HONEYWELL
VERSATILIS TRANSMITTER

Multi-Variant Sensing

Honeywell Versatilis™ Transmitter is a multi-variant sensing platform based on the latest LoRaWAN® protocol communication technology. Its inherently low-power compact design coupled with quick & easy installation, and commission helps manufacturers to deploy them at scale with the lowest CAPEX and negligible OPEX. These sensors are designed to monitor and predict the health of rotating equipment like motors, pumps, blowers, fans, compressors, and gearboxes. In addition, they can be deployed to remotely monitor the position of manual valves, the health of steam traps, and the surface temperature of static process equipment. They can also be deployed to monitor environmental conditions in life science facilities.



Figure 1– Honeywell Versatilis Transmitter

MEASUREMENT PARAMETERS:

Surface Temperature	Ambient Humidity	Ambient Pressure
Vibration	Audio Acoustics	Ambient Temperature

SENSORS AND COMMUNICATIONS:

The Honeywell Versatilis platform contains a suite of sensors encompassing versatile sensing parameters such as pressure, temperature, humidity, triaxial accelerometer, and audio acoustics MEMS to provide insightful measurements. Sensors on-the platform are selected to cover a broad frequency spectrum enabling adequate sensing coverage of process and physical phenomena. Sensor fusion analysis on the acquired measurements can be performed. Any specific parameter is customizable in either software or hardware according to the requirement of a specific application. Each measured parameter contributes a unique dimension thereby augmenting the system into a multi-dimension sensing platform. Sensor data can be transferred over the LoRaWAN® network which is protected through secure key authentication. The Honeywell Versatilis™ Transmitter can be configured to notify the application through Event Triggers and FFT (Fast Fourier Transform) Triggers.

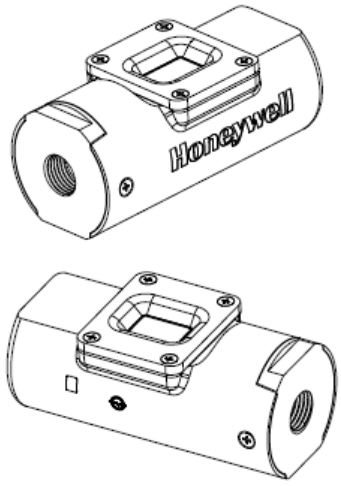


Figure 2– Assembly

Honeywell Technologies

FEATURES

PARAMETER	DESCRIPTION
Measuring Parameters	Vibration, Acoustics, Surface Temperature, Ambient Temperature, Humidity, and Ambient Pressure
Measurement interval (Sensor Parameters)	1 min to 60 mins
Vibration output data	RMS values (average), Kurtosis, Crest Factor, Skewness, FFT High Energy samples (amplitude and frequency), and Sub-band Energy.
Vibration FFT no. of lines	4096 (1.8 Hz resolution)
Vibration Raw data and full spectrum FFT data are available through the configuration application for further analysis by the users.	
Velocity measurement and range	Available as per ISO 10816-3, Range >0 to 100 mm/s
Triaxial accelerometer	MEMS, +/- 16g, 2500 Hz Bandwidth
Acoustics sensor	Bandwidth 20 to 20 kHz Maximum 120 dB SPL
Acoustics FFT data is available through a configuration application for further user analysis.	
Surface temperature	-40°C to +80°C (-40 °F to +176 °F)
Pressure sensor	335 to 1100 hPa
Humidity	0 to 100% RH
Edge computing	RMS, FFT calculations, Statistical parameters, RPM, Vibrational statistical parameter, and Static alarm thresholds[2]
Operating temperature	-40°C to +80°C (-40 °F to +176 °F)
Data over LoRaWAN	• Configurable publish rate of RMS values, Kurtosis, Crest Factor, and Skewness. • Configurable publish rate of FFT (36 High energy amplitudes). • Configurable Sub-band (size 250 Hz) energy values.
Communication	• 2.4 GHz Bluetooth low energy. • LoRaWAN Class-A. For information, see Honeywell Versatilis Transmitter LoRaWAN® Frequency and channel details"
Device LED indication	Green and Red LEDs (for more information, see Honeywell Versatilis Transmitter Installation and User Guide, 34-VT-25-01)
Device diagnostics	Battery status, Sensor health
Battery life	• Upto 3 years with 5 minutes sensor measurement interval and 30 mins LoRaWAN update. • Upto 5[1] years with 10 minutes sensor measurement interval and 60 mins LoRaWAN update.
LoRaWAN reporting interval (all sensors data)	1 minute to 24 hours
Vibration measurement duration	Acceleration RAW data – 2.2 seconds
Derived parameters	Velocity and RPM
Physical dimensions	W: 46 mm (1.81 inches) x H: 100 mm (3.93 inches)
Weight	180 grams (0.39 lb)
Mounting options	Adhesive Adapter Magnetic Adapter Screw Mount Adapter (M6 screw) Epoxy Mount Adapter
Data logging	Capable of recording 20 days of data with the default configuration
Data security and encryption	AES256 LoRa and BLE encryption
Firmware updates	Available through the Honeywell Versatilis™ Connect App.
Wireless range	BLE 25m Line of Sight (LOS) and LoRa 4km Line of Sight (LOS)

[1] Change in default parameters will affect the battery life accordingly.

[2] There will be an impact on battery life based on the number of times the alarm condition is created.

MEASUREMENT PARAMETERS – RANGE AND PERFORMANCE SPECIFICATIONS

SENSOR	RANGE	UNITS	ACCURACY
Pressure	335 to 1100 hPa	hPa	0.5% of span
Surface Temperature	-40 to +80 °C (-40 to +176 °F)	°C (°F)	+/-3 °C
Humidity	0 to 100	%RH	+/- 3%
Ambient Temperature	-40 to +80 °C (-40 to +176 °F)	°C (°F)	+/-2 °C
Audio Acoustics	20 to 20,000	Hz	
	Upto 120	dBSPL	+/-3 dBSPL@1KHz
Triaxial Vibration/Acceleration	5 to 2500 (+/-16g)	Hz	+/- 1dB(*)
* With Screw Mount Adapter.			
Note: Sensors are pre-calibrated and do not require field calibration.			

COMMUNICATIONS TECHNOLOGY SPECIFICATIONS		
BLUETOOTH LOW ENERGY (BLE) TECHNOLOGY: BLUETOOTH® 5.0		
DESCRIPTION	RANGE	UNITS
Frequency	2360 to 2500	MHz
RX Sensitivity	-96	dBm
TX Power	-17 to 0	dBm
Range	Typical 25	Meters

LONG RANGE COMMUNICATION TECHNOLOGY: LORAWAN® CLASS-A			
DESCRIPTION	RANGE	UNITS	PERFORMANCE CONDITIONS
Frequency	For more information, see LoRaWAN frequency and channel details	MHz	
RX Sensitivity (125 kHz BW)	-117.5 LoRa	dBm	SF = 6
	-122.5	dBm	SF = 7
	-125.5	dBm	SF = 8
	-128.5	dBm	SF = 9
	-131.0	dBm	SF = 10
	-133.5	dBm	SF = 11
	-135.5	dBm (Max)	SF = 12
TX Power	14	dBm	LoRaWAN® Region Specification

COMPLIANCE STANDARDS	
Enclosure	IP66 & IP67

MATERIAL CONSRTUCTION	
Housing	Polycarbonate housing
Base	Metal Base – Aluminum ; 6061, NPT/Magnetic Adapter – 6061

CERTIFICATIONS

PARAMETER	DESCRIPTION
Global Regulatory Certifications	**CE (EEA & EFTA Countries)** **EMC Directive:** EN 61326-1, EN 61326-2-3, **Radio Equipment Directive:** ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 300 328, ETSI EN 301 489-1, ETSI EN 301 489-3 & ETSI EN 301 489-17 **Low Voltage Directive:** EN 61010-1 **RoHS directive:** EN 50581: 2012 **Radio Exposure Directive:** EN 50385: 2017 **Explosive Atmospheres Directive:** EN 60079-0: 2018, EN 60079-11: 2012
	UKCA (United Kingdom) **EMC Regulations:** EN 61326-1, EN 61326-2-3 **Radio Equipment Regulations:** ETSI EN 300 220-1, ETSI EN 300 220-2, ETSI EN 300 328, ETSI EN 301 489-1, ETSI EN 301 489-3 & ETSI EN 301 489-17 **Electrical Safety Regulations:** EN 61010-1 **RoHS Regulations:** EN 50581: 2012 **Radio Exposure Regulations:** EN 50385: 2017 **Explosive Atmospheres Regulations:** EN 60079-0: 2018, EN 60079-11: 2012
	FCC Approval (United States) 47 CFR Part 15 Subpart B & C
	ISED Approval (Canada) IC Regulation ICES-003 Issue 7:2020 and ICES-Gen Issue 1:2018+A1:2021
	LoRaWAN Alliance Certified
	Bluetooth SIG Listed
	Enclosure: IP66 & IP67
Hazardous Location Certifications	I**ECEx Intrinsic Safety** Ex ia IIB T4 Ga; Tamb: -40°C to +80°C
	ATEX Intrinsic Safety II 1G - Ex ia IIB T4 Ga; Tamb: -40°C to +80°C
	UKCA Intrinsic Safety II 1G - Ex ia IIB T4 Ga; Tamb: -40°C to +80°C
	North America & Canada - CSA Compliance Class I, Division 1, Groups C and D T4 (I.S.) Ex ia IIB T4 Ga Class I, Zone 0, AEx ia IIB T4 Ga Ambient Temperature: -40°C to +80°C
	FM Approvals™ (USA): Intrinsically safe, for Class I, Division 1, Groups C and D, T4 Ta= -40°C to +80°C Zone 0, AEx/Ex ia IIB T4 Ga Ta=-40°C to +80°C.
	CCoE Approval (India) Ex ia IIB T4 Ga; Tamb: -40°C to +80°C
Marine	DNS and ABS
NAMUR	Type testd according to NAMUR NE 95

PHYSICAL DIMENSIONS

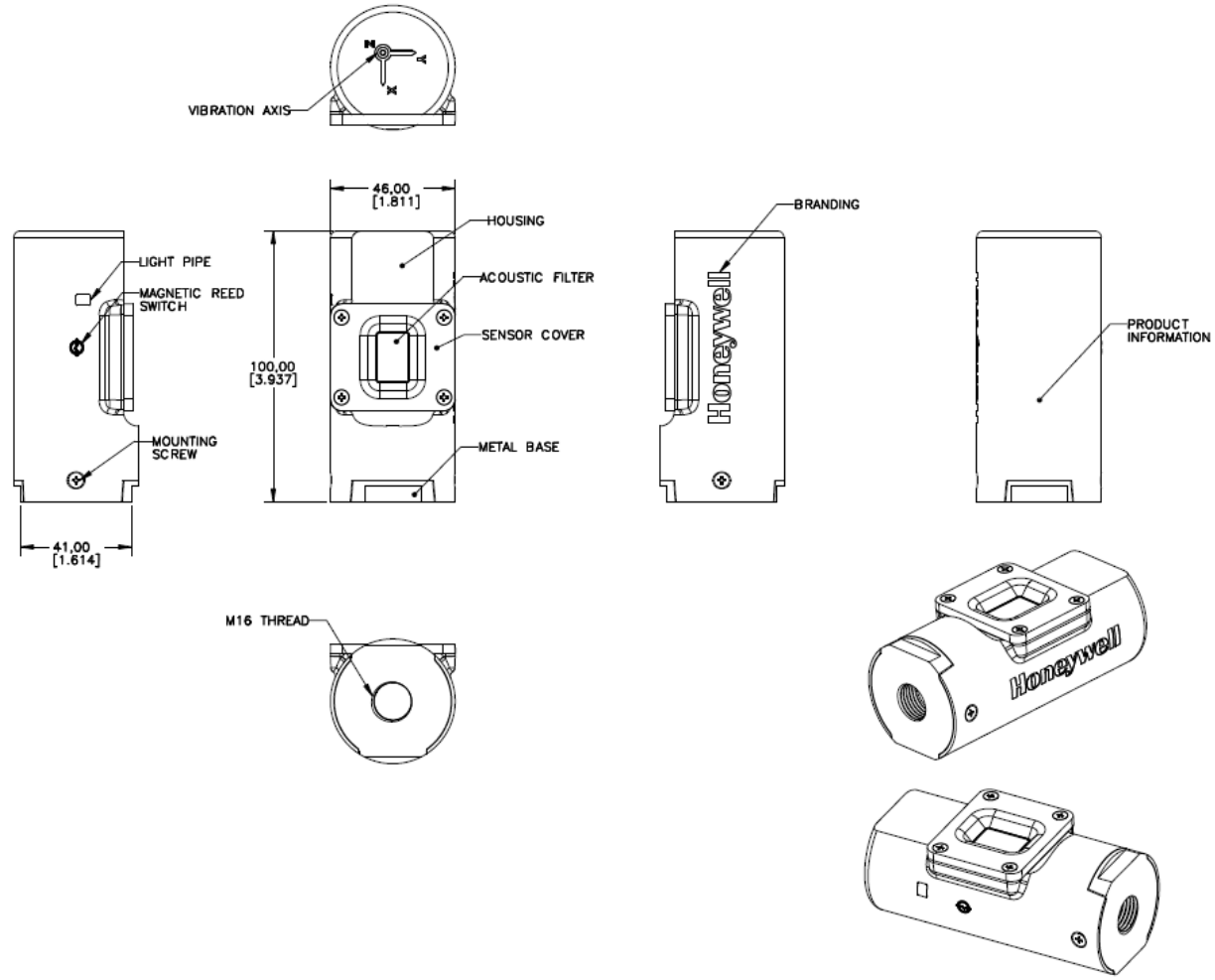


Figure 3– Physical Dimensions

MOUNTING CONSIDERATIONS

Adapters: The Honeywell Versatilis Transmitter comes with a variety of mounting options. The mounting options are magnetic adapter, adhesive adapter, screw mount adapter, and epoxy mount adapter.

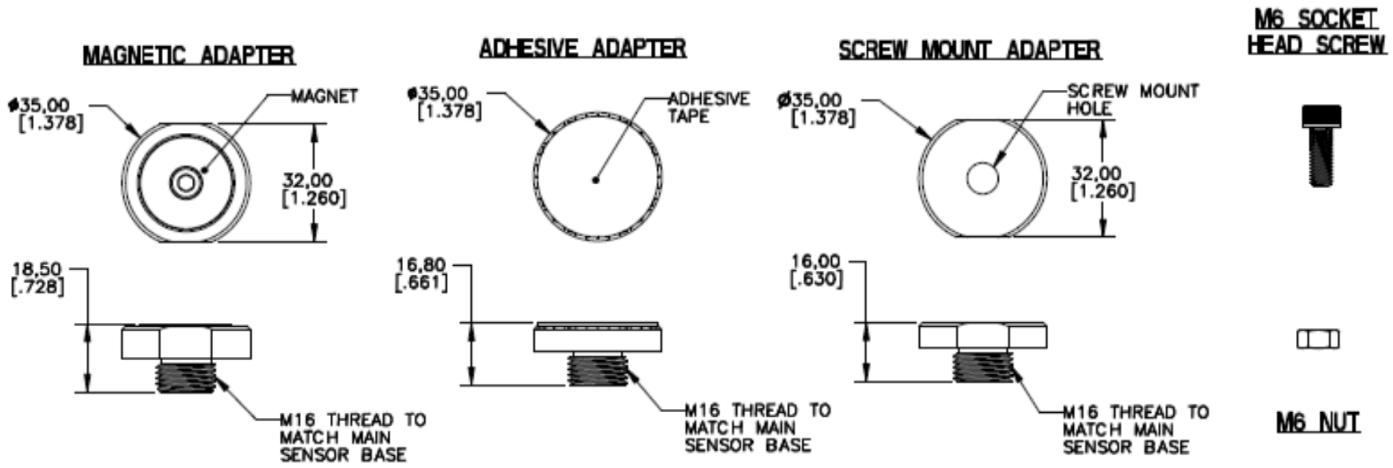


Figure 4– Adapters

Adhesive Adapter – Attach to the target machine with a sticky adapter face.

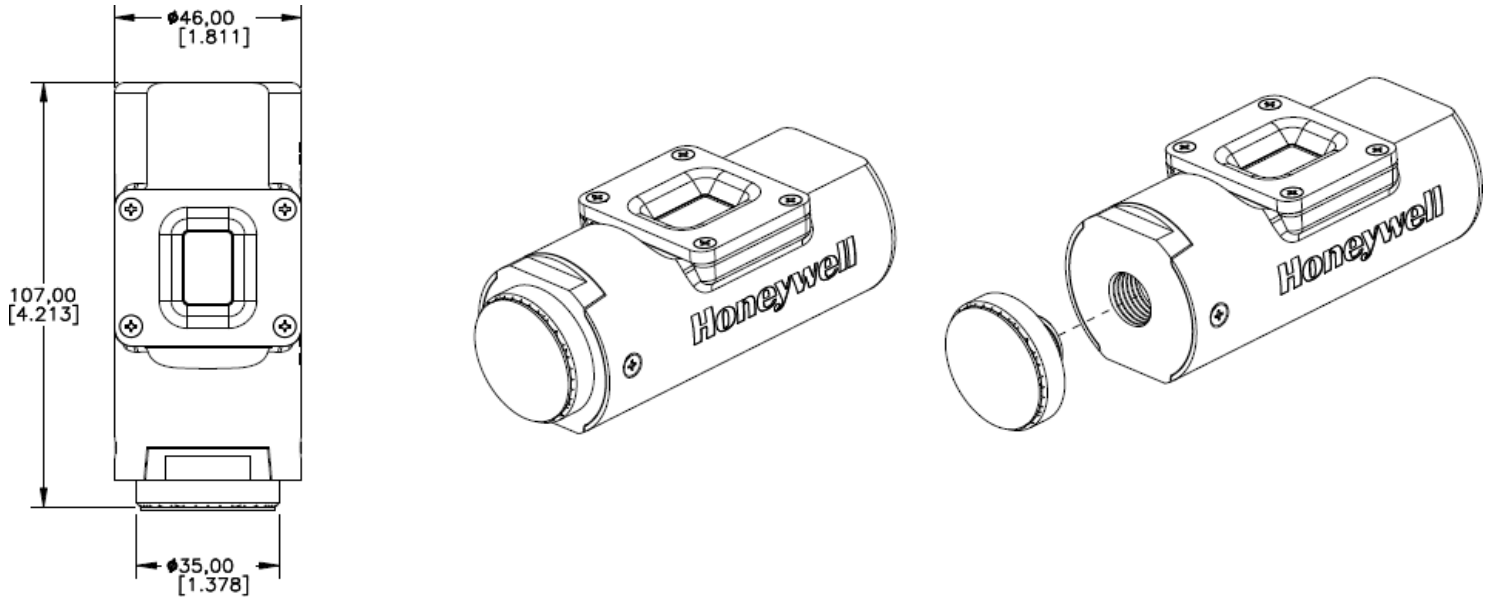


Figure 5– Adhesive mount

Magnetic Adapter (Attach to the machine with magnetic pull force).

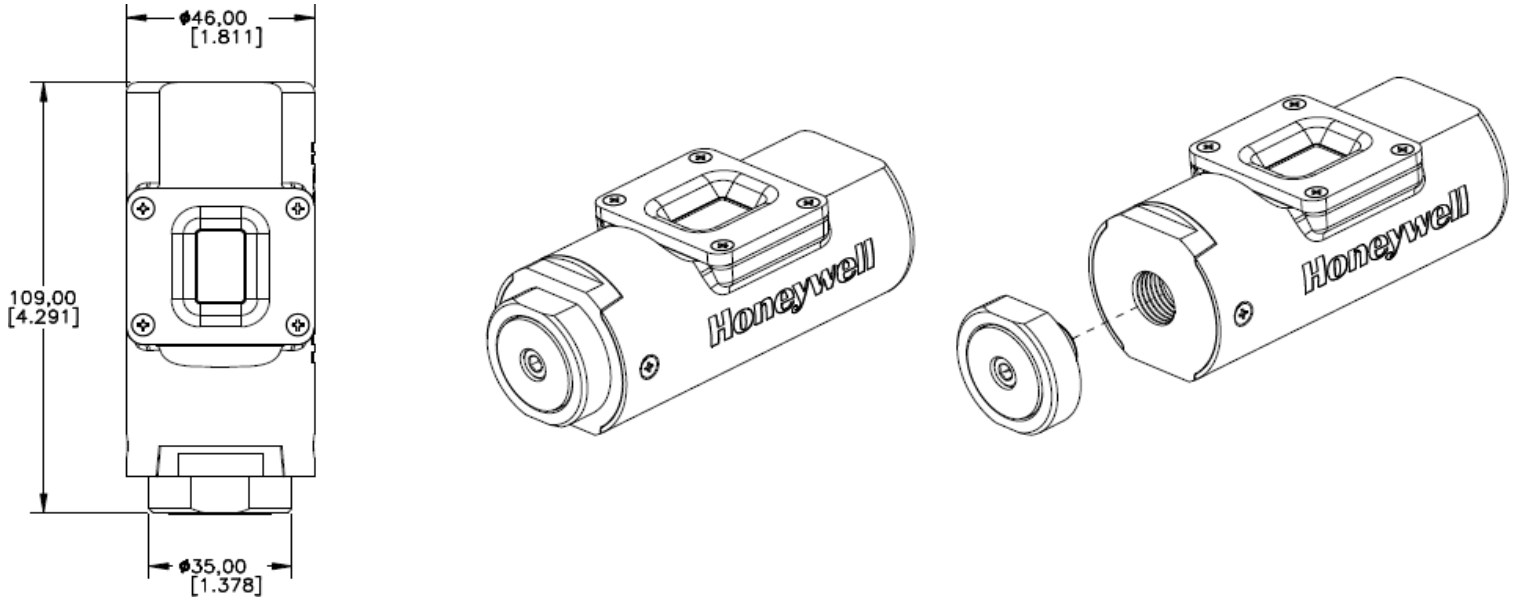


Figure 6– Magnetic mount

Screw Mount Adapter – Preferred mounting for vibration and Surface Temperature applications. (M6 screw & nut arrangement to clamp on the machine).

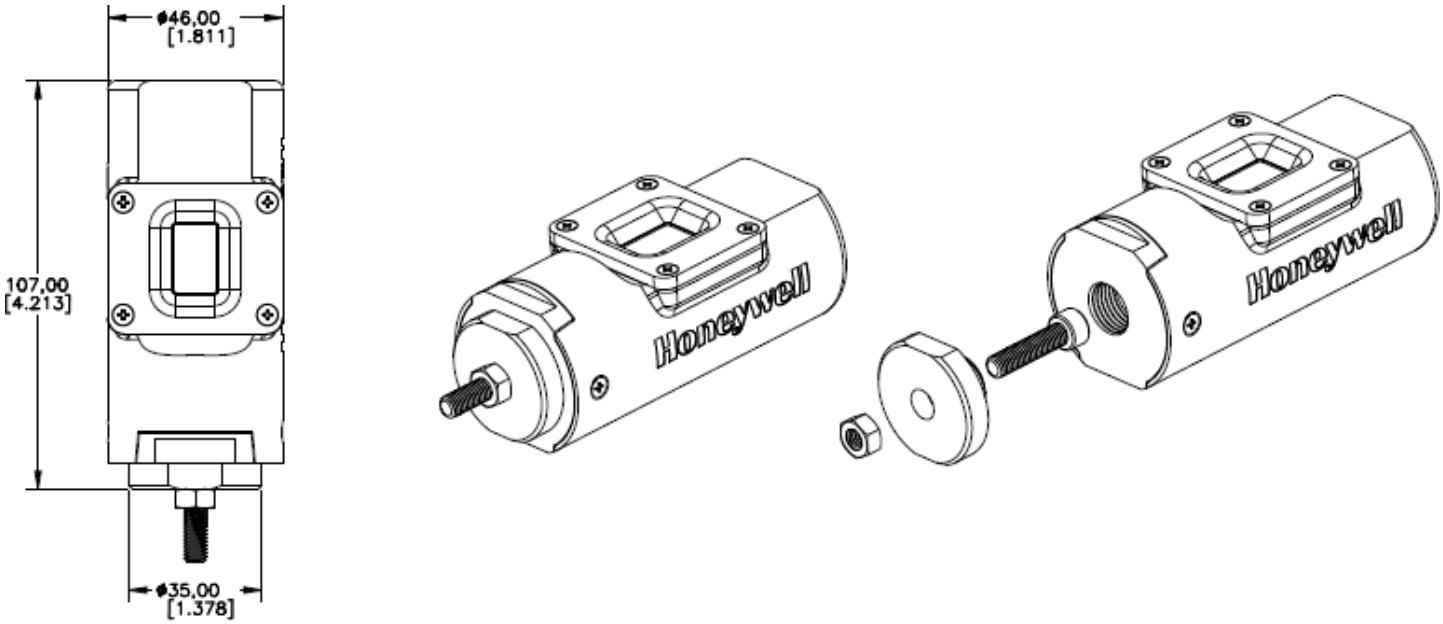


Figure 7– Screw mount

Epoxy Mount Adapter – Attach to the top of the target machine by applying epoxy-based adhesive on the adapter face.

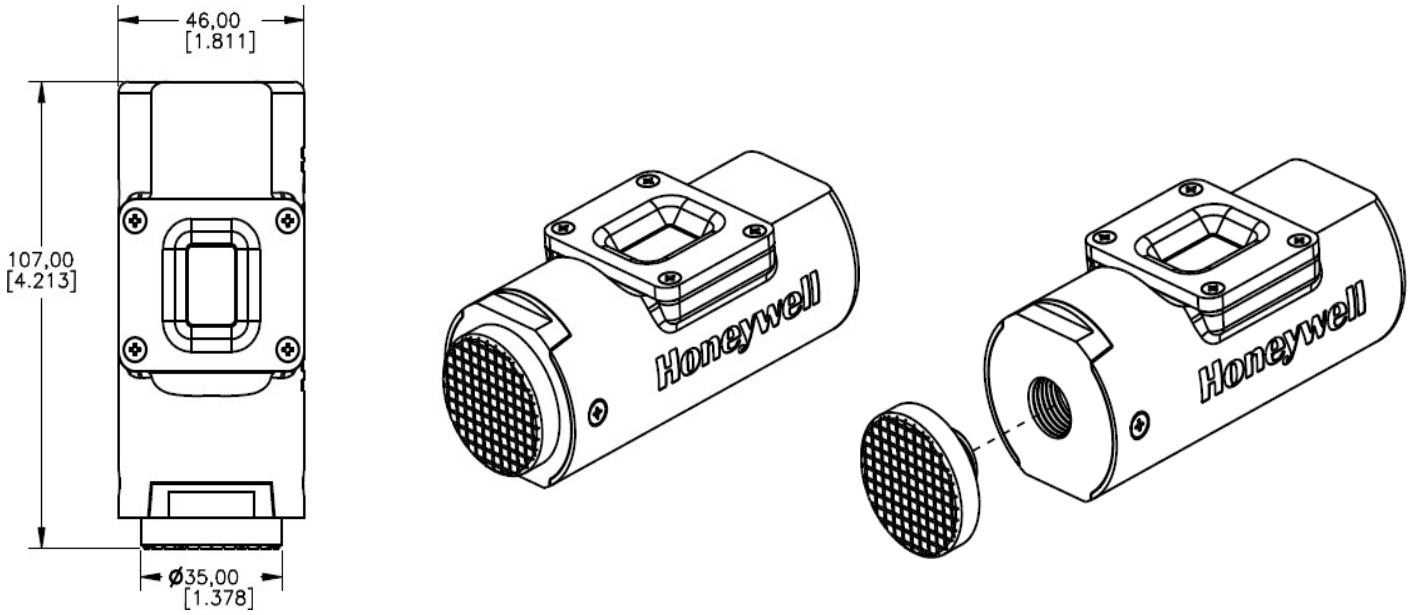


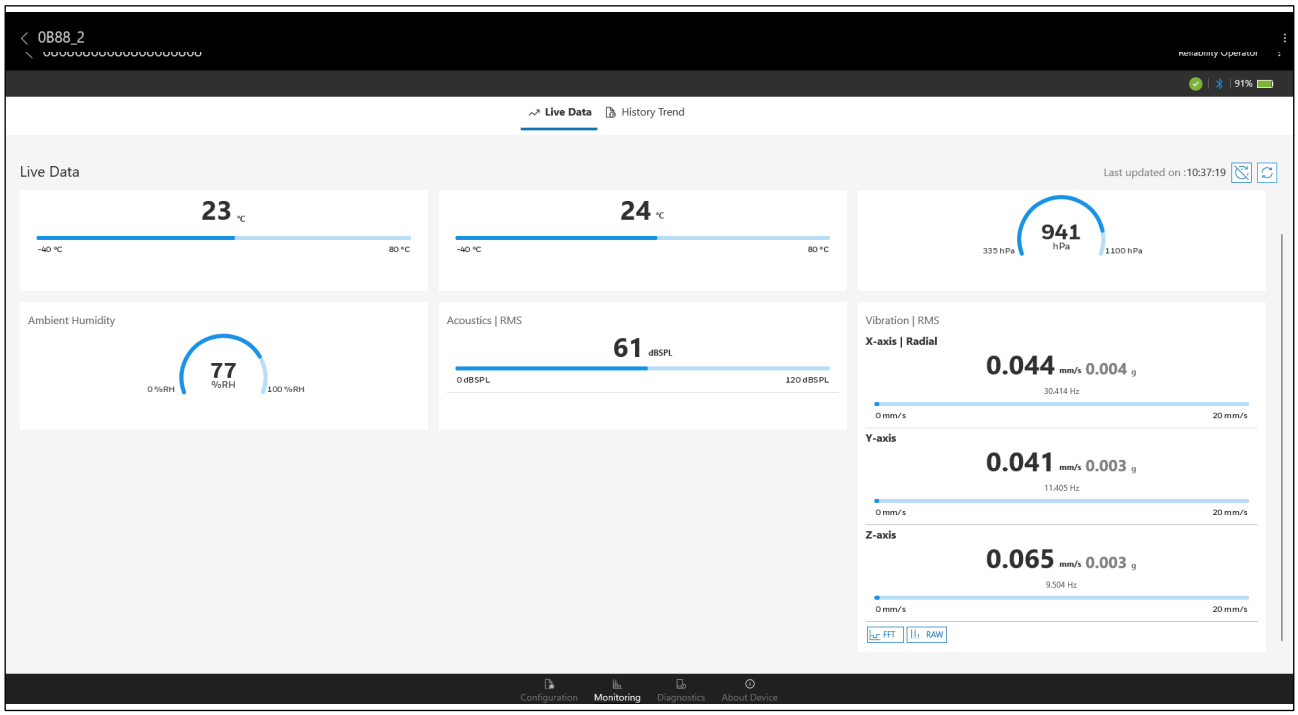
Figure 8– Epoxy Mount

HONEYWELL VERSATILIS™ CONNECT - DEVICE CONFIGURATION APPLICATION

Honeywell Versatilis™ Transmitter is an intuitive application that can be installed on mobile devices and tablets running Android, Windows, and iOS platforms. The application is compatible to work with the Honeywell Versatilis tablet..

Key Features:

- Secure log on
- Connects Via BLE
- Read and download real time as well as historical data
- Graphical user interface
- Identify Device as well as Asset
- Bulk configuration
- FFT spectrum visualization.
- Connect and Configure Honeywell Versatilis Transmitters in minutes



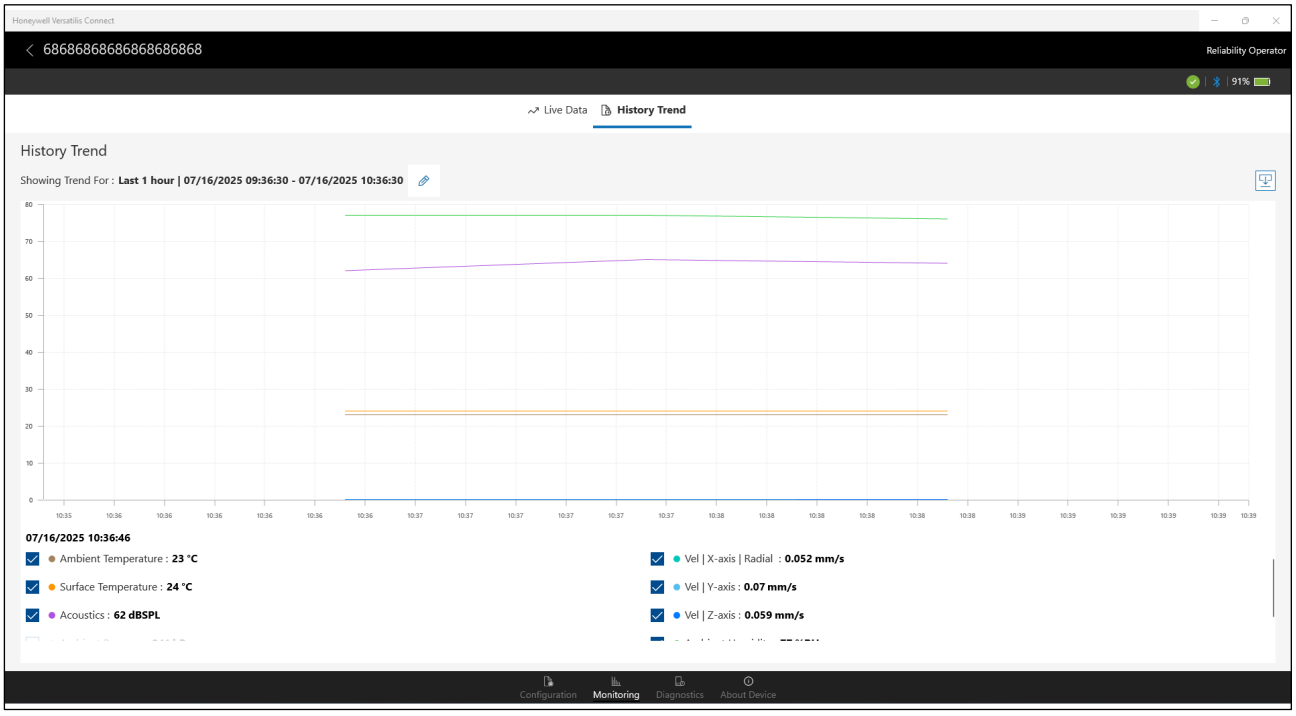


Figure 9– Live Data and History Trends dashboards

DATA LICENSING

Various data processed from the transmitter can be obtained based on the purchased data license.

There are two types of licenses:

- Basic
- Advanced

Note: The Advanced license is now offered as a perpetual license, replacing the previous two-year subscription. Existing devices can be upgraded, while new devices purchased with the Advanced license will retain the license for the life of the device.

Advanced data license provides more data such as:

- Vibration statistical parameters such as Kurtosis, Crest Factor, and Skewness for all three axis.
- Vibration Top 36 FFT peaks and frequencies for all three axis.
- Vibration 10 energy bands (Acceleration) of 250Hz bands till 2500Hz and 4 energy bands (Velocity) of 250Hz bands till 1000Hz.

Using an advanced license, a condition monitoring analyst can carry out fault diagnosis of equipment.

DATA OVER LoRaWAN

PARAMETERS	BASIC LICENSE	ADVANCED LICENSE
RMS of vibration, Surface Temperature, Acoustics, Ambient (Pressure, Temperature, Humidity)	Available	Available
Vibration – Kurtosis, crest Factor, and Skewness	No	Available
Vibration – Top 36 FFT Peaks, Frequencies	No	Available
Vibration – 10 Energy bands of 250Hz band	No	Available

DATA OVER BLE (HONEYWELL VERSATILIS™ CONNECT)

PARAMETERS	BASIC LICENSE	ADVANCED LICENSE
RMS of vibration, Surface Temperature, Acoustics, Ambient (Pressure, Temperature, Humidity)	View and download	View and download
Vibration – Kurtosis, crest Factor, and Skewness	Not available	View and download
Vibration – RAW Waveform	Not available	View and download
Vibration FFT	Only view	View and download

HONEYWELL VERSATILIS TRANSMITTER LORAWAN® FREQUENCY AND CHANNEL DETAILS

CHANNEL PLAN	FREQUENCY	COUNTRY AND REGIONS
AS923-3	915 – 921 MHz 915 - 918 MHz	Africa
EU863-870	863 - 870 MHz 862 – 870 MHz 862 – 876 MHz	
IN865-867	865 – 868 MHz	
EU863-870	863 – 870 MHz	Asia
AS923-1	922 - 925.0 MHz	Asia
AU915-928	915 - 928 MHz	Asia**
AS923-3	915 – 921 MHz	Asia
AU915-928	915 to 928 MHz	Argentina**
AS923-1	915 to 928 MHz	Australia
AU915-928	915 to 928 MHz	Australia**
AU915-928	915 to 928 MHz	Brazil**
AU915-928	915 - 928 MHz	Chile**
CN470-510*	430 - 510 MHz	China*
EU863-870	863 to 870 MHz 863 - 873 MHz 864.4 - 868.6 MHz 869 - 869.2 MHz 869.4 – 869.65 MHz 869.7 – 870 MHz	Europe
AS923-3	915 - 918 MHz	
IN865-867	865 - 867 MHz	India
EU433	433.05 - 434.79 MHz	Kuwait
EU863-870	863 - 876 MHz	
AS923-3	915 - 918 MHz	
AS923-1	916 – 919 MHz	Malaysia
AS923-1	919 – 924 MHz	
AS923-1	915 - 928 MHz	New-Zealand
AU915-928	915 - 928 MHz	New-Zealand**
IN865-867	864 - 868 MHz	New-Zealand
US915	902 to 928 MHz	North America
AU915-928	915 - 928 MHz 902 - 928 MHz	North America**
AS923-1	920.5 - 928 MHz	North America
AS923-3	915 - 921 MHz	North America
EU433	433.05 - 434.79 MHz	Oman
EU863-870	863 - 870 MHz	
EU433	433.05 - 434.79 MHz	Qatar
EU863-870	863 - 870 MHz	
AS923-3	915 - 921 MHz	
AU915-928	915 - 928 MHz 915 - 930 MHz 902 - 928 MHz	South America
AS923-1	920 - 925 MHz	
EU863-870	863 - 870 MHz	
AS923-1	920 - 925 MHz	Singapore, Thailand
KR920-923	917 to 923.5 MHz	South Korea
EU863-870	863 – 875.8 MHz	Saudi Arabia (SA)
AS923-3	915 – 921 MHz	
AS923-1	920 – 925 MHz	Taiwan, Province of China (TW)

* This can be added in a future release.
** In progress

Honeywell

Model HVT100 & HVSS100
Honeywell Versatilis Family

Model Selection Guide

Model Selection Guide: 34-VT-16-01 Issue 8 Rev 1

Instructions: Make selections from all Tables: Key through XIII using column below the proper arrow. Asterisk indicates availability. Letter (a) refer to restrictions highlighted in the restrictions table. Tables delimited with dashes.
List Price: Price equals the sum of prices for all selections made.

Key	I	II	III	IV	V	VI	VII	VIII
HVT/HVSS_ _ _	- _ _ _ , _ _ _	- _	- _ _	- _	- _	- _	- _	- _

KEY NUMBER	Honeywell Versatilis Transmitter	Selection		
	Honeywell Versatilis Transmitter - Equipment Health Monitor	HVT100	▼	
	Honeywell Versatilis Signal Scout - Emissions Detector	HVSS100		▼

TABLE I	Measuring Parameters			
	Amb. PTH, Acoustics–Audio	A01	e	
	Surface Temperature and Vibration	A03	e	
	Emission Detection(Methane - Molecular Property Spectrometry), Amb. PTH	A07		*

TABLE II	Energy Harvesting			
b. Energy Harvesting method	No Energy harvesting	0	*	*
	Yes PV	1		i

TABLE III	Housing and Mounting			
a.Housing	Standard Housing (IP67,Poly carbonate)	S _	*	
	Emssion Detection - Housing (IP66,Poly carbonate)	G _		c
b.Mounting	Thread	_ T	*	*
	Magnetic Adapter	_ M	*	*
	Adhesive	_ A	*	*
	Epoxy Mounting- Supplied with Epoxy Kit 1	_ E	*	*

1 For Mounting option selection E , Order Partnumber 51157048-502 and 51157048-503 Separately

TABLE IV	Agency Approvals (see data sheet for Approval Code Details)			
IS Approvals	No Approvals	0	*	
	IECEx/CSA/ATEX/UKCA Intrinsically Safe, Non-incendive, & Dust tight,CCoE Intrinsically Safe[2]	1	*	*
	IECEx/CSA/FM/INMETRO Intrinsically Safe, Non-incendive, & Dust tight	2	*	*
	IECEx/KOSHA Intrinsically Safe & Non-incendive	3	*	

[2] Common Approval label for all Global agency approvals

TABLE V	Wireless radio options			
Wireless Communication	LoRA and BLE	1	g	*

TABLE VI	Wireless Communication			
LoRA Band	Not Applicable	0	*	*
	868MHz – Europe, India, Africa, Russia, UK, Parts of Middle East	1	*	*
	915MHz – North and South America, Canada	2	*	*
	914 to 928MHz – Australia, Japan, Malaysia, Indonesia, Korea	3	*	*

TABLE VII	Communication Data Options			
Data Transmission	HVT - Basic - LoRA : Basic Parameters (RMS) ; BLE : Only Live Dashboard with RMS HVSS - Basic - LoRA : Basic Parameters (Pressure,Temperature,Humidity,Methane PPM and Diagnostic Bits)	1	*	*
	HVT - Adv.Perpetual - LoRA :Basic Parameters + FFT Parameters and Energy Band & Adv Vibration Statistical Parameters ,BLE -Live Dashboard , FFT and Raw Vibration data	2	*	

TABLE VIII	Manufacturing Specials			
Factory	Factory Identification	0000	*	*

Restriction Letter	Available Only with		Not Available with	
	Table	Selection(s)	Table	Selection(s)
c	I	A07		
e	I	A01	I	A02,A04 to A19
		A03		
g	VI	1,2,3		
	VII	1,2		
i	IV	1		

FIELD INSTALLABLE ACCESSORY KITS (HVT & HVSS)

Description	Kit Number
Hon Versatilis Tx Threaded Adaptor Kit	51157048-504
Hon Versatilis Tx Magnetic Adaptor Kit	51157048-505
Hon Versatilis Tx Adhesive Adaptor Kit	51157048-506
Hon Versatilis Tx Epoxy Adaptor Kit	51157048-507
Mandatory Kit for Option E in Table III	
Hon Ver.Tx Epoxy Mt. Kit - 25 HVT units	51157048-503
Hon Ver.Tx Epoxy Applicator Kit	51157048-502

FIELD INSTALLABLE ACCESSORY KITS (HVT)

Description	Kit Number
Honeywell Versatilis Tx Filter Replacement Kit	51157048-501
Honeywell Versatilis Tx Battery Kit	50191567-500

FIELD INSTALLABLE LICENSE KEY (HVT)

Description	Kit Number
HVT : Advanced License Key Perpetual	50191909 -500

FIELD INSTALLABLE ACCESSORY KITS (HVSS)

Description	Kit Number
Hon Versatilis Signal Scout Battery Kit	50191567-501

ACRONYMS

ACRONYMS	DEFINITION
°C	Degree Celsius
°F	Fahrenheit
ATEX	Appareils destinés à être utilisés en Atmosphères Explosives
BLE	Bluetooth® Low Energy
CCOE	Chief Controller of Explosives
CAPEX	Capital Expenditures
dBm	Decibel-Milliwatts
EMC	Electromagnetic Compatibility
EU	European Union
ETSI	European Telecommunications Standards Institute
FCC	The Federal Communications Commission
FFT	Fast Fourier transform
G	Acceleration (9.81 m/ s^2)
hPa	Hectopascal
Hz	Hertz
in	inch
iOS	iPhone Operating System
IIoT	Industrial Internet of Things
ISED	Innovation, Science and Economic Development
IECEx	International Electrotechnical Commission for Explosive Atmospheres
kHz	Kilohertz
km	Kilometer
kPa	Kilopascal
lb	Pound
LoRaWAN®	Long Range Wide Area Network Protocol
LVD	Low Voltage Directive
MEMS	Micro-electromechanical systems
MHz	Megahertz
NPT	National Pipe Thread
OPEX	Operating Expenses
Pa	Pascal

ACRONYMS	DEFINITION
RED	Radio Equipment Directive
RF	Radio frequency
RSSI	Received Signal Strength Indicator
RX	Receiver
TX	Transmitter
UKCA	UK Conformity Assessed

For more information

To learn more about Honeywell's products, visit www.process.honeywell.com or contact your Honeywell account manager.

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