

WIRELESS ONLINE CONDITION MONITORING SOLUTIONS

EAGLE is a smart wireless sensor that is easy to set up and allows for the continuous monitoring of the health condition of rotating machinery. Manufacturerq can enhance the reliability of their production tools in the simplest way possible, freeing themselves from the restrictions inherent to the set-up of standard wired solutions.



EAGLE guarantees a drastic reduction of installation costs in severe environments or where preliminary engineering phases are necessary.

With its unique measurement capabilities, **EAGLE** is the first wireless solution with no compromise on diagnosis capabilities. All types of industrial rotating machines can be monitored, thereby enabling you to increase the overall reliability of your industrial facilities.

EAGLE DIAGNOSIS CAPABILITIES

Post-processing	On time waves	Filters: High Pass, Low Pass, Band Pass, Shock Finder smart filter High Resolution Spectra (400 to 6,400 lines), concatenation Automatic parameters: Statistical levels (RMS, peak, peak-peak, mean...), Kurtosis
	On spectra	Automatic parameters: Peak Extraction, Energy Narrow band Level, Energy broadband Level Bearings frequencies, gear frequencies Cepstra (automatic or manual)
	On parameters	Logic combination of parameters
Advanced thresholds	Alarm thresholds levels	4 levels (pre Alarm, Alarm, Danger, Error)
	Standard thresholds types	HIGH level thresholds, LOW level threshold, IN RANGE thresholds, OUT OF RANGE thresholds,
Data mining	Advanced thresholds types	Evolution vs. previous control, Evolution vs. reference date, Statistics, Forecast
	Operating condition	Trends filtered per operating condition for variable operating condition machines
	History	Trends, waterfall Filter on control history from parameter trend.
	Comparison	Superimposition of parameters, spectra, time waves
	Quick access to results	Quick look matrix: the machine condition in one view of all alarm status (2DG)



EAGLE HARDWARE SPECIFICATIONS

Eagle Sensor

Performances	Number of axes	Uni-axial or Tri-axial	
	Sensing element	Piezoelectric ceramic, shear mode piezo	
	Amplitude Range	± 50 g peak, 24 bits	
	Frequency Response @ ±3 dB	1 Hz to 15 kHz	6 kHz for X and Y axes
	Background noise	1.1 mg RMS	
	Transverse Sensitivity (Typ.)	< 6%	
	Temperature measurement range	-20°C to 120°C (-4°F to 248°F)	±2°C accuracy, 0.1°C resolution
	Sampling frequency	256 to 51.2 kHz	FFT Fmax 100 to 20 kHz
	Time waveform number of points	512 to 16,384 points	FFT resolution 800 to 3,200 lines
	Maximum recording duration	0.3 to 64 s	For machine speeds ≥ 100 RPM
	Smart sensor	Embedded FFT, Overall velocity and Overall Acceleration	
	Acquisition modes	Periodic, condition-based, alarm-based, smart on/off	
	Vibration limit / Shock limit	500 g peak / 5,000 g peak	

Eagle Sensor and Expander

Models	EGL1103000: tri-axial (X, Y, Z), EGL1102000: mono-axis (Z), EGL1104000: Expander		
Physical	Size and weight	Ø48 mm, 113mm high, 403 grams	44 mm wrench and dedicated tool
	Case material	316L Stainless steel	Reinforced, UV-stabilized polyamide
	Mounting	M6 x 1 thread	Option: cementing pads patented tri-axial mount
	Sealing	IP67	O-ring
Electrical	Standard battery	Li-SOCl ₂ , D cell, 3.6 V, 17 Ah	SAFT LS33600
	Autonomy	5 years at typical usage, non-rechargeable	
Radio	FCC ID 2AC3Z-EGL1102	IC 12336A-EGL1102	
Operating requirements	Humidity limits	< 95% RH non-condensing	
	Standard operating temperature	-20°C to 85°C (-4°F to 185°F)	Extreme temperatures reduce optimum battery life
	Solvent resistance	Solvents resistant	
	Hazardous environments	Ex I M1 Ex ia I Ma, Ex II 1 G Ex ia IIC T3 Ga -20 °C ≤ T _{amb} ≤ +85°C	Class I, Div I equivalent T3 (-4°F to 185°F)
	Contact temperature	Withstands a 120°C contact temperature in safe area. Tested during 7h on a surface at 120°C in an ambient temperature environment <85°C	

Eagle Gateway

Technical	Models	EGL1101000 (internal antenna) for safe area	Solutions on request for installation in explosive area	
	Power supply	48 V, 0.3 A, PoE injector (IEEE802.3.af)		
	Size	220 x 120 x 38 mm, 360 g		
	Material	Polycarbonate	RAL 7035	
	Enclosure / dust & water	IP67 case and IP68 gland	NEMA 4, 4X, UL 94-V0	
	Temperature range	-20°C to 60 °C (-4°F to 140°F)		
	Relative humidity	< 95% RH non-condensing		
	Ethernet channel	10/100 Base-T Ethernet Channel, RJ45 connector	Standard Ethernet class 5e cables	
	Radio	FCC ID 2AC3Z-EGL1101	IC 12336A-EGL1101	
	Antenna	Embedded omnidirectional antenna		
	Mounting	Tough Ball joint mounting		
	IT and networks	TCP/IP, HTTP, DHCP		
	Features	Variable operating condition machines	Modbus TCP	
		Sensors network configuration	Gateway Web Interface	

Eagle system

Wireless communication	Network standard	ISA100.11a (pending)		
	Physical layer (PHY)	IEEE 802.15.4		
	Frequency	2.4 GHz ISM band	International license-free	
	Security	128bit AES encrypted packets		
	Output power (peak)	3 dBm Sensor / 14 dBm Expander and Gateway		
	Reception sensitivity	-101 dBm		
	Wireless range point to point	100 m / Line of sight	Wireless range is highly dependent on the environment, height and orientation.	
		60 m / typical industrial environments		
	Expander hops	up to 8 hops	Extends wireless range or bypass obstacles	
	Max. nodes per gateway	30 direct nodes, 150 sensors using expanders	depending on expanders and measurements scheduling	
	Compliances	FCC part 15, CE, EN60950-1, 62479, 301489-17, 301489-1, 300328		