

# BEEKs™ Industrial Beacons

## BLE Beacons for Condition Monitoring, and Status/Process Monitoring for Industrial Applications



BEEKs™ Bluetooth Low-Energy (BLE) 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,

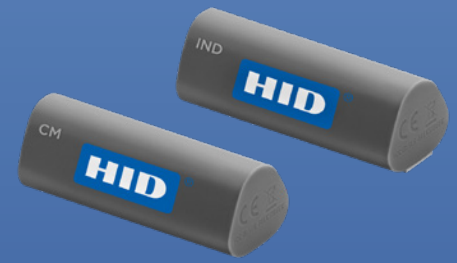
temperature being outside a given range, etc. Additionally, the Industrial beacon may be configured for temperature data logging, allowing for temporary backup of data in the event of a WiFi outage (up to 24 hours of data, moving window). BEEKs beacons can easily be retrofitted on almost any type of 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.



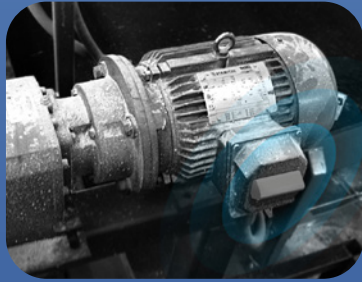
### KEY BENEFITS:

- 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 Smart 4.2 compliant beacons
- Highly accurate sensors to monitor vibration and temperature
- New data every 2 minutes
- Up to 3 years battery lifetime
- 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)

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## 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

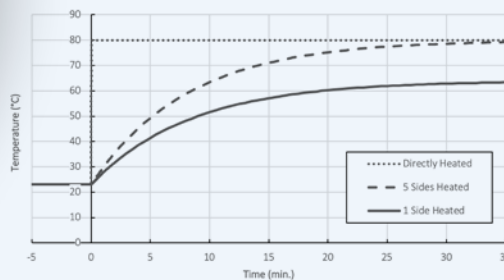
**Industrial Monitoring** (requires Bluzone™ Status Monitoring SaaS)

- 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™ CM v2
<b>Model Number</b>	BEEKS001	
<b>Configuration Types</b>	BEEKS001-IND Status monitoring beacon	BEEKS001-CM Advanced condition monitoring beacon
<b>Part Number</b>	BVBI45G2	BVCM45G2
<b>RF SPECIFICATIONS</b>		
<b>Standard Protocol</b>	Bluetooth Low Energy (BLE) 4.2	
<b>Frequency Band (No. of Channels)</b>	2400-2483.5 MHz (40 channels)	
<b>Max Output Power</b>	-5.6 dBm e.i.r.p	
<b>Modulation</b>	GFSK	
<b>Antenna / Gain</b>	integral pcb, 0 dBi	
<b>Mode of Operation</b>	half-duplex	
<b>Data Rates</b>	1 Mbit/s	
<b>FEATURES</b>		
<b>BLE Application Supported</b>	Eddystone, iBeacon, sBeacon	
<b>Processor Type</b>	ARM Cortex M3 and M0	
<b>Memory</b>	55 KB Flash	
<b>Sensors</b>	Motion (+/- 8 g), 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)
<b>PHYSICAL</b>		
<b>Length x Width</b>	2.36 in x 0.83 x 0.98 in (60 x 21 x 25 mm)	
<b>Mounting Method</b>	3M VHB adhesive sticker (included)	Epoxy glue - e.g. Loctite AA 330 or Devcon 5 minutes (for Advanced Condition Monitoring), sold separately
<b>Housing Material</b>	Polycarbonate and ABS	
<b>Color</b>	Grey	
<b>Weight</b>	1 oz (28 g)	1.37 oz (39 g)
<b>BATTERY</b>		
<b>Type</b>	3.6V / 2600mAh – Primary Lithium	
<b>Lifetime (depending on utilization)</b>	1-3 years expected, dependent upon environmental operating conditions, beacon configuration, communication frequency	
<b>CHEMICAL AND MECHANICAL RESISTANCE</b>		
<b>Water</b>	IP65	IP67, 68° F (20° C), 3.3 ft (1 m) x 1 h
<b>Withstands Exposure To</b>	Water and UV resistant	
<b>THERMAL</b>		
<b>Storage</b>	-22° to +185° F (-30° to +85° C)	
<b>Operating Temperature</b>	-13° to +185° F (-25° to +85° C)	
<b>OTHER</b>		
<b>Specialty</b>	General purpose industrial beacon for asset basic motion, on/off, and temperature (Status Monitoring SaaS required).	Condition Monitoring beacon for AI fault detection, epoxy potted, 25.6 kHz raw data streaming, vibration trend analysis (Advanced Condition Monitoring SaaS required).
<b>Standards</b>	FCC / CE / JRF / IC	
<b>Box Size</b>	10 pcs.	
<b>Warranty</b>	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
<b>Temperature sensor installed on board</b>	Oil bath, fully submersed	0.8 sec	0°C
<b>Temperature sensor installed in beacon</b>	Temperature chamber (5 sides heated)	8.1 min	0°C
<b>Temperature sensor installed in beacon</b>	Hot plate (1 side heated, 4 sides ambient cooled)	6.3 min	-16.3°



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