DEK Series Solution Profile

Industrial Dust Collection

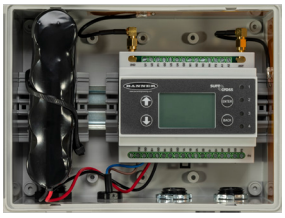
Break out from the four walls of your enterprise and monitor anywhere with the DXM Enclosure Kit Series.

Build standalone monitoring systems with a kit that includes everything needed to deploy an end-to-end solution. This cellular-enabled offering from Banner Engineering arrives complete with a weatherproof enclosure, world class gateway controller, and an optimized solar-charging system with battery power supply.

Prepaid access to cloud software tools will capture critical data allowing you to acquire insights and make data-driven decisions about your operation. Monitor vibration, temperature, humidity, material levels, duty cycles, and pressure while creating alerts to prevent failures and costly downtime.

Kit Features

- Cellular-enabled gateway controller with battery power supply and optimized solar-charging circuit
- Kit includes environmentally rated enclosure, solar panel, battery, antennas, mounting and cabling hardware
- Data inputs include analog and discrete signals with modbus, SDI-12, and wireless data communication
- Prepaid 90 day trial for Banner Cloud Data services and cellular service management with the Banner Cell Data web portal



DXM Enclosure Kit

5W Solar Panel

Banner Cloud Data Services

Banner Cell Data

Model	Description	Radio Frequency	Cell Carrier
DEK100-A1-V	DXM100-A1 VZW Controller, Enclosure with Glands, Solar Panel, and Battery	–	Verizon
DEK100-A1-A	DXM100-A1 ATT Controller, Enclosure with Glands, Solar Panel, and Battery	–	AT&T
DEK100-A2R1-V	DXM100-A1 VZW Controller, Enclosure with Glands, RF Module, Solar Panel, and Battery	900 MHz	Verizon
DEK100-A2R1-A	DXM100-A1 ATT Controller, Enclosure with Glands, RF Module, Solar Panel, and Battery	900 MHz	AT&T

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Customer Industry

Every major industry that processes material, food, or waste will create dust and excess particles that are harmful to the environment, people, or that may damage product. From the grinding, buffing, and polishing processes of metal & machining to the stockpiles of food in grain elevators and flour mills – dust collection is necessary for the quality of products and the safety of our environments and the people within it..

Background

Dust collection systems are common across all industries to manage the accumulation of excess particulates. The primary component, known as a baghouse, collects and filters the dust from the processing environment so that it can be disposed of properly. Monitoring and maintaining the operation of these baghouses is critical for continuous production of material, food, and other products.

Requirements

Track and monitor airflow through the system for operational performance and regulatory compliance

- Differential pressure across filters for health, damage, and replacement scheduling
- Internal temperature & humidity measurements within airflow environment
- Relative airflow measurements for sufficient air draw checks

Perform condition monitoring for assets of the dust collection system to maximize operational performance

- Compressed air pressure of the self-cleaning mechanism
- Blower fan vibration for health and damage detection
- Dust material levels within the hopper for disposal schedules

Challenges

- Remote locations of assets without available power and network communication
- Collection of data to common repository for analysis and visualization of trends is often difficult with independent systems
- Maintenance checks are costly without preemptive alerts

Solution

The DXM Enclosure Kit (DEK) Series is well equipped to address the requirements for monitoring industrial dust control systems for regulatory compliance and operational performance.The solution is the pivotal component that can collect information regarding the static pressure, differential pressure, pneumatic pressure, temperature and humidity, vibration and current, and material levels. The data is processed with the Banner Cloud Data Services web-based software where it can be analyzed, visualized, and alert notifications can be delivered.

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The DEK Series is designed to easily implement Banner solutions, as well as sensors and equipment from other manufacturers that assist you with creating the most comprehensive solution for your needs. Below are monitoring considerations within your industry and recommended Banner offerings that meet the requirements of your application.

Blower and Exhaust Fan Health

Prevent downtime of your manufacturing processes by monitoring the health of the blowers and exhaust fans of your dust collection system. Use our QM30VT sensors to measure vibration, temperature, and add a current transformer to monitor runtime and energy consumption.

Filter Health

Monitor the pressure drop of the air as it passes through the filter media to determine the conditions of the filter using our QM42-DPS differential pressure sensor. Issue alerts for rapid drops that indicate ruptures or schedule filter replacement during planned downtime as the filter clogs. Keep the self-cleaning air pulse system of the dust collector functioning properly by tracking the compressed air system with our BWA-PRESSURE-SENSOR transducers.

Airflow Monitoring

Configure an input on the controller to interface with your preferred airflow sensor to ensure that there is sufficient air draw to pull dust from the processing environment. Use our M12FTH temperature and humidity sensor to monitor and maintain the environment within the collector to normal parameters.

Hopper Monitoring

Monitor the rotary airlock on most dust collectors to validate their operation and check the level of material inside the hopper using our T30R radar sensor.