

- **Four Versatile Vibration Guards**
- **Fastest Possible Response Time**
- **Relay and Level Output**
- **Motion Pattern Analysis**
- **Built-in Signal Processing**
- **Price Competitive**

Overview

The Gram & Juhl DAM-XY01 sensor is an intelligent sensor with built-in digital signal analysis that offers advanced motion monitoring facilities at low system costs. Applications include monitoring and analysis of structures, such as wind turbines, bridges, towers, cranes, and buildings. Since the DAM-XY01 is a self-contained digital device there is no risk of damaging an external sensor and cabling is straightforward. This makes the DAM-XY01 most reliable for critical systems.



Structural Vibration Monitoring SVM

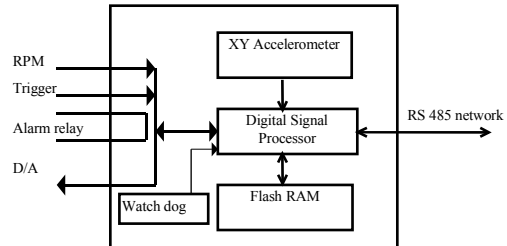
The DAM-XY01, with its DC coupling, is well suited to measure low frequencies simultaneously in X and Y direction. This is used for calculating the motion of the structure onto which the sensor is mounted. When narrowed in bandwidth, e.g. around a resonance frequency, this converges to an ellipsis showing orientation and maximum deflection.

Continuous Vibration Guards

The sensor has four continuously running vibration guards. The guards are independently configured regarding direction(s), frequency band, level, and response time. Alarms are signalled via a relay switch and an analogue voltage. Further, all alarm events are stored internally in non-volatile memory. The vibrations guards are optimised to provide the fastest possible response time.

The Sensor

The DAM-XY01 has an internal two-axial accelerometer. Further, the unit has input for tachometer pulses or triggers, solid-state relay and an analogue output (0-5Volt). Thus, motions can be related to machine operation as expressed via RPM, which allows for advanced monitoring.



Stand-alone or Internet operation

The DAM works on its own or on a network. When operating with a host e.g. the hardware front end, the M-System, in the TCM® System, monitoring results are communicated via a RS485 multi-drop serial bus. The host can be connected to as many as 32 DAM units on a single DAM network. The DAM network protocol is open so any controller with a serial port may interface to the DAM network. The DAM-XY01 can be applied to remote monitoring using the TCM® WEB software.

Open System Architecture

In a networked environment, access to DAM units is provided via the Gram & Juhl TCM® system or some custom service (open protocol). Contact Gram & Juhl A/S for further information.

Sensor Measurements

DAM Measurements	Application		
	SVM	Bearings	Gear
Time, FFT, Overall	✓	✓	✓
Vibration Guards	✓		
Zoom, Envelope		✓	
Zoom, Cepstrum			✓

Structural Vibration Monitor DAM-XY01

1000-0001-0000

Measurements

Vibration guards

No. of independent guards	4
Sensing direction	X, Y or XY
Centre Frequency]0 Hz .. 100 Hz]
Bandwidth	>2%
Filter Response	Minimum Phase
Averaging	Exp. running mean

SVM and MCM measurements

Motion pattern (Major axis, minor axis, orientation)
 Averaging on all measurements except time
 Configurable frequency span DC-1 kHz.
 Autospectrum with Zoom and Envelope. 400 lines within span.
 Configurable Overall.
 Cepstrum non-liftered.
 Time series 16384 samples at configurable sampling rate

Vibration Sensor Specification

Dynamic range	> 70dB
Calibrated at	10 Hz (± 0.1 dB)
Frequency accuracy	30 ppm
Coupling	DC or AC (digital filter)
Full Scale Range	± 180 m/s ²
Nonlinearity	0.2% of Full Scale
Transverse sensitivity	$\pm 2\%$
Overload detection	
Sensitivity temperature drift	0.5%
Noise	250 μ G/ \sqrt{Hz}

RPM / TRIGGER Input

RPM range	60000 RPM
Input Level	TTL
Accuracy	0.4 ms
RPM divider	1..65535

Analogue output

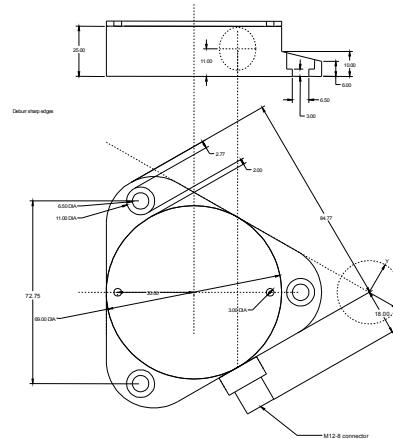
Bandwidth	100 Hz (2 nd order filter)
Range	0-5 Volt
Noise	1mVolt RMS

Alarm Output

Type	Solid state non-polarized
Current	max 100 mA
Voltage	50 V DC
Voltage ripple	max 100 mVrms

Mechanics

Housing	Stainless steel (non corrosive)
Connector	M12-8, shielded connector male
Enclosure	IP68 to 5 bars
Mounting	3 holes, M6 bolts, see drawing
Weight	400g



DAM-XY01 HOUSSE. Gram & Juhl A/S www.gramjuhl.dk

Power supply

Voltage	12-24 V DC, ripple < 0.1 Vrms
Continuous Power	1.5 W
Start current	0.15 A

Environmental

Operating temp.	-25 to 75 ° C
Sustained acceleration	<50 Grms
Storage temp.	-40° to +80 ° C
ESD and over-voltage protected (transients)	

Compliance with standards

CE (low voltage)
 EN 50081-1, EN61000-6-3 (emission)
 EN 50082-2, EN61000-6-2 (immunity)
 Surge protected
 Shielded cable DIN 47250-6/01.83 or better

Software

Can be used in conjunction with the M-System as part of the TCM® System (no special software required).
 Sensor firmware is on-site upgradeable and configurable.
 Open communication protocol

Connector

Pin, Colour	Description	Connector
1, White	A RS485+	<p>Front View</p>
2, Brown	POWER +, 12-24 VDC	
3, Green	RPM / TRIG TTL input	
4, Yellow	RELAY	
5, Grey	B RS485+	
6, Pink	RELAY	
7, Blue	POWER -, 0 VDC	
8, Red	0-5VOLT OUT	

Note: If communication pins are unused they should be interconnected with a 120 Ohm 0.25W resistor. Unused RPM input should be tied to ground.