OIAC9

3-Axis 16g accelerometer

General Description

OIAC9 is a +/-16g tri-axial accelerometer with buffered voltage outputs. The self-test input line can be used to check the accelerometer's correct functionality.

The compact sturdy anodized metal enclosure can withstand shocks and vibrations, while the filling resin makes OIAC9 accelerometers waterproof and dustproof.

The internal protection circuits make these accelerometers electrically robust to withstand overvoltage and outputs lines overload.

Images are for illustration purpose only and may not represent exactly the product in all the details

Applications

Wind turbine monitoring

Machine vibration monitor

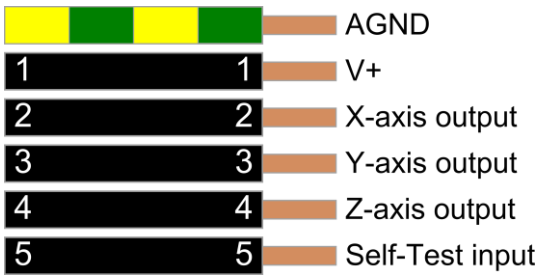
Shock monitoring

Industry 4.0

Pin Functions

The OIAC9 connection cable is 1.5 meters long. It has 6 conductors plus shield. Cable length or conductors termination customizable on request.

Cable color	Name	Function
Yellow-Green	AGND	Ground
Black 1	V+	Power supply
Black 2	X	X-axis output
Black 3	Y	Y-axis output
Black 4	Z	Z-axis output
Black 5	ST	Self-Test input
Shield	SH	Shield



Features

- **Three axes**
- **500Hz bandwith**
- **Buffered outputs**
- **Self-test function**
- **Rugged device: fully metal case filled with protective resin**
- **Resistant to electrical disturbs and transients**
- **Power supply inversion internal protection**
- **Operating temperature -40°C to +85°C**
- **IP67 protection grade**

Ordering information

OIAC9-500	Tri-axial accelerometer BW_{xyz}=500Hz

ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Min	Max	Unit
T_S	Storage Temperature	-40	85	°C
T_A	Operating Temperature Range	-40	85	°C
V_{CC}	Supply Voltage Range (DC voltage)	6	28	V

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

ELECTRICAL CHARACTERISTICS

T_A = 25°C unless otherwise noted.

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Supply voltage range		7	12	24	V
I_{CC}	Current consumption	average value V_{CC} = 12V; R_{Lxyz} = 100kΩ		1.5		mA
N_{AX}	Axis number			3		-
R	Range			±16		g
S_S	Sensitivity		51	57	63	mV/g
Z_B	Zero BIAS (0g offset)	X-axis and Y-axis acceleration = 0g	1.35	1.5	1.65	V
		Z-axis acceleration = 0g	1.2	1.5	1.8	V
BW	Internal filter bandwidth	X-axis ; Y-axis ; Z-axis		500		Hz
R_L	Voltage outputs load resistor		20	100		kΩ
ST_{IN}	Self-test input		1		24	V
ST_{CX}	X-axis output change	$ST_{IN} = V_{CC}$	-29	-62	-114	mV
ST_{CY}	Y-axis output change	$ST_{IN} = V_{CC}$	+29	+62	+114	mV
ST_{CZ}	Z-axis output change	$ST_{IN} = V_{CC}$	+29	+105	+190	mV

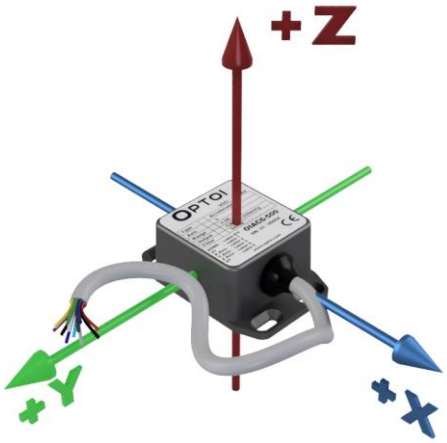
RELIABILITY PARAMETERS

All MTTF calculations are made according to Siemens SN 29500.

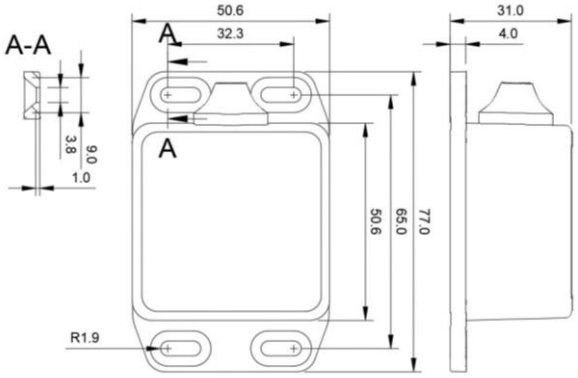
Symbol	Parameter	Conditions	Value	Unit
MTTF	Mean time to failure	Environment GM; T_A = 40°C; V_{CC} = 12V	231	years
		Environment GM; T_A = 40°C; V_{CC} = 24V	213	
DC	Diagnostic coverage		None	-
S	Structure		Not redundant	-

MECHANICAL CHARACTERISTICS AND DIMENSIONS

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
Wdt	Width			50.6		mm
Lgt	Length			77.0		mm
Hgt	Height			31.0		mm
Wgt	Weight			200		g
C_L	Cable standard length			8		m
$C_Ø$	Cable outer diameter			7.6		mm
C_S	Cable connection styles			6 conductors + shield		-



AXIS ORIENTATION



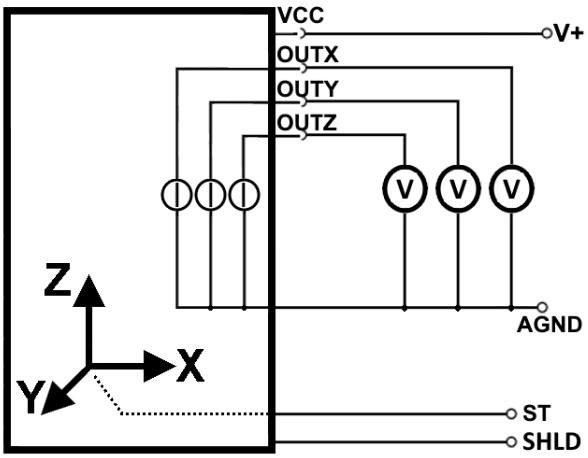
TOP VIEW *SIDE VIEW*

Mounting

Mount the OIAC9 accelerometer using 4 flat head countersunk screws with a maximum thread diameter of 4mm, externally centered in the 4 slot-holes.

Electrical Connections

CONNECTIONS



The diagram above is for illustration purposes only.
Internal drawings of the device are schematized as logic functions and may not represent the physical implementation

SELF-TEST

The ST input signal controls the OIAC9 self-test function for checking accelerometer functionality. When this pin is driven to V_{CC} the internal transducer detects an acceleration change on its three sensing axes. This acceleration change is −1.08g in the X-axis, +1.08g on the Y-axis, and +1.83g on the Z-axis. ST line can be left open-circuit or connected to V- (AGND) line in normal use.