

Eaton GFX machine dynamics sensor



Intelligence in motion

The GFX machine dynamics sensor delivers data that enables intelligent machine functions and helps operators maintain safe, productive vehicle operation.



As off-highway machinery becomes smarter and more dynamic, the need to track vehicle performance and equipment usage is only growing. The Eaton GFX sensor provides the data required to monitor and control intelligent machine functions such as geopositioning and vehicle dynamic sensing. It also enables users to optimize operations such as seeding, harvesting and earthmoving operations.

The GFX machine dynamics sensor is a global positioning system (GPS) sensor, ground speed sensor and inertial measurement unit (IMU) in one compact device. With the ability to monitor machine speed, acceleration, direction, location, tilt, pitch and roll, the GFX device can help keep operators and their machinery safe and productive.

The compact, three-in-one device saves space and reduces costs compared to single-function sensors, while the IP67 rating and wide operating temperature range ensure it can perform in rugged, off-highway environments. Through CAN or serial output messaging, the GFX device delivers the data you need to enable intelligent machine functions.

The Eaton GFX machine dynamics sensor. Intelligence in motion.

To learn more about the GFX machine dynamics sensor, please contact your Eaton sales manager or visit:

Eaton.com/GFX

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Powering Business Worldwide

GFX sensor features and benefits

- Acceleration, angular rate and magnetic field data can help operators maintain safe vehicle operation on uneven terrain, helping to avoid rollover accidents.
- Provides true ground speed data as an ISOBUS message or digital output for crucial operations like seeding, spraying and harvesting.
- Offers ge positioning accurate to within 4 meters for tracking machine location and operation.
- Eliminates the need to buy and integrate multiple components.
- Offers space and cost savings over the two or three separate devices that would be needed to perform the same functions.
- Easily integrated into a vehicle: Connect one side to an antenna and plug the other side into the CAN bus.
- Offers both serial and CAN output messaging in the same device for application flexibility.
- Features a dustproof and waterproof design rated to IP67, suitable for open-cab machinery.

Applications

- Tractors
- Combines
- Excavators
- Wheel loaders
- Telehandlers
- Skid steer loaders

Specifications

Mechanical

Size	125mm (L) x 43mm (W) x 22.25mm (H)
Weight	160 gram

Voltage & current

Operating voltage	5VDC to 36VDC
Nominal voltage	12VDC and 24VDC
Input current	Up to 120mA

Environmental

Operating temperature	-40°C to +85°C	
Storage temperature	-40°C to +85°C	
Humidity	90% RH	
Altitude	40000 ft	Air shipment , device off state
Ingress protection	IP67	ISO 20653 (Road vehicles - Degrees of protection (IP code)) Protection of electrical equipment against foreign objects, water and access

Communication protocols

CAN	SAE J1939	Baud rate 250Kbps
Serial	RS232	Default: 115200 bps Configurable baud rate 9600/19200/38400/57600/115200 bps

Digital speed output

Signal format	PWM	Duty cycle: 77%
PWM frequency	36Hz to 1.85KHz for 1kph to 50kph speed	Linearly varying
Signal amplitude	Equal to supply input	
Accuracy	± 5%	
Note:	1. Digital speed output is disabled at speed less than 1Kph 2. When digital speed output is disabled, output will be equal to supply input (100% duty cycle).	
Caution:	Pay attention to Digital Output Pin Wiring. This pin should not be short circuit with ground terminal.	

GPS specification

GPS L1 frequency	1575.42 MHz	
Accuracy	4.77m CEP	Circular Error Probability (radius of a circle centred on the true value)
Acquisition time	Hot start	4 Sec
	Warm start	38 Sec
	Cold start	60 Sec
Sensitivity	Tracking	-160dBm
	Acquisition	-145dBm
GPS data update rate	5Hz	

IMU specification

Linear acceleration	±4 g
Angular rate	±245 dps
Magnetic field	±4 gauss
IMU data update rate	50Hz

Eaton
1000 Eaton Boulevard
Cleveland, OH 44122
United States
Eaton.com

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EMEA Headquarters
Route de la Longeraie 7
1110 Morges, Switzerland
Eaton.eu

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Eaton
Asia Pacific Headquarters
No.3, Lane 280, Linhong Road
Shanghai 200335, P.R. China
Eaton.com.cn