TECHNICAL-COMMERCIAL PRESENTATION

SMARTAIR

Intelligent and connected system for managing and controlling inverters in industrial plants

Rev.2 - 05.08.2025


SMARTAIR
Iperjet Srl
Frequenza 0.0 Hz
Rotazione 0 rpm
Tensione 0 V
Corrente 0.0 A
Press. Condotta 0 mmH2O
SMARTAIR
MENU
OK

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1. SMARTAIR ELECTRONICS

1.1 Introduction

In an industrial sector increasingly focused on energy optimization and process digitalization, SMARTAIR offers a complete and intelligent solution for the automated management and control of inverters.

Thanks to its modular and flexible design, the system is compatible with the main inverter brands on the market (INVT, SIEMENS, SCHNEIDER) and can be easily integrated into both new and existing systems, without the need for complex structural modifications.

SMARTAIR enables dynamic control of the inverter frequency based on actual operating conditions, optimizing the operation of ventilation and filtration systems. Integrated intelligence allows for fully automatic or manual adjustment, with an intuitive, multilingual graphical interface that can be customized with the customer's logo and brand.

The system supports advanced connectivity (Wi-Fi, GSM) and uses IoT protocols (MQTT) for remote management and monitoring, offering a powerful tool for predictive maintenance, energy efficiency, and reduced operating costs.

Thanks also to the UL/CSA certifications, SMARTAIR is ready for use in highly regulated international markets, representing a technologically advanced, safe and sustainable choice for the future of industrial automation.

1.2 Available Versions

1.2.1 Electrical Panel Door Mounting Version

This version is designed for direct installation on the electrical panel door, integrating a color LCD front panel for intuitive operation.

Main technical features:

- Power supply: 24V DC
- Power consumption: 10 W in standby / up to 30 W at full power
- Operating temperature: -10°C to +50°C
- Pneumatic connection: 6 x 4 mm Rilsan tube
- Terminal block: 2.5 mm² – 250 VAC / 12 A

This version is the ideal solution for applications requiring compact integration within the electrical panel.

1.2.2 Remote Version on External Box

The remote version is supplied in a practical external ABS box with an integrated color LCD panel, ideal for decentralized installations or environments where the electrical panel is not easily accessible.

Technical specifications:

- Power supply: IN 230 V AC – 110 V AC - 24 V DC.
- Power consumption: 10 W in standby / up to 30 W in operation
- Operating temperature: -10°C to +50°C
- Terminal block: 2.5 mm² – 250 VAC / 12 A
- Air connections for RILSAN tube 6x4
- Rilsan pneumatic connection 6 x 4
- IP65 ABS enclosure – impact resistant (IK07)
- Enclosure dimensions: 160 x 106 mm
- Transparent cover in smoked polycarbonate

Compliance with standards:

- EN 62208 – EN 61439-3
- EAN Code: 8025241175661

This solution is ideal for installations in harsher environments or where high levels of protection from external agents are required.

1.3 GRAPHIC CUSTOMIZATION

CUSTOMER LOGO AND WORDING: SMARTAIR software offers the ability 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 seeking a uniform and professional look across all digital interfaces related to their industrial plants.

1.4 SMARTAIR POWER SUPPLY

The control unit can be powered by a variety of voltages to ensure universal compatibility with industrial systems: 230V AC, 110V AC, or 24V DC. This versatility allows the system to be integrated into a variety of environments, both in industrial settings with standard electrical grids and in systems requiring low voltage for safety and energy efficiency.

1.5 CONTROL OF THE DIFFERENTIAL PRESSURE OF THE PIPE

The system features advanced analog differential pressure control, which uses an internal transducer to continuously monitor filter clogging. This feature optimizes filter cleaning in real time, minimizing energy consumption and extending the life of filter components. Precise differential pressure control ensures the system always operates at maximum capacity, reducing the risk of malfunctions and improving air quality.

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 operating information in real time, making system management easy and straightforward. The information is presented in a visual format that is easy to understand, allowing operators to accurately monitor system performance and status.

1.7 MULTILINGUAL MENU

To ensure global usability, the system features a multilingual interface that includes a selection of languages, including Italian, English, German, French, and Spanish. This makes the system easily usable in various international markets, simplifying programming and day-to-day management in multinational and diverse business environments.

1.8 ALARMS AND MONITORING

ALARM MENU INTERFACE

The SMARTAIR system features an intuitive and user-friendly interface that allows you to easily view active and historical alarms. Thanks to an advanced graphical layout, operators can quickly access critical information, improving real-time response to system issues. 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 system status and respond promptly in the event of malfunctions. Alarms are highlighted and classified by type, providing detailed information on any issues, such as valve failures or differential pressure anomalies, facilitating rapid identification of the cause. Proactive alarm management helps reduce system downtime and optimize response times.

ALARM SIGNAL

dP Alarm Signal Output – 24 VDC
Device for monitoring the pressure difference (ΔP) in filtration systems. When the preset differential pressure threshold is exceeded, the system activates an alarm output via a 24 VDC electrical signal, ideal for connection to PLCs, supervision systems, or audible/visual alarm devices.
The output allows for timely management of filter clogging conditions, preventing system efficiency losses and maintaining optimal dust collection system performance.
Main Features:

- 24 VDC digital alarm output
- Automatic activation when the configurable ΔP threshold is exceeded

- Compatibility with industrial control systems
- Remote signaling for rapid and targeted interventions

Available upon request, with a relay option.

1.9 SETTING THE FIRST START-UP DATE

The system automatically detects the first start-up date after 4 hours of continuous operation. This feature allows you to precisely track the start of system operation, providing a useful reference for managing future maintenance and planning subsequent interventions.

SYSTEM OPERATION HOURS

Electronic counter that records the total system operating time. Useful for scheduling preventative maintenance, checking work cycles, and evaluating system performance.
Commercial benefits: Enables efficient management of the system's life cycle, optimizing maintenance costs and improving overall reliability.

2. SMARTAIR ELECTRONIC CONNECTIVITY

• Wi-Fi: Wi-Fi is a wireless technology that enables wireless Internet connection and data transmission between devices. In industrial settings, 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 corporate 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 industrial or business settings. GSM routers allow a local area network (LAN) to be connected to the Internet via a mobile operator's SIM card. This type of solution is ideal for remote areas or where wired Internet infrastructure is unavailable, offering a reliable and scalable connection that enables real-time remote management of industrial devices and systems. GSM routers are used for IoT applications, remote monitoring, and backup connections.

3. COMMUNICATION PROTOCOL

3.1 MQTT

MQTT (Message Queuing Telemetry Transport) is a lightweight messaging protocol based on a client-server model, ideal for IoT applications and environments with limited connectivity. 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 lightweight nature, it minimizes bandwidth and power consumption, enabling seamless data management even in complex environments. Ideal for sectors such as industrial automation, home automation, and smart cities, MQTT enables reliable and secure communication between devices, with customizable quality of service levels. Its flexible architecture and ease of implementation make it a strategic choice for optimizing operational efficiency and rapidly scaling IoT solutions, ensuring a continuous and secure data flow.

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

This product is suitable for networking unattended devices and sites. It is equipped with watchdog and multi-layer link control mechanisms to ensure reliable and stable communications.

- 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 hierarchical user authorization (CLI only), implementing secure access management by providing different roles and permissions.
- High reliability and stability

  - Link level detection: Continuous detection and automatic redialing in the event of a link interruption to maintain the connection.

    - Dual SIM failover: Automatically switches to the most stable carrier network.

    - PPP level detection: Maintains connection to the carrier network, preventing forced hibernation, maintaining smooth network communications.

    - VPN tunnel detection: Maintains a stable VPN tunnel connection, ensuring continuous transmission.

    - Automatic device recovery: Built-in hardware watchdog, automatic recovery from malfunctions, maintaining high device availability.

  • Industrial-grade design

  • Metal enclosure, IP30 protection. Level 2 EMC. Ethernet ports support 1.5KV isolation transformer protection. Wide operating temperature range: -20°C ~ 70°C.

5. 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 markets. These certifications are essential to ensure the product meets the highest safety, reliability, and performance criteria required by American and Canadian regulations. UL certification signifies compliance with electrical safety standards and protection against fire, electric shock, and other hazards. The globally recognized CSA certification guarantees that the product meets the safety, performance, and environmental requirements for use in Canada. This commitment to UL and CSA compliance 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, meeting the needs of a highly regulated and innovation-oriented market.

6. ELECTRONICS TECHNICAL DATA

6.1 SMARTAIR INVERTER MANAGEMENT AND CONTROL WITH LCD PANEL ON THE ELECTRICAL PANEL DOOR

- COLOR LCD FRONT PANEL
- Power consumption: 10 W (Standby) - 30 W Max. (EV ON)
- Operating temperature: -10°C to +50°C
- Rilsan pneumatic connection: 6 x 4
- Terminal block: 2.5 mm² - 250 VAC / 12 A
- Power supply: IN 230 V AC - 110 V AC - 24 V DC.
- CONTROL PANEL BOX DIMENSIONS: 150 X 110 X 70, SMOOTH SIDES

6.2 SMARTAIR INVERTER MANAGEMENT AND CONTROL WITH LCD PANEL ON EXTERNAL BOX

- COLOR LCD FRONT PANEL
- Power supply: 24V DC / 230V AC
- Power consumption: 10 W (Standby) - 30 W Max. (ON)
- Operating temperature: -10°C to +50°C
- Rilsan pneumatic connection: 6 x 4
- Terminal block: 2.5 mm² - 250 VAC / 12 A
- ABS IP65 IK07 BOX, SMALL 160 X 106, TRANSPARENT FOR CONTROL PANEL
- Cover: TRANSPARENT PC, SMOKED
- Technical data
- Type: ABS 17-16-L3
- Height (mm) 160
- Depth (mm) 106
- Material: ABS
- Cover type: TRANSPARENT PC, SMOKED
- IP protection rating: IP65
- Impact resistance: IK07
- EAN 13 8025241175661
- Reference standards: EN 62208 and EN 61439-3

7. SMARTAIR – ADVANTAGES AND ADVANCED PARAMETERS COMPARED TO THE COMPETITION

Extended Inverter Compatibility

- Integrated management of inverters from leading manufacturers:
  - o SIEMENS
  - o SCHNEIDER
  - o INVT
- Configurable upon request for any other type of inverter

Advanced Fan Control

- Minimum adjustable frequency: 25 Hz
(required if auxiliary ventilation is not present)
- Maximum adjustable frequency: 50 Hz
(unless otherwise specified for the motor and impeller)
- Selectable direction of travel:
  - o FWD = Forward
  - o RWD = Reverse

Time and Stop Mode Management

- Acceleration time: default 30 s (modifiable)
- Deceleration time: default 30 s (modifiable)
- Selectable stop mode:
  - o INE = Coast to Stop (free)
  - o DEC = Controlled Deceleration

Fully customizable motor parameters

- Data entry from the nameplate:
  - o Power
  - o Speed
  - o Rated Voltage
  - o Current Nominal

SMARTAIR is the ideal solution for optimizing existing industrial filtration systems without structural modifications or costly interventions.

It integrates easily with existing systems and offers numerous advantages:

- Adaptability: compatible with existing systems
- Real-time monitoring: continuous filter monitoring
- Remote management: intuitive control via Wi-Fi, from any device
- Energy efficiency: reduced consumption, operating costs, and downtime
- Environmental compliance: regulatory compliance and a safe work environment
- Reliability and sustainability: long-lasting technology and simplified maintenance

In short, SMARTAIR improves the performance, efficiency, and sustainability of your system, without having to replace it. A smart, practical, and flexible choice.

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