BEEKs™ Industrial Beacons

Bluetooth LE Beacons for Condition Monitoring, and Status/Process Monitoring for Industrial Applications



BEEKs™ Bluetooth Low-Energy (LE) beacons are among the most advanced beacons in the industry.

HID Condition Monitoring Services include a range of specialized BEEKs sensor beacons for capturing vibration and temperature. This sensor data is sent via BluFi™ gateways to the Bluzone™ Cloud to perform operational analysis for motorized equipment performance and operating behavior. Alerts according to policy are received via e-mail or web service.

Condition monitoring beacons with advanced condition monitoring cloud services aims to warn about future equipment failure by the utilization of AI algorithms evaluating vibration sensor trends over time. Equipment agnostic, high-resolution, 3-axis vibration and temperature monitoring provides anomaly detection that indicates when a piece of rotating machinery has deviated from its normal operating state, which can be used in the inspections workflow to improve maintenance practices. High-bandwidth raw sensor data can also be provided for further analysis by third-party tools.

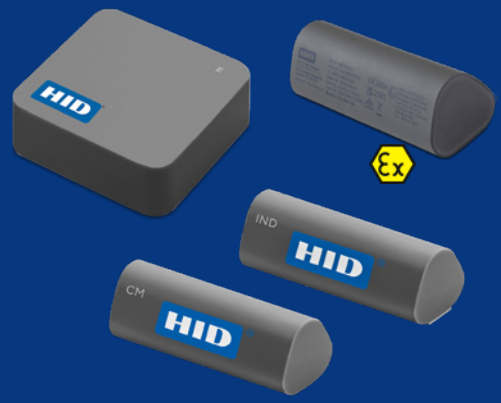
Industrial beacons with status monitoring cloud services provide information on start or stop of (vibrating) equipment, temperature being outside a given range, etc. Additionally, the Industrial beacon may be configured for temperature data logging, allowing for temporary backup of data in the event of a WiFi outage (up to 24 hours of data, moving window). BEEKs beacons can easily be retrofitted on almost any type of equipment to receive immediate wireless monitoring.

BEEKs can be centrally managed remotely through the Bluzone cloud to transfer new messages, firmware updates, policies and battery status checks. Their unique design allows BEEKs to broadcast reliably even in densely populated WiFi environments.

In addition to Industrial and Condition Monitoring, BEEKs beacons are also available in multiple form factors and sensor configurations for other use cases; ID badges for Location Services or with anti-tamper sensors to raise an alarm upon removal. Being fully Apple iBeacon and Google Eddystone compatible, BEEKs beacons may also be used for any standard beacon application that provides location based promotional or way-finding services to smartphone users.

The extensible architecture allows organizations to combine deployments of Condition Monitoring with Location Services and/or promotional applications as needed.

For getting started, the HID Condition Monitoring Deployment Starter Kit has everything needed. The kit includes 50 condition monitoring beacons, 6 BluFi™ gateways, setup instructions, a label maker for hardware identification, surface prep & cleaning supplies, and epoxy glue with dispenser for beacon mounting.



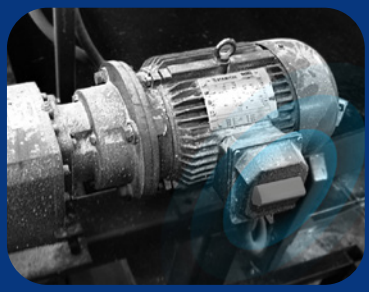
KEY BENEFITS:

- Accurate – High resolution, wireless vibration and temperature sensors efficiently provide insights to equipment status.
- Multi-Purpose – Used for a variety of industrial applications.
- Rapid Implementation – Gather real-time data on equipment condition or operating state with minimal infrastructure.

TECHNOLOGY HIGHLIGHTS:

- Bluetooth LE compliant beacons
- Highly accurate sensors to monitor vibration and temperature
- New data every 2 minutes
- Up to 3 years battery lifetime or optional externally replaceable battery
- Over-the-air central management via Bluzone and BluFi™
- Retrofits any motorized equipment, incl. fridges
- Deployment Starter Kit contains all you need for fast end easy roll-out (see image below)
- BEEKS LR Temperature features a high-gain directional antenna for strong transmission performance in one direction

BEEKs™ Industrial Beacons



APPLICATION AREAS:

Condition Monitoring (requires Bluzone™ Advanced Condition Monitoring SaaS)

- Rotating equipment monitoring
- Fault detection, based on vibration trends
- Vibration threshold alerts based on published standards (e.g. ISO 20816)
- Temperature threshold alerts

Industrial Monitoring (requires Bluzone™ Status Monitoring SaaS)

- Industrial equipment process monitoring
- On/ off, run time
- Duty cycles
- Temperature monitoring and alerting (configurable for temporary data backup, up to 24 hours of minutely data in the event of a WiFi outage)

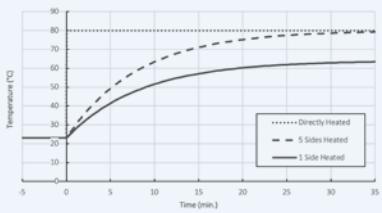
Retail and Hospitality (requires Bluzone™ Advanced Condition Monitoring or Status Monitoring SaaS)

- HVAC equipment health monitoring for predictive maintenance (Condition Monitoring beacon w/ Adv. CM SaaS)
- Equipment run time for scheduled/ preventive maintenance (Industrial beacon w/ Status Monitoring SaaS)
- Refrigerator temperature monitoring (Industrial beacon w/ Status Monitoring SaaS)

	BEEKs™ Industrial v2	BEEKs™ LR Temperature
		
Model Number	BEEKS001	BEEKSLR001
Configuration Types	BEEKS001-Industrial: Status monitoring beacon BEEKS001-EX-Industrial: Status monitoring beacon Intrinsically Safe	BEEKSLR001-Temperature: 24-hour temperature data backup for network outages
Part Number	BVBI45G2 BVBI45G2-A1Z1 (Intrinsically Safe)	BVLRN9GT
	RF SPECIFICATIONS	
Standard Protocol	Bluetooth Low Energy (BLE) 4.2	
Frequency Band (No. of Channels)	2400-2483.5 MHz (40 channels)	
Max Output Power	-5.6 dBM e.i.r.p	
Modulation	GFSK	
Antenna / Gain	integral pcb, 0 dBi	
Mode of Operation	half-duplex	
Data Rates	1 Mbit/s	
	FEATURES	
Bluetooth LE Application Supported	Eddystone, iBeacon, sBeacon	
Sensors	Motion (+/- 8 g), Temperature -13° to +185° F (-25°to +85° C)	Temperature -13° F to +170° F (-25° C to +77° C), 12-bit digital, +/- 0.5° C steady state accuracy (0° C to +65° C); +/- 1.0° C steady state accuracy (-25° C to 0° C, +65° C to +77° C)
Explosive Environment Certifications (Intrinsically Safe Version Only)	ATEX/ IECEx: IECEx EXV 21.0018X ExVeritas 21ATEX0798X ExVeritas 21UKEX1039X II 1G Ex ia IIB T4 Ga II 1D Ex ia IIIB T135C Da I M1 Ex ia I Ma Ta = -30°C to +60°C United States: CLASS I, Division 1, Group C, D, T4 CLASS II, Division 1, Group F, G, T135C Ta = -30°C to +60°C Canada: CLASS I, Zone 0, AEx ia IIB T4 Ga Zone 20, AEx ia IIB T135C Da Ta = -30°C to +60°C	
	PHYSICAL	
Length x Width	2.36 in x 0.83 x 0.98 in (60 x 21 x 25 mm)	2.48 x 2.36 x 0.86 in (63 x 60 x 22 mm)
Mounting Method	3M VHB adhesive sticker (included)	3M VHB adhesive sticker (included)
Housing Material	Polycarbonate and ABS	
Color	Grey	
Weight	1 oz (28 g)	3.3 oz (93.5 g)
	BATTERY	
Type	3.6V / 2600mAh – Primary Lithium	3.6V / 7200mAh – Primary Lithium
Lifetime (depending on utilization)	up to 3 years	
	CHEMICAL AND MECHANICAL RESISTANCE	
Water	IP65	IP67, 68° F (20° C), 3.3 ft (1 m) x 1 h
Withstands Exposure To	Water and UV resistant	
	THERMAL	
Storage	-22° to +185° F (-30° to +85° C)	-13° to +170° F (-25° to +77° C)
Operating Temperature	-13° to +185° F (-25° to +85° C)	-13° to +170° F (-25° to +77° C)
	OTHER	
Speciality	General purpose industrial beacon for asset basic motion, on/off, and temperature (Status Monitoring SaaS required).	Temperature monitoring for applications that require high-gain antenna (longer distances or noisy/ RF-blocking environments). Includes 24-hour temperature data backup for network outages.
Standards	FCC / CE / IC / UKCA / RCM ATEX / IECEx (Intrinsically Safe version only)	FCC / CE / IC / UKCA / RCM
Box Size	10 pcs.	
Warranty	1 year	

BEEKs™ Industrial Beacons

	BEEKs™ CM v2	BEEKs CM v2 – Externally Powered
		
Model Number	BEEKS001	
Configuration Types	BEEKS001-CM: Advanced condition monitoring beacon BEEKS001-EX-CM: Advanced condition monitoring beacon Intrinsically Safe	BEEKS001-CM: Advanced condition monitoring beacon with external replaceable batteries
Part Number	BVCM45G2 BVCM45G2-A1Z1 (Intrinsically Safe)	BVCM45G2-EXTPOW
	RF SPECIFICATIONS	
Standard Protocol	Bluetooth Low Energy (BLE) 4.2	
Frequency Band (No. of Channels)	2400-2483.5 MHz (40 channels)	
Max Output Power	-5.6 dBM e.i.r.p	
Modulation	GFSK	
Antenna / Gain	integral pcb, 0 dBi	
Mode of Operation	half-duplex	
Data Rates	1 Mbit/s	
	FEATURES	
Bluetooth LE Application Supported	Eddystone, iBeacon, sBeacon	
Sensors	Motion, Vibration (3-axis, up to 25.6 Khz, +/- 64 g max. dynamic range, 16-bit), Temperature -13° to +185° F (-25° to +85° C)	Motion, Vibration (3-axis, up to 25.6 Khz, +/- 64 g max. dynamic range, 16-bit), Temperature -13° to +185° F (-25° to +85° C)
Explosive Environment Certifications (Intrinsically Safe Version Only)	ATEX/ IECEx: IECEx EXV 21.0018X ExVeritas 21ATEX0798X ExVeritas 21UKEX1039X II 1G Ex ia IIB T4 Ga II 1D Ex ia IIIB T135C Da I M1 Ex ia I Ma Ta = -30°C to +60°C United States: CLASS I, Division 1, Group C, D, T4 CLASS II, Division 1, Group F, G, T135C Ta = -30°C to +60°C Canada: CLASS I, Zone 0, AEx ia IIB T4 Ga Zone 20, AEx ia IIB T135C Da Ta = -30°C to +60°C	
	PHYSICAL	
Length × Width	2.36 in × 0.83 x 0.98 in (60 × 21 x 25 mm)	Battery pack: 3.0 x 2.6 x 1.0 in (77 x 66 x 26 mm); Attached cable: 9.8 in (250 mm)
Mounting Method	Epoxy glue - e.g. Loctite AA 330 or Devcon 5 minutes (for Advanced Condition Monitoring), sold separately	
Housing Material	Polycarbonate and ABS	
Color	Grey	
Weight	1.37 oz (39 g)	3.6 oz (102 g)
	BATTERY	
Type	3.6V / 2600mAh – Primary Lithium	3.6V / 4800mAh – Primary Lithium
Lifetime (depending on utilization)	up to 3 years	up to 5 years (replaceable)
	CHEMICAL AND MECHANICAL RESISTANCE	
Water	IP67, 68° F (20° C), 3.3 ft (1 m) x 1 h	
Withstands Exposure To	Water and UV resistant	
	THERMAL	
Storage	-22° to +185° F (-30° to +85° C) / Intrinsically Safe Version -22° to +140° F (-30° to +60° C)	-13° to +185° F (-25° to +85° C)
Operating Temperature	-13° to +185° F (-25° to +85° C) / Intrinsically Safe Version -13° to +140° F (-25° to +60° C)	-13° to +185° F (-25° to +85° C)
	OTHER	
Speciality	Condition Monitoring beacon for AI fault detection, epoxy potted, 25.6 kHz raw data streaming, vibration trend analysis (Advanced Condition Monitoring SaaS required).	Bluetooth transmitter with vibration and temperature sensors, powered by a wired battery pack (included), containing two replaceable AA batteries.
Standards	FCC / CE / IC / UKCA / RCM ATEX / IECEx (Intrinsically Safe version only)	FCC / CE / IC / UKCA
Box Size	10 pcs.	10 pcs.
Warranty	1 year	1 year



BEEKs CM v2 Temperature Sensor Details
[80° C input starting from ambient (23° C)]

Part	Input	Time constant (63% steady state)	Steady state offset
Temperature sensor installed on board	Oil bath, fully submersed	0.8 sec	0°C
Temperature sensor installed in beacon	Temperature chamber (5 sides heated)	8.1 min	0°C
Temperature sensor installed in beacon	Hot plate (1 side heated, 4 sides ambient cooled)	6.3 min	-16.3°

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