiver to lock to satellite signals after a complete loss of all signals for a short period of time.

Time to First Fix:
The time it takes a GNSS receiver to produce a first position solution.

Data Rate:
The frequency of time and position messages transmitted by the receiver to the Core 2 MAX video recorder. A higher sampling rate leads to better position accuracy, especially for mobile applications, and a higher video timestamp accuracy for all situations.

Video Timestamp Accuracy:
Refers to the accuracy of the timestamps applied to all video frames during recording, relative to GPS time, when the receiver is locked. With no GPS receiver installed, the timestamp clock of the Core 2 MAX is initialized to the time of the connected PC, then experiences drift throughout operation. With a GPS receiver, the timestamp clock is updated continuously (at a rate equal to the receiver's data rate), reducing total drift over time to the maximum drift between an update period.

ORDERING

Example: CORE2CXMAX-G01

DVR	Receiver
CORE2CLMAX	G01-G10
CORE2CXMAX	
CORE2SDIMAX	

REQUIRED PARTS

Not included; must purchase separately:
1x GNSS Antenna (suitable for receiver's frequencies and constellations)
1x RF Cable, TNC to antenna connector

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Specifications subject to change without notice