

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.

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

compact, two-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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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

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Document No. E-ELSE-BB003-E
April 2020

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