

PYXIS

Smart 3-Axis Vibration Sensor

Edge vibration analytics for continuous machinery health monitoring, fault indication and predictive maintenance over Modbus RTU.



3 AXIS

Acceleration, velocity and displacement

DC-6 kHz

Wide vibration measurement bandwidth

20×3

Harmonics with amplitude per axis

RS-485

Modbus RTU with auto-baud

PyXis processes vibration and temperature information at the machine, reducing network traffic while giving PLC, SCADA and condition-monitoring systems direct access to health metrics, alarms and advanced diagnostic indicators.

MODEL PyXis-Modbus

DOCUMENT TTN-DS-2026-002

ISSUE DATE 19 July 2026

BUILT FOR CONTINUOUS CONDITION MONITORING

Motors • Pumps • Fans • Compressors • Gearboxes • Conveyors

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PRODUCT CAPABILITIES

Condition intelligence at the edge

Tri-axis motion metrics Independent X, Y and Z acceleration RMS, peak, peak-to-peak and crest factor; velocity RMS and peak-to-peak; displacement peak-to-peak.	Spectral and harmonic data Up to 20 harmonic frequencies and corresponding acceleration amplitudes for every axis, without transmitting raw time-waveform data.
Severity and fault outputs Per-axis ISO severity state and fault-analysis status for direct use by supervisory systems and maintenance workflows.	Speed and order tracking Current RPM, tachometer quality, speed state and 1X order information for speed-normalised analysis.
Advanced condition indicators Envelope kurtosis, sideband density, harmonic consistency, cepstrum gear index, spectral kurtosis and cyclostationary index.	Predictive maintenance outputs Remaining Useful Life in days, failure probability, degradation index, time-to-maintenance, aging factor and baseline status.
Thermal correlation Sensor temperature and motor temperature values with configurable warning and alarm thresholds.	Asset-aware configuration Machine profile, motor frequency, gear ratio, gear-tooth count, bearing geometry and configurable analysis filters.

Typical monitored assets

Rotating equipment • Electric motors and generators • Centrifugal and axial pumps • Industrial fans and blowers • Reciprocating and screw compressors	Mechanical transmission • Gearboxes and geared drives • Belt- and coupling-driven equipment • Conveyors and material-handling machinery • Remote and unattended rotating assets
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Fault interpretation depends on installation, machine configuration, operating state and firmware profile. Final alarm limits should be commissioned for the actual asset.

SYSTEM INTEGRATION

Modbus-accessible monitoring and configuration

ITEM	SPECIFICATION / CAPABILITY
Device identification	Device code, hardware and firmware versions, manufacturing date and serial number for automated asset records.
Communication setup	Slave ID 1-247; auto-baud or 9600, 19200, 38400 and 115200 bps; even, odd or no parity; configurable stop bits and 0-50 ms response delay.
System management	Communications watchdog, persistent-save command, reboot, factory reset and register-remapping area.
Per-axis vibration data	Acceleration, velocity and displacement metrics for X, Y and Z axes, including crest factor and peak values.
Per-axis spectral data	Twenty harmonic frequency bins and twenty associated acceleration-amplitude values per axis.
Per-axis condition state	ISO severity result and fault-analysis state for each axis.
Rotational condition data	RPM, tachometer quality, speed state and 1X order information.
Advanced diagnostic indices	Envelope kurtosis, sideband density, harmonic consistency, cepstrum gear index, spectral kurtosis and cyclostationary index.
Prognostic data	RUL days, failure probability, degradation index, time-to-maintenance, baseline-active state, baseline update count and aging factor.
Machine profile settings	Active profile, motor frequency, gear ratio, gear teeth, bearing rolling-element count, ball size, pitch diameter and contact angle.
Analysis filters	Configurable high-pass and low-pass cut-off frequencies.
Alarm thresholds	Separate warning and alarm thresholds for vibration velocity, acceleration and displacement on all three axes, plus temperature warning and alarm limits.

Commissioning workflow

1 Install Mount rigidly on the machine and align the sensor axes with the asset.	2 Configure Set the Modbus address, communications format and the applicable machine parameters.	3 Baseline Capture representative healthy operation before applying final warning and alarm limits.	4 Integrate Map condition, alarm and prognostic values into PLC, SCADA, CMMS or analytics systems.
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PRODUCT DATA

Technical specifications

ITEM	SPECIFICATION / CAPABILITY
Sensing element	3-axis digital MEMS accelerometer with orthogonal X, Y and Z measurement axes.
Frequency bandwidth	DC to 6 kHz, specified at the -3 dB point.
Temperature sensing	Embedded internal surface sensor; -40 to +125 °C measurement range; stated accuracy ± 0.1 °C.
Input supply	4.75 to 28 VDC; compatible with nominal 12 VDC and 24 VDC systems.
Power consumption	<0.15 W typical (approximately 5 mA at 24 VDC).
Circuit protection	Reverse-polarity protection, undervoltage lockout, short-circuit protection, thermal shutdown and surge protection.
Communications	2-wire half-duplex RS-485; Modbus RTU slave; software-configurable communications parameters.
Addressing	Modbus slave ID 1-247. Permissible physical node count depends on cable, termination, transceiver loading and installation conditions.
Data formats	8E1, 8O1, 8N1 and 8N2 according to configured parity/stop-bit setting.
Ingress protection	IP67 / IP68 sealed construction, subject to connector and installation method.
Connection options	A-coded M12 5-pin male circular connector or high-flex integral cable option.
Mounting	M5 threaded mechanical stud mount or high-force magnetic mounting option.
Operating temperature	-40 to +85 °C.
Storage temperature	-40 to +125 °C.
Humidity	10-95% RH, non-condensing.

Ordering and documentation notes

Specify when ordering

- Connector or integral-cable version
- Mounting method and accessories
- Required cable length, if applicable
- Firmware profile and target machine type

Separate engineering documents

- Detailed Modbus register map
- Mechanical dimensional drawing
- Connector pin assignment and installation guide
- Commissioning and alarm-setting procedure

Advanced V2 diagnostic and prognostic items are firmware-dependent. Specifications are subject to engineering release and may change without notice. Verify the applicable firmware and register-map revision before system integration.