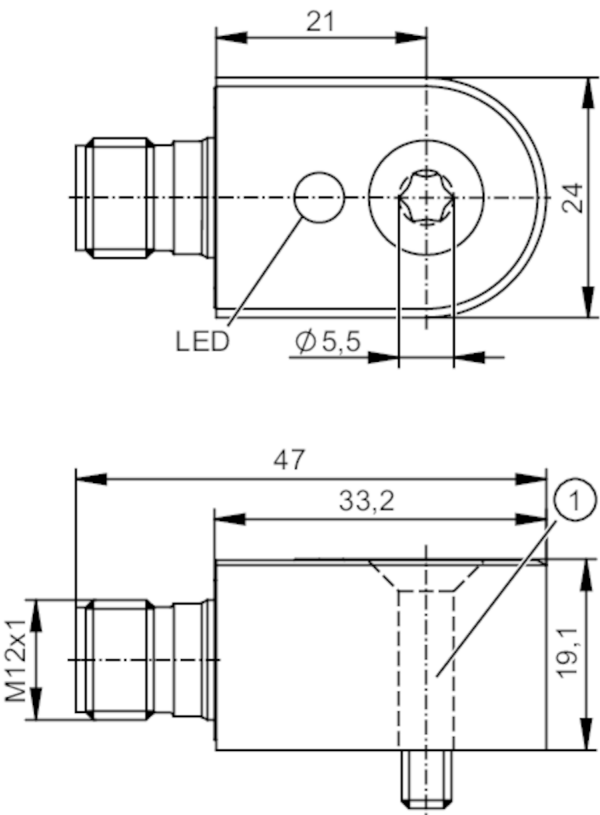


VVB301



Vibration sensor

VIBRATION IO-LINK SWITCH



1 Mounting screw M5



Product characteristics

Frequency range	[Hz]	2...5600
Measuring principle		capacitive

Application

Design	Basic condition monitoring
Application	industrial machines

Electrical data

Operating voltage	[V]	18...30 DC
Current consumption	[mA]	< 50
Min. insulation resistance	[MΩ]	100; (500 V DC)
Protection class		III
Reverse polarity protection		yes
Type of sensor		Microelectromechanical system (MEMS)

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2
------------------------------	------------------------------

Outputs

Output signal	switching signal; IO-Link
Electrical design	PNP/NPN; (configurable)
Number of digital outputs	2
Output function	normally open / closed



Vibration sensor

VIBRATION IO-LINK SWITCH

Max. voltage drop switching output DC	[V]	2
Max. current load per output	[mA]	100
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Measuring/setting range		
Note on setpoint SP		configurable
Frequency range	[Hz]	2...5600
Measuring principle		capacitive
Number of measurement axes		3
v-RMS (x-y-z)		
Measuring range of vibration	[m/s]	0...0.3
Resolution	[m/s]	0.0001
Set point SP	[m/s]	0.0002...0.3
Reset point rP	[m/s]	0...0.2998
a-Peak / a-RMS (x-y-z)		
Measuring range of vibration	[m/s²]	0...156.91
Resolution	[m/s²]	0.01
Set point SP	[m/s²]	2...156.91
Reset point rP	[m/s²]	0...154.91
Crest (x-y-z)		
Measuring range of vibration		1...50
Resolution		0.1
Set point SP		2...50
Reset point rP		1...49
Temperature measurement		
Measuring range	[°C]	-30...80
Resolution	[°C]	0.1
Set point SP	[°C]	-28...80
Reset point rP	[°C]	-30...78
Accuracy / deviations		
Accuracy	[K]	± 5
Linearity deviation		2; (% of the final value)
X axis		
Accuracy		2-4000Hz +/- 10%, 4000...5600Hz -3dB
Y axis		
Accuracy		2-5000Hz +/- 10%, 5000...5600Hz -3dB
z-axis		
Accuracy		2-5000Hz +/- 10%, 5000...5600Hz -3dB
Software / programming		
Parameter setting options		IO-Link



Vibration sensor

VIBRATION IO-LINK SWITCH

Diagnostic functions	self-test	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM3 (230,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9: 2013-07	
Profiles	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
	Function	Locator
	Function	ProductURI
SIO mode	yes	
Required master port class	A	
Min. process cycle time [ms]	3.3	
IO-Link process data (cyclical)	Function	bit length
	v-RMS (x-y-z)	16
	velocity scaling	8
	velocity measurement axis	4
	a-Peak (x-y-z)	16
	a-RMS (x-y-z)	16
	scaling acceleration	8
	measurement axis acceleration	4
	Crest (x-y-z)	16
	temperature	16
	scaling Crest + temperature	8
	device status	4
	unbalance event	1
	virtual switching output (v-ou1)	1
	binary switching information	2
IO-Link functions (acyclical)	filter for vibration velocity (v); filter for vibration acceleration (a); Hysteresis; window; Switch points; switching logic; unbalance measurement; machine operating hours counter	
Supported DeviceIDs	Type of operation	DeviceID
	default	1703
Note	For further information please see the IODD PDF file at "Downloads"	
Operating conditions		
Ambient temperature [°C]	-30...80	
Storage temperature [°C]	-30...80	
Protection	IP 67; IP 68; IP 69	
Tests / approvals		
EMC	EN IEC 61000-6-2	noise immunity / industrial environments
	EN IEC 61000-6-4	noise emission
Shock resistance	DIN EN 60068-2-27	50 g 11 ms
		500 g 1 ms
Vibration resistance	DIN EN 60068-2-6	20 g / 10...3000 Hz
MTTF [years]	480	
UL approval	UL approval number	L006
	File number UL	E251902
Standard	mechanical vibration; ISO 10816-3; ISO 2954; ISO 20816-3	

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Vibration sensor

VIBRATION IO-LINK SWITCH

Mechanical data		
Weight	[g]	98.2
Type of mounting		mounting screw
Material		housing: stainless steel (1.4404 / 316L)
Tightening torque	[Nm]	4.6
Displays / operating elements		
Display	Power	1 LED, green
	fault	1 LED, red
Accessories		
Items supplied		mounting screw: 1 x (M5 x 25 mm)
Remarks		
Pack quantity		1 pcs.
Electrical connection		
Connector: 1 x M12; coding: A; Maximum cable length: 20 m		
1	L+	
2	OUT2 Switching output	
3	L-	
4	OUT1 switching output or IO-Link	

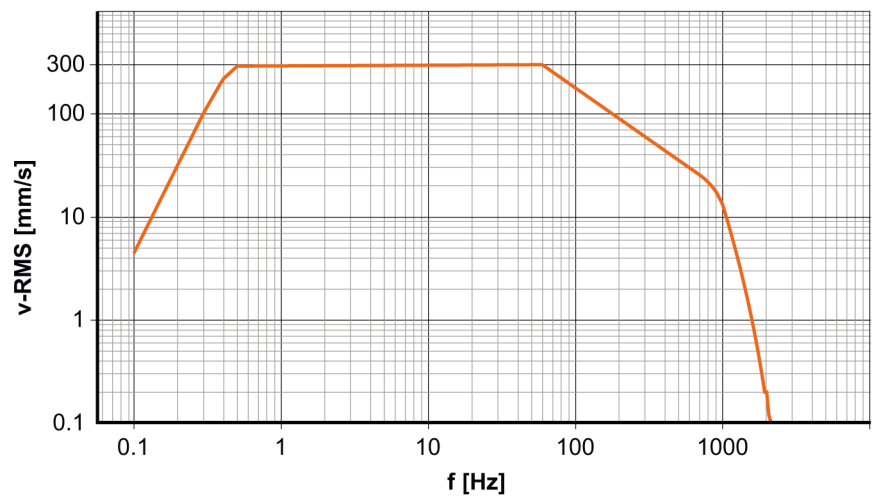
VVB301

Vibration sensor

VIBRATION IO-LINK SWITCH



Diagrams and graphs



v-
RMS
[mm/
s]
vibration velocity

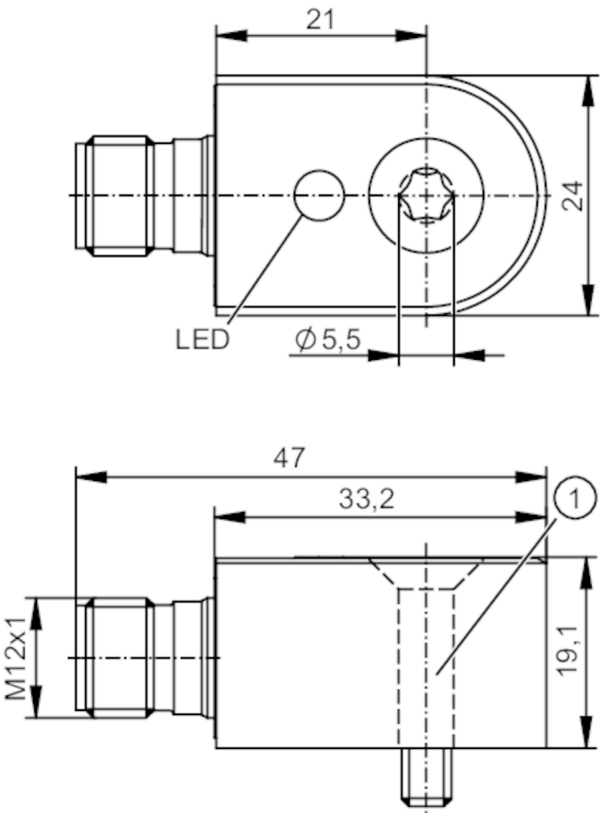
f
[Hz]
Frequency

VVB302



Vibration sensor

VIBRATION IO-LINK SWITCH



1 Mounting screw M5



Product characteristics

Frequency range	[Hz]	2...5600
Measuring principle		capacitive

Application

Design	DataScience condition monitoring
Application	industrial machines

Electrical data

Operating voltage	[V]	18...30 DC
Current consumption	[mA]	< 50
Min. insulation resistance	[MΩ]	100; (500 V DC)
Protection class		III
Reverse polarity protection		yes
Type of sensor		Microelectromechanical system (MEMS)

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2
------------------------------	------------------------------

Outputs

Output signal	switching signal; IO-Link
Electrical design	PNP/NPN; (configurable)
Number of digital outputs	2
Output function	normally open / closed



Vibration sensor

VIBRATION IO-LINK SWITCH

Max. voltage drop switching output DC	[V]	2
Max. current load per output	[mA]	100
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Measuring/setting range		
Note on setpoint SP		configurable
Frequency range	[Hz]	2...5600
Measuring principle		capacitive
Number of measurement axes		3
v-RMS (x-y-z)		
Measuring range of vibration	[m/s]	0...0.3
Resolution	[m/s]	0.0001
Set point SP	[m/s]	0.0002...0.3
Reset point rP	[m/s]	0...0.2998
a-Peak / a-RMS (x-y-z)		
Measuring range of vibration	[m/s²]	0...156.91
Resolution	[m/s²]	0.01
Set point SP	[m/s²]	2...156.91
Reset point rP	[m/s²]	0...154.91
Temperature measurement		
Measuring range	[°C]	-30...80
Resolution	[°C]	0.1
Set point SP	[°C]	-28...80
Reset point rP	[°C]	-30...78
Accuracy / deviations		
Accuracy	[K]	± 5
Linearity deviation		2; (% of the final value)
X axis		
Accuracy		2-4000Hz +/- 10%, 4000...5600Hz -3dB
Y axis		
Accuracy		2-5000Hz +/- 10%, 5000...5600Hz -3dB
z-axis		
Accuracy		2-5000Hz +/- 10%, 5000...5600Hz -3dB
Software / programming		
Parameter setting options		IO-Link
Diagnostic functions		self-test
Interfaces		
Communication interface		IO-Link
Transmission type		COM3 (230,4 kBaud)
IO-Link revision		1.1



Vibration sensor

VIBRATION IO-LINK SWITCH

SDCI standard	IEC 61131-9: 2013-07	
Profiles	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
	Function	Locator
	Function	ProductURI
SIO mode	yes	
Required master port class	A	
Min. process cycle time [ms]	4.1	
IO-Link process data (cyclical)	Function	bit length
	v-RMS (x)	16
	v-RMS (y)	16
	v-RMS (z)	16
	v-RMS (Magnitude)	16
	scaling / v-RMS	8
	a-Peak (x)	16
	a-Peak (y)	16
	a-Peak (z)	16
	a-Peak (Magnitude)	16
	a-RMS (x)	16
	a-RMS (y)	16
	a-RMS (z)	16
	a-RMS (Magnitude)	16
	scaling / a-Peak/a-RMS	8
	temperature	16
	scaling / temperature	8
	device status	4
	unbalance / bearing event	1
	virtual switching output (v-ou1)	1
	binary switching information	2
IO-Link functions (acyclical)	filter for v-RMS, a-RMS, a-Peak; Hysteresis; window; Switch points; switching logic; unbalance measurement; machine operating hours counter; bearing analysis (BearingScout)	
Supported DeviceIDs	Type of operation	DeviceID
	default	1778
Note	For further information please see the IODD PDF file at "Downloads"	
Operating conditions		
Ambient temperature [°C]	-30...80	
Storage temperature [°C]	-30...80	
Protection	IP 67; IP 68; IP 69	
Tests / approvals		
EMC	EN IEC 61000-6-2	noise immunity / industrial environments
	EN IEC 61000-6-4	noise emission
Shock resistance	DIN EN 60068-2-27	50 g 11 ms
		500 g 1 ms
Vibration resistance	DIN EN 60068-2-6	20 g / 10...3000 Hz
MTTF [years]	480	
UL approval	UL approval number	L006
	File number UL	E251902

VVB302



Vibration sensor

VIBRATION IO-LINK SWITCH

Standard	mechanical vibration; ISO 10816-3; ISO 2954; ISO 20816-3
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Mechanical data

Weight	[g]	98.4
Type of mounting		mounting screw
Material		housing: stainless steel (1.4404 / 316L)
Tightening torque	[Nm]	4.6

Displays / operating elements

Display	Power	1 LED, green
	fault	1 LED, red

Accessories

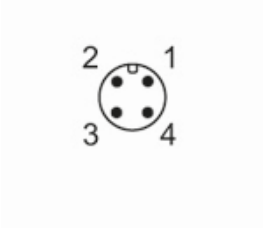
Items supplied	mounting screw: 1 x (M5 x 25 mm)
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Remarks

Pack quantity	1 pcs.
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Electrical connection

Connector: 1 x M12; coding: A; Maximum cable length: 20 m



1	L+
2	OUT2 Switching output
3	L-
4	OUT1 switching output or IO-Link

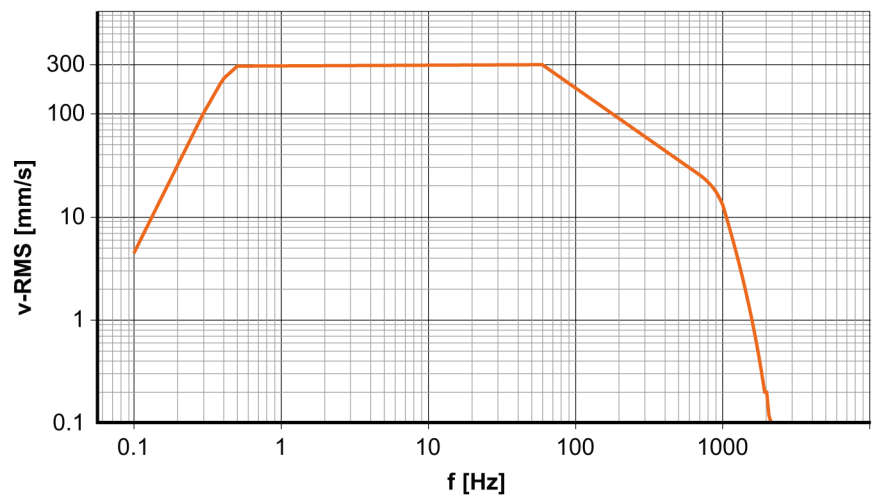
VVB302

Vibration sensor

VIBRATION IO-LINK SWITCH



Diagrams and graphs



v-
RMS
[mm/s]
vibration velocity

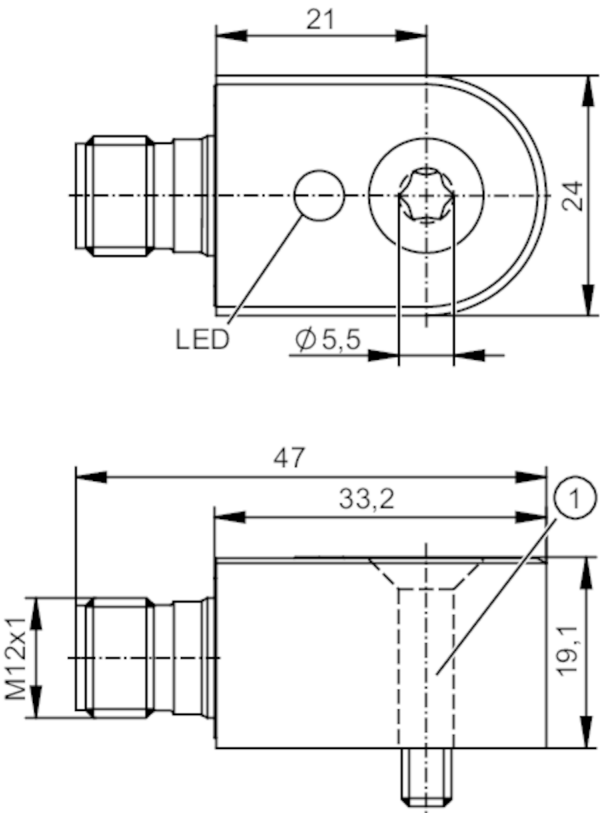
f
[Hz]
Frequency

VVB305



Vibration sensor

VIBRATION IO-LINK SWITCH



1 Mounting screw M5



Product characteristics

Frequency range	[Hz]	2...5600
Measuring principle		capacitive
v-RMS (x-y-z)		
Measuring range of vibration	[mm/s]	0...300
a-Peak/a-RMS (x-y-z)		
Measuring range of vibration	[g]	0...16

Application

Design	Basic condition monitoring
Application	industrial machines

Electrical data

Operating voltage	[V]	18...30 DC
Current consumption	[mA]	< 50
Min. insulation resistance	[MΩ]	100; (500 V DC)
Protection class		III
Reverse polarity protection		yes
Type of sensor		Microelectromechanical system (MEMS)

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2
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VVB305



Vibration sensor

VIBRATION IO-LINK SWITCH

Outputs		
Output signal		switching signal; IO-Link
Electrical design		PNP/NPN; (configurable)
Number of digital outputs		2
Output function		normally open / closed
Max. voltage drop switching output DC	[V]	2
Max. current load per output	[mA]	100
Short-circuit protection		yes
Type of short-circuit protection		yes (non-latching)
Overload protection		yes
Measuring/setting range		
Note on setpoint SP		configurable
Frequency range	[Hz]	2...5600
Measuring principle		capacitive
Number of measurement axes		3
v-RMS (x-y-z)		
Measuring range of vibration	[mm/s]	0...300
Resolution	[mm/s]	0.1
Set point SP	[mm/s]	0.2...300
Reset point rP	[mm/s]	0...299.8
Temperature measurement		
Measuring range	[°C]	-30...80
Resolution	[°C]	0.1
Set point SP	[°C]	-28...80
Reset point rP	[°C]	-30...78
Crest (x-y-z)		
Measuring range of vibration		1...50
Resolution		0.1
Set point SP		2...50
Reset point rP		1...49
a-Peak/a-RMS (x-y-z)		
Measuring range of vibration	[g]	0...16
Resolution	[g]	0.001
Set point SP	[g]	0.2...16
Reset point rP	[g]	0...15.8
Accuracy / deviations		
Accuracy	[K]	± 5
Linearity deviation		2; (% of the final value)
X axis		
Accuracy		2-4000Hz +/- 10%, 4000..5600Hz -3dB

VVB305



Vibration sensor

VIBRATION IO-LINK SWITCH

Y axis		
Accuracy	2-5000Hz +/- 10%, 5000...5600Hz -3dB	
z-axis		
Accuracy	2-5000Hz +/- 10%, 5000...5600Hz -3dB	
Software / programming		
Parameter setting options	IO-Link	
Diagnostic functions	self-test	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM3 (230,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9: 2013-07	
Profiles	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
	Function	Locator
	Function	ProductURI
SIO mode	yes	
Required master port class	A	
Min. process cycle time [ms]	3.3	
IO-Link process data (cyclical)	Function	bit length
	v-RMS (x-y-z)	16
	velocity scaling	8
	velocity measurement axis	4
	a-Peak (x-y-z)	16
	a-RMS (x-y-z)	16
	scaling acceleration	8
	measurement axis acceleration	4
	Crest (x-y-z)	16
	temperature	16
	scaling Crest + temperature	8
	device status	4
	unbalance event	1
	virtual switching output (v-ou1)	1
	binary switching information	2
	IO-Link functions (acyclical)	filter for vibration velocity (v); filter for vibration acceleration (a); Hysteresis; window; Switch points; switching logic; unbalance measurement; machine operating hours counter
Supported DeviceIDs	Type of operation	DeviceID
	default	1779
Note	For further information please see the IODD PDF file at "Downloads"	
Operating conditions		
Ambient temperature [°C]	-30...80	
Storage temperature [°C]	-30...80	
Protection	IP 67; IP 68; IP 69	
Tests / approvals		
EMC	EN IEC 61000-6-2	noise immunity / industrial environments
	EN IEC 61000-6-4	noise emission

VVB305



Vibration sensor

VIBRATION IO-LINK SWITCH

Shock resistance	DIN EN 60068-2-27	50 g 11 ms
		500 g 1 ms
Vibration resistance	DIN EN 60068-2-6	20 g / 10...3000 Hz
MTTF [years]		480
UL approval	UL approval number	L006
	File number UL	E251902
Standard	mechanical vibration; ISO 10816-3; ISO 2954; ISO 20816-3	

Mechanical data

Weight [g]	98.2
Type of mounting	mounting screw
Material	housing: stainless steel (1.4404 / 316L)
Tightening torque [Nm]	4.6

Displays / operating elements

Display	Power	1 LED, green
	fault	1 LED, red

Accessories

Items supplied	mounting screw: 1 x (M5 x 25 mm)
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Remarks

Pack quantity	1 pcs.
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Electrical connection

Connector: 1 x M12; coding: A; Maximum cable length: 20 m



1	L+
2	OUT2 Switching output
3	L-
4	OUT1 switching output or IO-Link

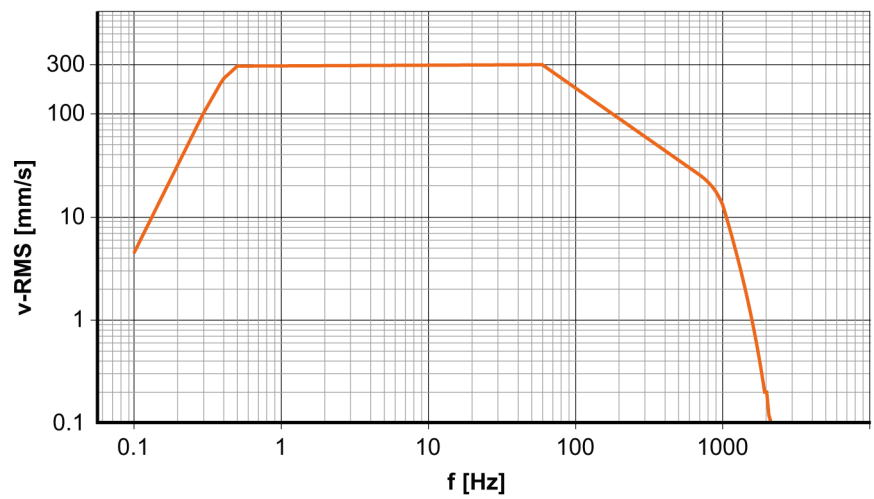
VVB305



Vibration sensor

VIBRATION IO-LINK SWITCH

Diagrams and graphs



v-
RMS
[mm/
s]
vibration velocity

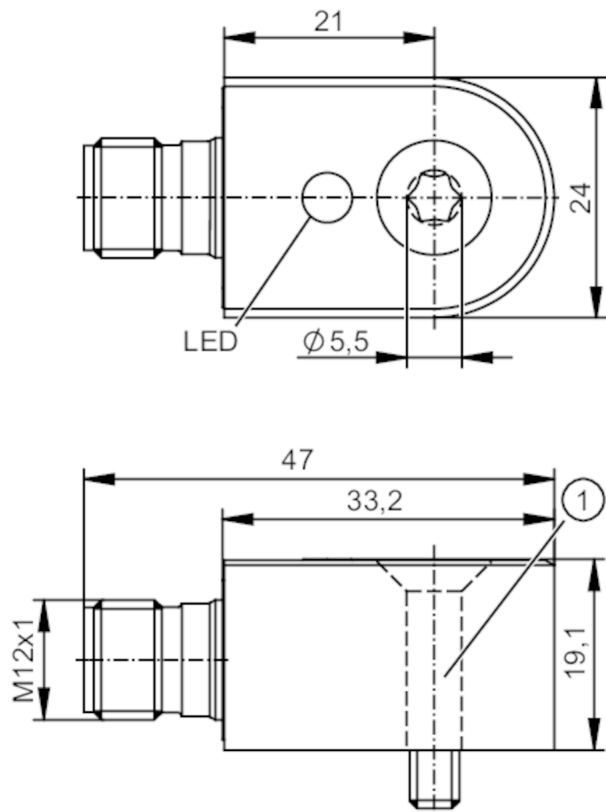
f
[Hz]
Frequency

VVB306



Vibration sensor

VIBRATION IO-LINK SWITCH



1 Mounting screw M5



Product characteristics

Frequency range	[Hz]	2...5600
Measuring principle		capacitive
v-RMS (x-y-z)		
Measuring range of vibration	[mm/s]	0...300
a-Peak/a-RMS (x-y-z)		
Measuring range of vibration	[g]	0...16

Application

Design	DataScience condition monitoring
Application	industrial machines

Electrical data

Operating voltage	[V]	18...30 DC
Current consumption	[mA]	< 50
Min. insulation resistance	[MΩ]	100; (500 V DC)
Protection class		III
Reverse polarity protection		yes
Type of sensor		Microelectromechanical system (MEMS)

Inputs / outputs

Number of inputs and outputs	Number of digital outputs: 2
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Vibration sensor

VIBRATION IO-LINK SWITCH

Outputs	
Output signal	switching signal; IO-Link
Electrical design	PNP/NPN; (configurable)
Number of digital outputs	2
Output function	normally open / closed
Max. voltage drop switching output DC [V]	2
Max. current load per output [mA]	100
Short-circuit protection	yes
Type of short-circuit protection	yes (non-latching)
Overload protection	yes
Measuring/setting range	
Note on setpoint SP	configurable
Frequency range [Hz]	2...5600
Measuring principle	capacitive
Number of measurement axes	3
v-RMS (x-y-z)	
Measuring range of vibration [mm/s]	0...300
Resolution [mm/s]	0.1
Set point SP [mm/s]	0.2...300
Reset point rP [mm/s]	0...299.8
Temperature measurement	
Measuring range [°C]	-30...80
Resolution [°C]	0.1
Set point SP [°C]	-28...80
Reset point rP [°C]	-30...78
a-Peak/a-RMS (x-y-z)	
Measuring range of vibration [g]	0...16
Resolution [g]	0.001
Set point SP [g]	0.2...16
Reset point rP [g]	0...15.8
Accuracy / deviations	
Accuracy [K]	± 5
Linearity deviation	2; (% of the final value)
X axis	
Accuracy	2-4000Hz +/- 10%, 4000...5600Hz -3dB
Y axis	
Accuracy	2-5000Hz +/- 10%, 5000...5600Hz -3dB
z-axis	
Accuracy	2-5000Hz +/- 10%, 5000...5600Hz -3dB
Software / programming	
Parameter setting options	IO-Link



Vibration sensor

VIBRATION IO-LINK SWITCH

Diagnostic functions	self-test	
Interfaces		
Communication interface	IO-Link	
Transmission type	COM3 (230,4 kBaud)	
IO-Link revision	1.1	
SDCI standard	IEC 61131-9: 2013-07	
Profiles	BLOB	Binary Large Object transfer
	Common - I&D	Identification and Diagnosis
	Function	Locator
	Function	ProductURI
SIO mode	yes	
Required master port class	A	
Min. process cycle time [ms]	4.1	
IO-Link process data (cyclical)	Function	bit length
	v-RMS (x)	16
	v-RMS (y)	16
	v-RMS (z)	16
	v-RMS (Magnitude)	16
	scaling / v-RMS	8
	a-Peak (x)	16
	a-Peak (y)	16
	a-Peak (z)	16
	a-Peak (Magnitude)	16
	a-RMS (x)	16
	a-RMS (y)	16
	a-RMS (z)	16
	a-RMS (Magnitude)	16
	scaling / a-Peak/a-RMS	8
	temperature	16
	scaling / temperature	8
	device status	4
	unbalance / bearing event	1
	virtual switching output (v-ou1)	1
	binary switching information	2
IO-Link functions (acyclical)	filter for v-RMS, a-RMS, a-Peak; Hysteresis; window; Switch points; switching logic; unbalance measurement; machine operating hours counter; bearing analysis (BearingScout)	
Supported DeviceIDs	Type of operation	DeviceID
	default	1780
Note	For further information please see the IODD PDF file at "Downloads"	
Operating conditions		
Ambient temperature [°C]	-30...80	
Storage temperature [°C]	-30...80	
Protection	IP 67; IP 68; IP 69	
Tests / approvals		
EMC	EN IEC 61000-6-2	noise immunity / industrial environments
	EN IEC 61000-6-4	noise emission

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Vibration sensor

VIBRATION IO-LINK SWITCH

Shock resistance	DIN EN 60068-2-27	50 g 11 ms
		500 g 1 ms
Vibration resistance	DIN EN 60068-2-6	20 g / 10...3000 Hz
MTTF [years]		480
UL approval	UL approval number	L006
	File number UL	E251902
Standard	mechanical vibration; ISO 10816-3; ISO 2954; ISO 20816-3	

Mechanical data

Weight [g]	97.9
Type of mounting	mounting screw
Material	housing: stainless steel (1.4404 / 316L)
Tightening torque [Nm]	4.6

Displays / operating elements

Display	Power	1 LED, green
	fault	1 LED, red

Accessories

Items supplied	mounting screw: 1 x (M5 x 25 mm)
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Remarks

Pack quantity	1 pcs.
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Electrical connection

Connector: 1 x M12; coding: A; Maximum cable length: 20 m



1	L+
2	OUT2 Switching output
3	L-
4	OUT1 switching output or IO-Link

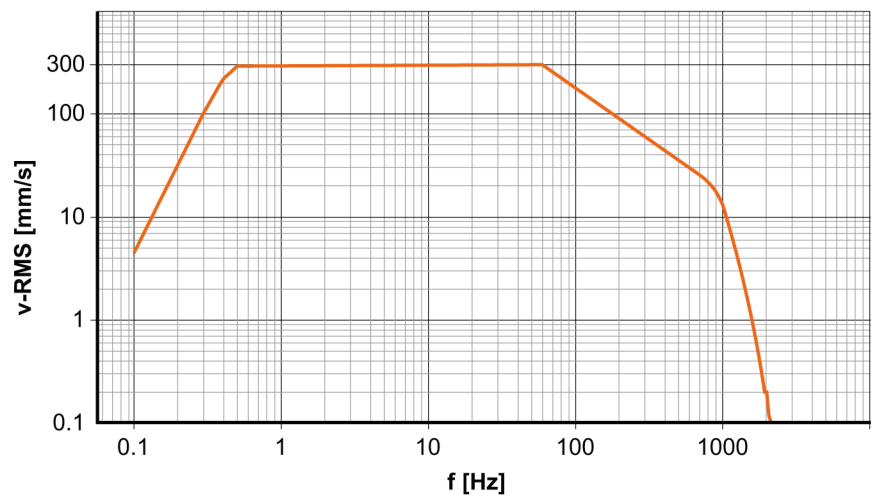
VVB306



Vibration sensor

VIBRATION IO-LINK SWITCH

Diagrams and graphs



v-
RMS
[mm/s]
vibration velocity

f
[Hz]
Frequency