Intelligent Compressor Controller

Sigma Control 2™

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Integrated Intelligence

Sigma Control 2™ is our most advanced compressor controller, combining safe and efficient internal supervision of the compressor with important information and maintenance friendly features. The operator interface offers easy access to all compressor settings and information. This new controller provides a broad range of capabilities and at the same time is simple and reliable.

Protection For Your Equipment

Our control provides full time protection for the compressor. It monitors over 20 critical parameters including airend discharge temperature, direction of rotation, motor temperature, internal pressure, electrical overload status, oil filter differential pressure, and auto drain status (if equipped). The controller safely shuts down the machine to avoid component damage. Sigma Control 2 also tracks service and load hours, which helps schedule routine maintenance and minimize downtime. It stores the compressor alarm and operating history, aiding in faster trouble-shooting and reducing unscheduled downtime. The RFID feature provides secure access to the control menus, preventing unauthorized access and tampering.

Superior Energy Efficiency

Two-unit lead/lag sequencer programming is standard in Sigma Control 2. This functionality equalizes runtimes, extends maintenance intervals and prevents unnecessary compressor starts. Further, it is pre-programmed with multiple user selectable control profiles (Quadro, Vario, Dual, Continuous, and Dynamic) to meet a wide variety of operating preferences. The precision electronic pressure sensor enables tighter switching differentials for further savings.

Flexible Communications

More and more customers desire the ability to remotely monitor or control their compressed air systems. Whether you have a standalone system or want to make it part of your plant-wide controls, the Sigma Control 2 was designed for maximum communication flexibility. Our built-in web server and Ethernet port (standard) let you view your compressor from any PC with a standard web browser. The open architecture makes it easy to integrate the compressor into existing plant-wide monitoring systems utilizing optional communication adapters such as Modbus, Profibus, DeviceNet, and Profinet.

Multiple Operating Profiles

Sigma Control 2 comes standard with pre-loaded control profiles. Select the one that best fits your operating needs:

- **Dual Control:** Operates the compressor at full load and idle mode via a minimum/maximum pressure switch and a timer. Pressure band and timer values are preset to match system requirements.

- **Quadro Control:** An improved version of Dual Control that includes an additional timer to effectively fine-tune the idle period and bypasses idle mode after periods of low air demand.

- **Vario Control:** Uses a smart timer to vary the idle time based on the frequency of motor starts, resulting in more energy savings.

- **Dynamic Control:** The machine will switch from load to stop at low motor temperature and to idle when the

motor is hot. The control may bypass idle mode if the motor temperature is low and more starts are permissible.

- **Sigma Frequency Control:** The most advanced and energy-efficient type of compressor control that varies output capacity according to system pressure requirements using a variable speed drive system (if so equipped).

- **Modulation Control:** Regulates air delivery using proportional inlet valve to provide a constant output pressure (if so equipped).

Security with RFID

Sigma Control 2 provides high level security with its integrated RFID (Radio Frequency Identification) key. This technology ensures secure log-in for users and service personnel so service work and system changes to the compressor can be performed only by authorized and qualified personnel. This protects the equipment and your operations.

Advanced Communications Capabilities

Superior System Integration

Sigma Control 2 comes ready for external communication with utility management and central control systems. A built-in web server is accessible via the standard Ethernet port, making it possible to view operational parameters from any computer — via Intranet or Internet — with a standard web browser without any additional software. Optional cellular modem also available for remote access.

In addition, Profibus DP, Modbus RTU or TCP, DeviceNet, Profinet and other common industrial communication buses are available to integrate the compressor into your centralized telemetry or plant monitoring system. Digital and analog inputs and outputs are available to monitor optional sensors and equipment or to send signals back to an alarm or telemetry system. To further enhance remote monitoring, email notifications of alarms and operational messages can be sent via an SMTP server.

Upgrades and Data Storage

A convenient SD card slot (standard) enables fast, easy software upgrades and storing key operational parameters. This feature minimizes service costs, provides system back up capability, and offers long-term data storage for trending and analysis purposes.

Customer Network

You can view each compressor through its **Ethernet** port and web server. Sigma Air Manager can also be viewed through its Ethernet port and web server or via Modbus or other industrial communications. Contact Kaeser for details.

Router

Server

Kaeser Equipment

Sigma Air Manager with Ethernet port and web server.
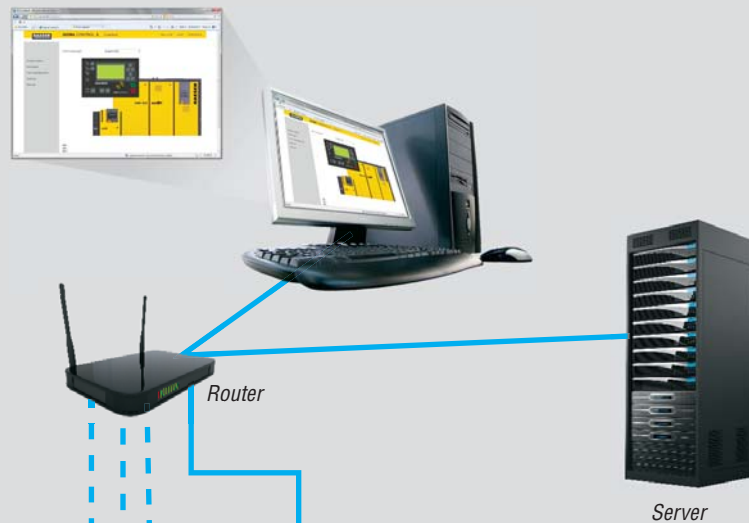
Each Sigma Control 2 has its own Ethernet port and web server. Shown with optional **Profibus** communication adapter.
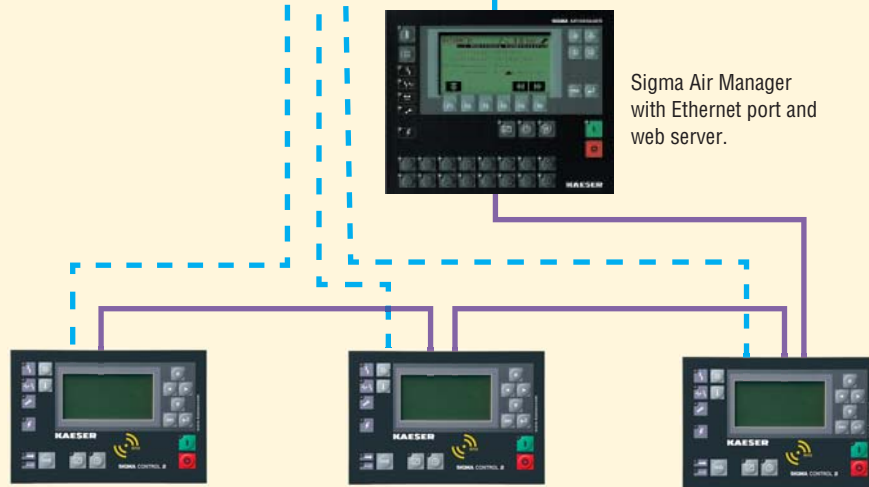
Sigma Control Interface

Sigma Control 2 features an easy to read plain-text display and durable input keys. All relevant information can be viewed by navigating the menu with a few simple key strokes, and you have 30 languages to choose from.

Display shows:
```
120 PSIG          09:26          185°F
------------------------------------------
ON LOAD
------------------------------------------
Key      –  on    !pA  –  Load
------------------------------------------
Run          18005h  Load      17105 h
Maintenance in:                 1995 h
```

Function Keys

ON
Switches ON the compressor in automatic, self control operation

OFF
Switches the compressor OFF

Idle
Switches the compressor from load to idle (and reverse)

Load/Idle Indicator
Green LED indicates whether the compressor is loaded (making air) or idling

Remote ON
Green LED indicates external control

Timer ON/OFF Key
Switches the timer ON and OFF. Green LED indicates the timer mode is active

Alarm Indicator
Red LED indicates the compressor has shut down with an alarm

Communication Fault Indicator
Red LED indicates faulty external communication

Maintenance Indicator
Yellow LED indicates maintenance is due

Main Power Indicator
Green LED indicates there is power to the machine (the control cabinet is energized)

Scroll
Scrolls up and down, line by line. Scrolls right and left.

Escape Key
Returns to the next higher menu level

Enter/Return
Goes to next sub-menu down or accepts inputted value

Acknowledge
Acknowledges alarms and, when permitted, resets the alarm memory

Info
Access to additional information

Features and Options

Hardware

- Advanced processor hardware
- Backlit 255 X 128 pixel graphical display with 8 lines, 30 characters each
- 9 LED indicators and 13 tactile membrane keys
- Real-time clock with 10 year battery back-up
- Precision electronic pressure transducer
- RFID reader for touchless security
- All components designed for industrial operating conditions

Data Recording

- On-site diagnosis at a glance
- Graphical representation of compressor status

Interfaces

1 RJ45 10/100MB Ethernet

2 I/O bus RS485 for communication with up to 6 input/output modules

3 USS interface RS485 for communications with up to three frequency converters

4 Plug in Profibus DP, Modbus RTU or TCP, DeviceNet, Profinet or other communication adapters

5 SD card slot for updates and data storage
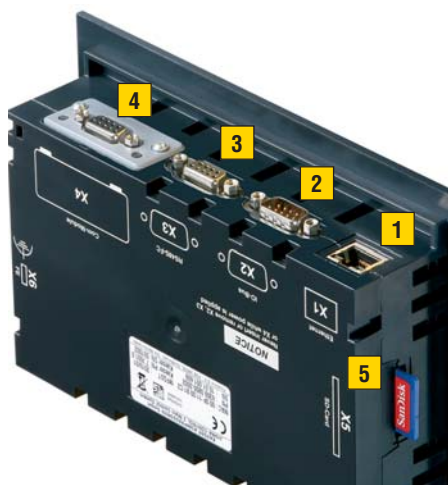
Optional Profibus adapter

Standard SD card slot

Control cabinet

Dust- and water-resistant, IP 54 compliant; input / output modules with color coded terminals for the signal sensor connection cable; terminal strips for additional floating contacts.

Certifications

cULus, CE, EMC, GL maritime certification, ABS, LRS, DNV.