Dytran by HBK
HOTTINGER BRÜEL & KJÆR

CAN-MD® SERIES – BUS-BASED DIGITAL SENSOR SUITE

Smart Machinery Health Monitoring Solutions

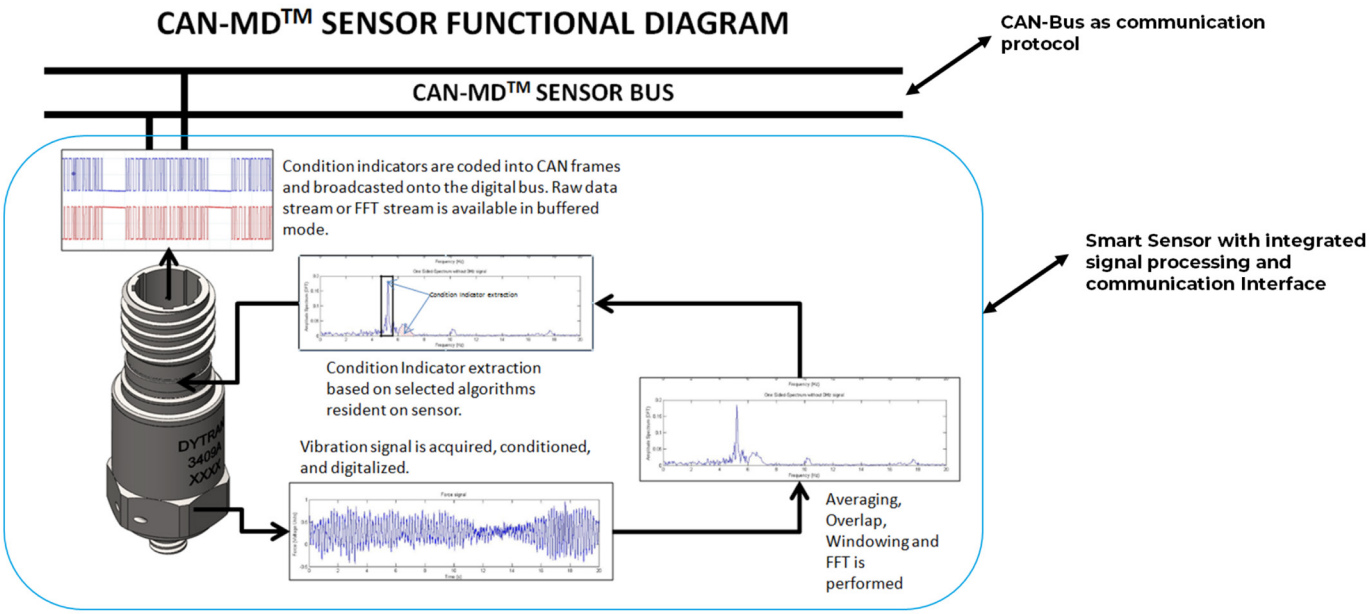
OPTIMIZING INDUSTRIAL EFFICIENCY

In industrial operations, ensuring machinery performs optimally while minimizing downtime poses significant challenges. Unpredictable failures and maintenance needs can disrupt productivity and incur substantial costs. Consequently, there is a pressing need for innovative solutions that can preemptively address these issues and optimize operational efficiency.

Our cutting-edge Machine Health Monitoring System is a revolutionary solution designed to optimize industrial operations through real-time data analysis and predictive maintenance. Leveraging advanced edge computing technology, our system performs data reduction and result calculations directly at the source, minimizing latency and maximizing efficiency. By harnessing the power of in-sensor data reduction, we enable rapid decision-making, proactive maintenance interventions, and unparalleled insights into the health and performance of your machinery. Say goodbye to costly downtimes and unexpected failures – with our Machine Health Monitoring System, you can stay ahead of issues, streamline operations, and ensure peak performance at all times.

ADVANCED SIGNAL PROCESSING AND COMMUNICATION INTERFACE

Our Smart Machine Heath Monitoring (SMHM) system is equipped with integrated signal processing and communication interface, utilizing the robust CAN-Bus protocol for seamless data transmission. This cutting-edge sensor goes beyond traditional monitoring devices by performing real-time signal processing directly at the source, eliminating the need for external processing units and reducing latency. The sensor's embedded microprocessors are adept at converting raw time-domain data into its frequency domain counterparts efficiently. It can then relay this information via the CAN bus or predetermined frequency ranges or in relation to the speed measured by a tachometer. Furthermore, it's capable of processing the time-domain data to generate RMS (Root Mean Square) and Skew values. Integrating the CAN-MD® sensor with the CAN-MD® tachometer adapter allows for the transmission of zero crossing data pertinent to the corresponding shaft back to the sensor. This facilitates the calculation of various time-synchronous condition indicators, such as time synchronous average, order domain waveforms, order domain amplitude, and order domain phase. This integration significantly enhances the ability to conduct thorough machine health assessments. By leveraging sophisticated data reduction techniques, the sensor condenses complex frequency domain data down to a single numerical value, providing a concise yet comprehensive indicator of the machine's health status. With its unparalleled efficiency and accuracy, our smart sensor revolutionizes machine health monitoring, empowering businesses to proactively manage maintenance activities and optimize operational performance.



SMART SENSOR CONCEPT OVERVIEW

The system is ideally suited for various applications, particularly in the monitoring and maintenance of rotating machinery such as pumps, fans, reducers, mechanical blowers, and compressors. It's particularly beneficial for equipment designed for long-term continuous operation, as it provides real-time insights into machinery health, enabling proactive maintenance and minimizing downtime. Remote installations can benefit significantly from the system's ability to perform in-sensor data reduction and analysis, ensuring timely interventions even in distant locations. High-cost downtime scenarios are mitigated by the system's proactive monitoring capabilities, allowing for preemptive maintenance actions. Additionally, it's valuable for end-of-line testing and burn-in procedures, ensuring the quality and reliability of newly manufactured equipment. Fleet monitoring becomes streamlined with centralized data collection and analysis, enabling efficient management of multiple assets. Finally, the system finds applications in test cell environments, where precise monitoring and analysis of machinery performance are crucial.

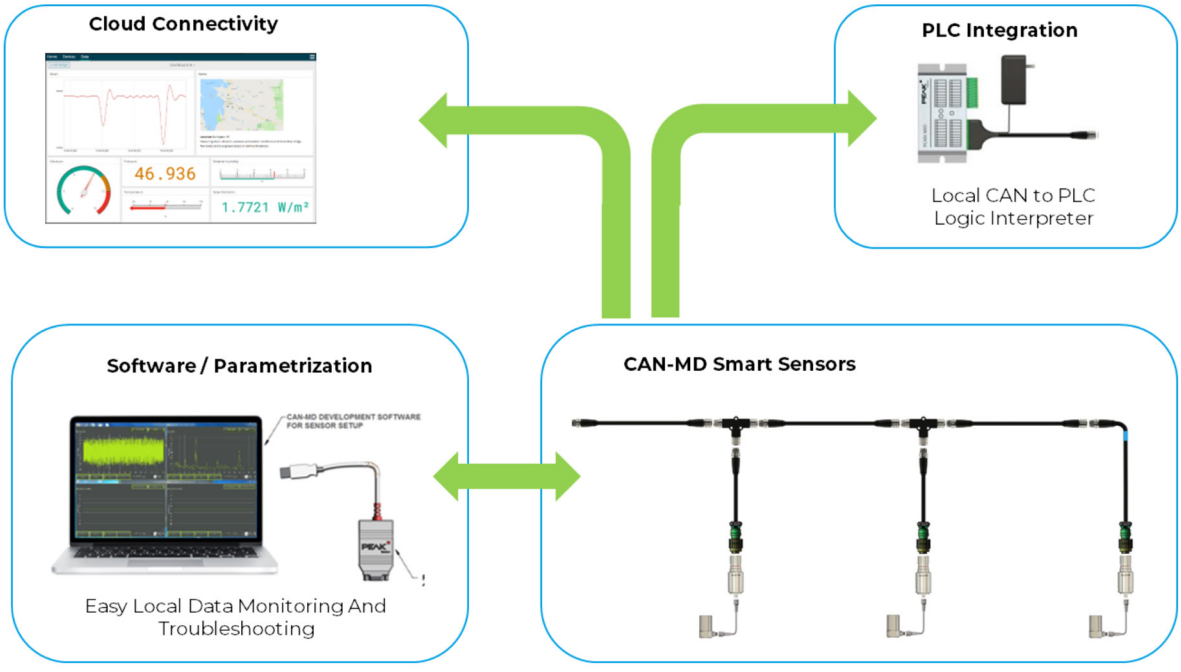
Our SMHM system incorporates local interpreters, providing a seamless interface with the customers Programmable Logic Controller (PLC) for efficient data exchange and control. This feature enables direct communication with the machinery's control system, facilitating real-time monitoring and intervention. Moreover, an upcoming feature enhancement will allow the system to offload processed data to the cloud for remote review and trending. This advancement extends the system's capabilities beyond local operations, enabling remote access to critical machinery health data. By leveraging cloud-based infrastructure, users can remotely monitor equipment status, review historical performance trends, and even engage in predictive maintenance strategies. This seamless integration of local and cloud-based functionalities enhances operation efficiency, facilitates proactive maintenance, and ultimately improves overall equipment reliability.

Our system offers unparalleled scalability, catering to a wide range of requirements from a sensor deployment to comprehensive solutions with live data visualization, cloud data storage, and robust reporting capabilities. At its most basic level, the system can be specified with just one sensor, making it an ideal choice for targeted monitoring of individual machinery components or specific parameters. The minimalist setup ensures cost-effectiveness and simplicity while still providing valuable insights into machine health.

For those seeking a more comprehensive solution, our system can easily scale up to accommodate multiple sensors across various equipment, offering a holistic view of an entire operation. Advanced features such as live data visualization allow users to monitor real-time performance metrics, detect anomalies, and make informed decisions on the fly. Additionally, cloud data storage capabilities enable seamless access to historical data from anywhere in the world, facilitating remote monitoring and analysis.

Furthermore, our system includes robust reporting functionalities, allowing users to generate custom reports tailored to their specific needs. Whether its tracking key performance indicators, identifying trends over time, or conducting predictive maintenance analyses, our system provides the tools needed to extract actionable insights from the data.

In summary, our system's flexibility and scalability make it the ideal choice for businesses of all sizes and industries. From single-sensor deployments to comprehensive solutions with live data views and cloud storage capabilities, our system can be tailored to meet the unique needs of any operation.



KEY ADVANTAGES OF DYTRAN'S MACHINE HEALTH MONITORING SYSTEM

Expandable Measurement Channels

With our system, expanding the number of measurement channels is so effortless. No modifications to the network are required; simply add a new node to the existing network, enabling seamless integration of additional sensors. This scalibility allows for easy customization and adaptation to evolving monitoring needs without disrupting ongoing operations.

Comprehensive Sensor Support

Our platform serves as a one-stop shop for a wide range of sensor needs, including acceleration, pressure, force, torque, strain and more. This versatility ensures that all essential parameters can be monitored accurately and efficiently, consolidating multiple sensor requirements into a simple integrated system.

Compliance with ASTM F2137

We offer ISO 17025 accredited system calibration services to ensure the highest level of accuracy in data acquisition. This accreditation guarantees compliance with international standards, providing confidence in the reliability and precision of measurement data.

Specialized Cabling Solutions

Our system includes specialized cabling design and manufacture services, ensuring optimal performance and reliability. Whether it's hardline cables, cable splitters, double-shielded cables, or other custom configurations, our expertly engineered cabling solutions are designed to meet the unique needs of each application, minimizing interference and ensuring data integrity.

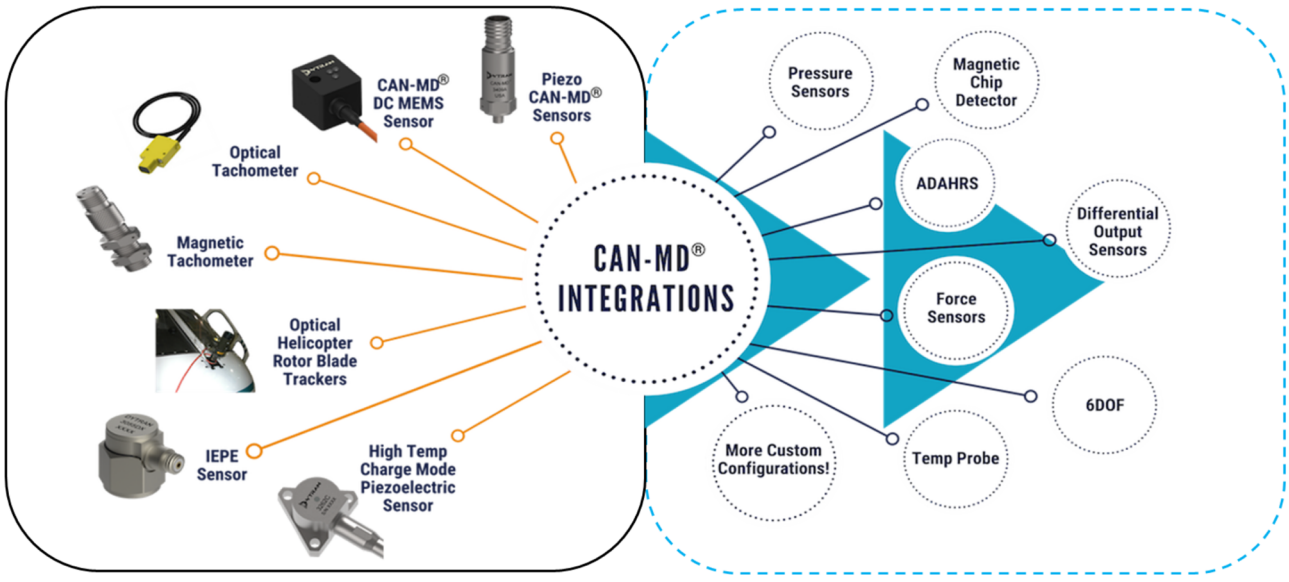
Custom Sensor Selection and Design

For demanding applications, we provide custom sensor selection and design services tailored to specific requirements. From extreme temperatures ranging from –320 °F to 1400°F to harsh environments with high shock and low EMI/RFI susceptibility, our sensors are engineered to excel in challenging conditions. We also offer hazardous installation options, including explosion-proofness certifications such as ATEX, IECEx, and HAZLOC Class 1 Div 1 to UL 913 / C22.2 60079 series, and ORDLOC to 61010-1.

End-to-End Solution with Cloud Connectivity

Our platform provides a seamless sensor-to-cloud solution for remote access and monitoring. With secure cloud connectivity, users can remotely access real-time data, monitor equipment status, and receive alerts and notifications from anywhere in the world. This end-to-end solution enhances operation efficiency, facilitates proactive maintenance, and enables informed decision-making for optimized performance and up-time.

Ultimately, our system offers a comprehensive solution for industrial monitoring and data acquisition. While currently tailored around accelerometers for vibration measurement, our system is designed with flexibility in mind. It is capable of seamlessly integrating other sensors such as force, pressure, torque, and more to further enhance its functionality. This adaptability ensures that our system remains at the forefront of innovation, meeting the evolving needs of diverse industries and applications with precision, reliability, and efficiency.



ABOUT DYTRAN

Data that drives innovation!

Product development can be a daunting task; sooner or later computer models of dynamic performance expectations need to be validated in the real world. Conversely, permanent, embedded monitoring of machines and structures is becoming a requirement across all industries and market segments, enabling the machines of the future. Dytran is an industry leader in innovative sensor technologies for both fields – product development testing and embedded solutions.

Need a custom solution?

Custom solutions are often required and Dytran excels at developing and delivering sensors that meet your specification, configuration, and price expectations on time and on budget. Call us and tell us what you are trying to accomplish – we will fill in the rest!

Technologies

Dytran engineers utilize a wide range of piezoelectric and variable capacitance DC-MEMS technologies to design sensors that are uniquely suited to environments from the test lab to the test track to outer space. When you need dynamic data, Dytran will find a way. Contact us today or visit www.dytran.com to learn more about how Dytran sensors capture data that drives innovation.

Fields of use

Our experienced application engineers are ready to assist you in selecting from a wide variety of dynamic force and pressure sensors, piezoelectric (AC coupled) and MEMS (DC coupled) accelerometers, USB triaxial accelerometers with embedded software, and digital bus-based sensors to provide the right sensors for the following markets.

Dytran by HBK

Since 2022, Dytran has expanded HBK's existing sensor offering to enhance its ability to design and deliver custom sensing solutions with remarkable speed. With over 75 years of experience in setting industry standards, HBK is the trusted expert in testing and measurement. The acquisition of Dytran brings even more innovation, agility, and customer-focused solutions to HBK.

For more details visit: www.dytran.com

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