

# TECHNICAL-COMMERCIAL PRESENTATION

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CONTROLAIR:

Precision and efficiency in filtration control

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# 1. CONTROLAIR ELECTRONICS

## 1.1 Introduction

CONTROLAIR is an advanced electronic solution designed to monitor and control the efficiency of industrial filtration systems, specifically developed for applications on existing plants. This innovative device allows you to optimize the filtration performance of dust from various industrial processes, without requiring complex or expensive structural interventions on pre-existing plants.

Thanks to its cutting-edge technology, CONTROLAIR allows you to monitor the efficiency of the filters in real time, ensuring that the plant always operates at its maximum capacity. This continuous control allows you to promptly identify any drops in performance, optimizing energy consumption and preventing costly failures, thus increasing the reliability and life of the plant.

Furthermore, CONTROLAIR's integrated technology provides precise monitoring of dust emissions, ensuring full compliance with environmental regulations and contributing to the creation of a safe and healthy working environment for operators. The system not only detects and records data in real time, but also offers advanced alarm and reporting features for proactive management of operations.

The system is equipped with Wi-Fi connectivity, which allows immediate and intuitive remote control from any device, eliminating the need for direct manual interventions. Furthermore, compatibility with the RS485 network allows for simple and seamless integration with industrial filtration systems already in operation, ensuring rapid and problem-free adoption in existing contexts.

The combination of these technologies allows for centralized and optimized management, improving the overall efficiency of the system, reducing operating costs and energy consumption, and keeping the system fully compliant with safety and environmental regulations.

CONTROLAIR therefore represents an ideal solution for improving the sustainability and performance of industrial filtration systems, without the need to replace or modify the existing infrastructure.

## 1.2 GRAPHIC CUSTOMIZATION

**CUSTOMER LOGO AND WRITING:** CONTROLAIR software offers the possibility to fully customize the user interface with the customer's name and logo. This option allows companies to have a dust management system that reflects their visual identity, improving the user experience and brand consistency. This feature is particularly useful for companies that want a uniform and professional look in all digital interfaces related to their industrial plants.

## 1.3 POWER SUPPLY CONTROL UNIT

The control unit can be powered with different voltages to ensure universal compatibility with industrial systems: 230V AC, 110V AC or 24V DC. This versatility allows the system to be integrated into different environments, both in industrial contexts with standard electrical networks and in systems that require low voltage for safety and energy efficiency.

## 1.4 FILTER DIFFERENTIAL PRESSURE CONTROL

The system features advanced analog differential pressure control, which uses an internal transducer to continuously monitor the filter clogging status. This feature optimizes filter cleaning in real time, minimizing

energy consumption and improving the life of filter components. Precise differential pressure control ensures the system is always operating at maximum capacity, reducing the risk of malfunctions and improving air quality.

## 1.5 EMISSION CONTROL MONITORING

**EMISSIONS CONTROL WITH TRIBO-CHECK PROBE:** The CONTROLAIR system uses a 4-20mA triboelectric probe (Tribo-Check) to monitor dust concentrations and emissions into the air in real time. Thanks to this advanced technology, the system is able to detect any leaks in the filtration system, with particular attention to the precise identification of broken sleeves or cartridges, thanks to the ability to detect anomalies in the filter surfaces.

The system allows you to set alarm thresholds directly from the display, activating timely warnings in the event of faults. In this way, it is possible to intervene quickly to solve problems and prevent the emission of harmful dust into the atmosphere. This function significantly reduces environmental remediation costs and plant downtime, avoiding damage to operations and ensuring environmental protection.

The integration of advanced electronic devices, such as the Tribo-Check probe, optimizes the management of the dust removal system, increasing operational reliability and ensuring compliance with environmental regulations. The ability to specifically locate the row of damaged sleeves or cartridges allows for targeted and efficient problem resolution, improving overall plant efficiency and sustainability.

## 1.6 VIEWING

The system is equipped with a color graphic LCD display, which offers a clear and intuitive user interface. This display allows you to view all operational information in real time, making system management easy and immediate. The information is presented in a visual format that is easy to understand, allowing operators to monitor the performance and status of the system precisely.

## 1.7 MULTILINGUAL MENU

To ensure global usability, the system is equipped with a multilingual interface that includes a selection of languages, such as Italian, English, German, French and Spanish. This makes the system easily usable in different international markets, simplifying programming and daily management in multinational and diversified business contexts.

## 1.8 ALARMS AND MONITORING

- **ALARM MENU INTERFACE**

The CONTROLAIR system is equipped with an intuitive and user-friendly interface that allows you to easily view active and historical alarms. Thanks to an advanced graphic layout, operators can quickly access critical information, improving real-time response to system problems. Alarm management is simple, ensuring immediate usability even for non-expert users, reducing intervention times and increasing system reliability.

- **ACTIVE ALARMS MENU**

The real-time display of active alarms allows you to continuously monitor the status of the system and intervene promptly in the event of malfunctions. Alarms are highlighted and classified by type, providing detailed information on any problems, such as valve failures or anomalies in differential pressure, facilitating rapid identification of the causes. Proactive alarm management helps reduce system downtime and optimize response times.

## 2. CONTROLJET ELECTRONIC CONNECTIVITY

- **BLUETOOTH:** Bluetooth is a standardized technology widely used in consumer devices and industrial applications for wireless connection between devices.
- **Wi-Fi:** Wi-Fi is a wireless technology that enables wireless Internet connection and data transmission between devices. In an industrial context, it is used to connect devices, machinery and sensors in real time, improving operational efficiency and data management. Thanks to its wide coverage and ease of implementation, Wi-Fi is a cost-effective and scalable solution for business networks, also supporting high speeds and stable connections.
- **GSM:** GSM via router is a technology that uses the GSM (Global System for Mobile Communications) mobile network to provide Internet connectivity to devices in an industrial or business context. GSM routers allow you to connect a local area network (LAN) to the Internet via a SIM card from a mobile operator. This type of solution is ideal for remote areas or where wired Internet infrastructure is not available, offering a reliable and scalable connection, which allows remote management of industrial devices and systems in real time. The GSM router is used for IoT applications, remote monitoring and backup connections.

## 3. COMMUNICATION PROTOCOL

### 3.1 MQTT

Data communication protocol via MQTT (Message Queuing Telemetry Transport) is a lightweight messaging protocol, based on a client-server model, ideal for IoT applications and environments with limited connections. It uses a "publisher/subscriber" communication model, where devices (publishers) send messages to specific "topics" and other devices (subscribers) receive them. It is a highly efficient and scalable communication protocol, perfect for IoT applications. Thanks to its lightness, it minimizes bandwidth and power consumption, allowing smooth data management even in complex environments. Ideal for sectors such as industrial automation, home automation and smart cities, MQTT allows reliable and secure communication between devices, with customizable quality of service levels. Its flexible architecture and ease of implementation make it a strategic choice to optimize operational efficiency and rapidly scale IoT solutions, ensuring a continuous and secure data flow.

### 3.2 MODBUS RS485

Modbus RS485 communication is a consolidated standard for serial data transmission, particularly suitable for industrial and automation applications. Thanks to its ability to guarantee reliability over long distances and in environments subject to electromagnetic interference, the RS485 protocol is ideal for stable and safe connections. This technology allows remote communication with PLCs, facilitating direct interaction with the advanced CONTROLJET electronics.

Both communication protocols allow reading and writing of all the variables of the devices in the field.



## 4. MODEM ECO-SMBE CELLULAR ROUTER IR302-FQ58-W - GSM

This product is suitable for unattended device and site networking. It is embedded with watchdog and multi-layer link control mechanisms to ensure reliable and stable communication.

- Uninterrupted network access
- Supports fast LTE WAN networks for business continuity and WAN diversity.
- Strong security protection
  - Data transmission: IPsec VPN (IKEv1, IKEv2), L2TP, PPTP, OPEN VPN, GRE and CA certificate.
  - Network protection: Supports SPI (Stateful Packet Inspection), SSH (Secure Shell), intrusion protection (forbidden ping), DDoS defense, attack defense, IP-MAC binding, etc., protecting the network from external attacks.
  - Device access: Supports user hierarchical authorization (CLI only), implementing secure access management by providing different roles and different permissions.
- High reliability and stability
  - Link level detection: Continuously detect and automatically redial when the link is broken to maintain the link connection.
  - Dual SIM failover: Automatically switch to the most stable carrier network.
  - PPP level detection: Maintains connection to the carrier network, preventing forced hibernation, keeping network communication smooth.
  - VPN tunnel detection: Maintains the VPN tunnel connection stable, ensuring continuous transmission.
  - Device automatic recovery: Built-in hardware watchdog, automatic recovery from malfunctions, maintaining high availability of the device.
- Industrial grade design
- Metal body, IP30 protection. Level 2 on EMC. Ethernet ports support 1.5KV isolation transformer protection. Wide operating temperature: - 20 °C ~ 70 °C.

## 5. ATEX CONFIGURATION

CONTROLAIR ATEX: can be applied in environments classified as potentially explosive. Thanks to its compliance with ATEX (Atmosphères Explosibles) regulations, Controlair guarantees a high level of safety and reliability in sensitive industrial areas.

## 6. UL / CSA CONFIGURATION - CERTIFICATION FOR THE USA AND CANADA MARKET

UL / CSA CERTIFICATION: Our product is fully compliant with UL (Underwriters Laboratories) and CSA (Canadian Standards Association) safety standards, ensuring its suitability for use in the US and Canadian market. These certifications are essential to ensure that the product meets the highest safety, reliability and performance criteria required by American and Canadian regulations. UL certification is synonymous with compliance with electrical safety standards and protection against fire, electric shock and other hazards. The globally recognized CSA certification is the guarantee that the product meets the safety, performance and environmental compatibility requirements for use in Canada. This commitment to compliance with UL and CSA regulations not only opens access to the North American markets, but also ensures that the product offers optimal performance in industrial environments with maximum safety. It also helps reduce the risk of

legal non-compliance by simplifying the sales and distribution processes in these regions. Choosing a UL/CSA certified product means guaranteeing quality, reliability and safety, responding to the needs of a highly regulated and innovation-oriented market.

## 7. ELECTRONICS TECHNICAL DATA

- Power supply: IN 230 V AC – 110 V AC - 24V DC.
- Power consumption 10 W (Stand-by) - 30 W Max ev ON
- Operating temperature - 10 °C ÷ + 50 °C
- Pneumatic connection Rilsan 6 x 4
- Terminal block 2.5 mm<sup>2</sup> - 250 VAC / 12 A
- BOX CONTROLPAN DIMENSIONS 150 X 110 X 70 SMOOTH SIDES

## 8. WHY CHOOSE CONTROLAIR?

Why choose CONTROLAIR technology?

CONTROLAIR is the ideal choice for those who want to optimize existing industrial filtration systems without having to invest in expensive structural interventions or replace the system. Here are the main reasons why CONTROLAIR technology is the perfect solution for your industrial needs:

1. Adaptability to existing systems: CONTROLAIR is designed to easily integrate with industrial filtration systems already in operation. It does not require structural modifications, reducing installation times and costs. With CONTROLAIR, you can improve the efficiency of your system without having to replace or radically modify it.
2. Real-time monitoring: CONTROLAIR's advanced technology allows you to constantly monitor filter efficiency and dust emissions. Thanks to this real-time monitoring, you can promptly detect any drops in performance, optimize energy consumption and prevent costly breakdowns or malfunctions. Proactive management allows you to always keep the system at maximum operational capacity.
3. Environmental compliance: CONTROLAIR ensures full compliance with environmental regulations, accurately monitoring dust emissions and helping to create a safe and healthy working environment for operators. This allows you to always comply with local and international regulations, avoiding fines and ensuring the sustainability of the plant.
4. Remote management and intuitive control: Thanks to Wi-Fi connectivity, CONTROLAIR offers simple and immediate remote control from any device. This eliminates the need for direct manual interventions and facilitates remote management, increasing operational efficiency and reducing intervention times.
5. Easy integration with RS485 network: Compatibility with RS485 network allows CONTROLAIR to be easily integrated with existing filtration systems, ensuring rapid adoption without difficulty. This means there is no need for complicated interventions to get the most out of the filtration system.
6. Energy savings and reduction of operating costs: With CONTROLAIR, you can optimize the performance of your plant, reducing energy consumption and improving overall efficiency. The system's proactive technology helps reduce operating costs, extend filter life and minimise downtime.
7. Sustainability and reliability: CONTROLAIR is designed to last, reducing failures and improving the sustainability of your filtration system. Its advanced technology allows you to operate efficiently, while meeting safety and environmental standards.

In short, CONTROLAIR offers a complete and flexible solution for monitoring and controlling industrial filtration performance, improving efficiency, reducing costs and increasing sustainability without the need to replace or modify existing systems. If you are looking for a technology that improves the management and performance of your system, CONTROLAIR is the right choice.





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