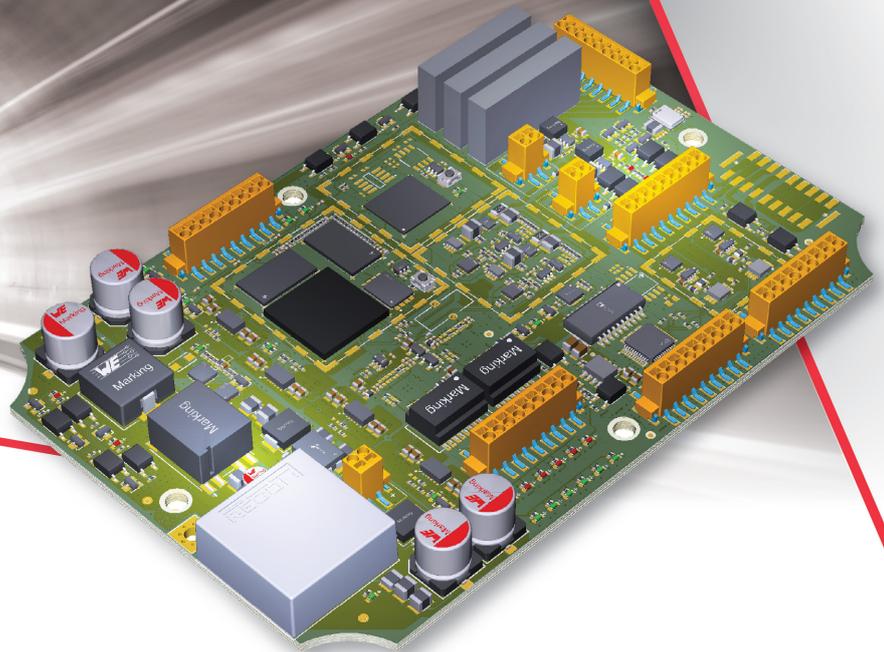


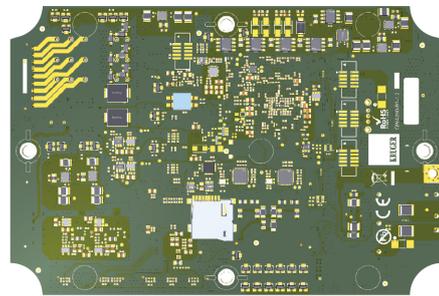
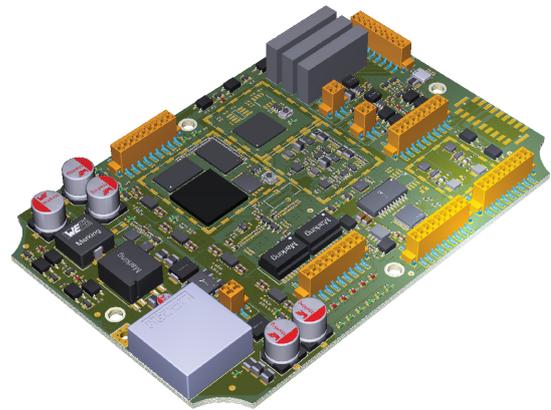
# KSC-SERIES

KRUGER SMART DATA ACQUISITION CARD  
FOR **TUNNEL FANS**



# SMART DATA ACQUISITION FOR TUNNEL FANS

The **KSC series** from Kruger seamlessly gathers all fan sensor data and transfers it to the PLC over LAN using Modbus TCP. By replacing bulky analog cabling, it cuts installation costs, removes signal losses, and streamlines setup with true plug-and-play convenience. With integrated data analytics and heater control, the KSC enables preventive maintenance and delivers dependable, efficient tunnel ventilation.



## ADVANTAGES



### Simplified control system

- Each fan connects via Modbus TCP over LAN with a unique IP address.
- Converts analog to digital with no signal loss.
- Sends all sensor data to PLC via LAN.
- Built-in motor heater control.
- Data analytics with pre-alarm/alarm alerts.



### Easy Maintenance

- Continue monitoring the health of the fan and motor.
- Notification for maintenance scheduling.
- Notification for predictive maintenance.
- Spectrum analyzer function to identify the root cause of the vibration in the fan.



### Cost Saving

- Reduce the cabling costs by change 20 cores cable to LAN cable.
- Reduce cable length by using LAN Hub.
- Remove Analog input module for PLC.



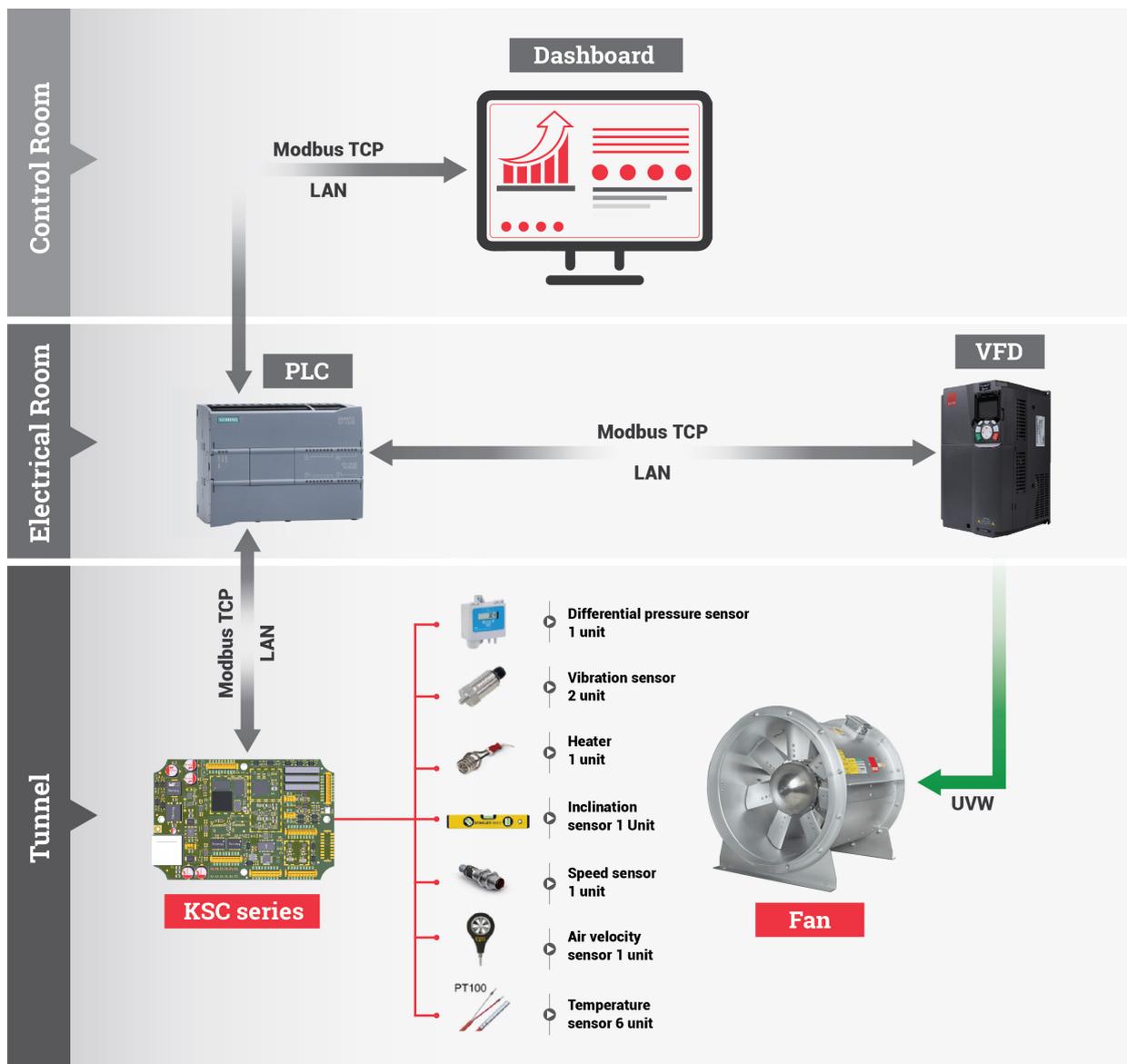
### Easy Installation

- Plug & Play connection
- Reduces installation costs.
- All the signals are connected and tested in the factory.
- Avoids connection mistakes on site.

# MODERN AND FLEXIBLE NETWORK ARCHITECTURE

Kruger Smart Data Acquisition Card For Tunnel Fans upgrades tunnel fans into fully digital devices by consolidating all sensor signals and transferring them directly to the PLC through a single LAN cable, eliminating the need for bulky multi-core wiring. This streamlined approach makes the system faster to install and easier to manage.

With Modbus TCP communication, every fan receives its own IP address, reducing system complexity and removing the reliance on analog input modules. The solution minimizes wiring length, cuts overall project costs, and ensures reliable data transmission. Moreover, it enables smooth integration with other digital tunnel systems such as sensors, cameras, and SCADA platforms, creating a smarter and more dependable ventilation network.



# KRUGER SMART DATA ACQUISITION CARD

## FOR TUNNEL FANS - SPECIFICATION

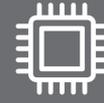
### 01



#### General

- Power supply: 18 – 36 VDC
- Power consumption: 4 W (typ.), 24 W (max.)
- Certification: CE (EMC & Safety)
- Enclosure: IP55
- Enclosure dimensions: 125 × 175 × 57 mm (W × L × H)

### 02



#### Microprocessor

- Processor: Xilinx Zynq-7000 SoC (XC7Z020-1CLG400I)
- Clock Speed: 667 MHz (CPU)
- Program memory: External eMMC 8 GB
- Boot memory: QSPI Flash 16 MB
- RAM: x2 External DDR3 512GB, On-chip memory 256 KB

### 03



#### Interface

- Communication: Modbus TCP
- Ethernet port: 2 × RJ45
- Ethernet speed: 10/100 Mbps
- Supported protocols: IEEE 802.3/802.3u /802.3az compliant
- Max. clients: 8 (configurable)

### 04



#### Functions

- Modbus TCP communication via LAN cable
- Data logging & data analytics
- Vibration spectrum analyzer
- Pre-alarm & alarm notifications to PLC
- Built-in heater control logic

### 05



#### Inputs / Outputs

- 6 Temperature sensors (PT100)
- 2 Vibration sensors (with spectrum analysis)
- 1 Differential pressure sensor for Fan-stall detection
- 1 Air velocity sensor
- 1 Inclination sensor
- 1 Speed sensor
- 2 Damper position inputs (Open/Close)
- 1 Motor space heater (built-in control logic)