

Sigma Control™



PC INSIDE™



Innovation

At Kaeser, we pride ourselves on being the world's leading innovator in air system technology. Over twenty-five years ago, we revolutionized the compressor industry by introducing the highly efficient, energy-saving **Sigma Profile** rotary screw airoend.



Today, Kaeser Compressors, in conjunction with Siemens AG, has developed the revolutionary new **Sigma Control™** system. This patent-pending compressor control features an industrial-based "PC Inside™."

Sigma Control can be integrated with multiple compressors into one complete system, while providing increased reliability, availability and additional energy savings. Its unprecedented capabilities allow remote access and universal communication from virtually anywhere in the world. Such access to system control is crucial to keeping vital operations running and reducing system downtime.

Sigma Control™ — with a PC inside

A new standard in air system technology

This revolutionary new compressor control system is the first of its kind. Using an industrial-based Intel® processor, Sigma Control precisely matches compressor performance to the actual air demand, thus optimizing energy efficiency while decreasing costs. Its service and operational history feature supplies "real-time" feedback to increase air system productivity.

Plus, Sigma Control has an open architecture to integrate the compressors into existing systems. It can be used to monitor and adjust the compressed air system from virtually anywhere in the world.

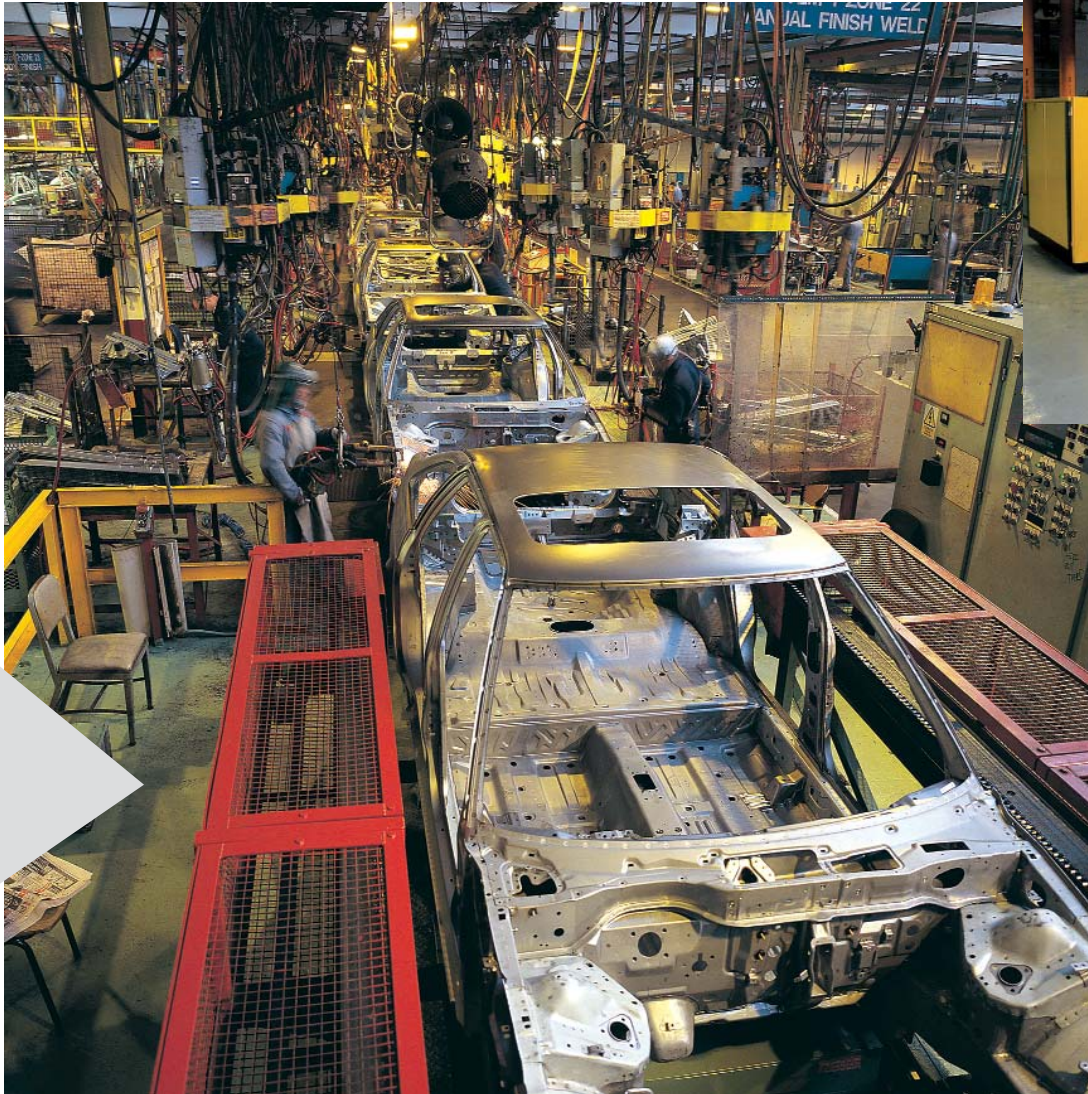
- **Sigma Control** offers five different compressor control configurations to meet the specific application and usage requirements
- **Sigma Control** provides the performance of a modern PC with a real-time operating system
- **Sigma Control** is preprogrammed with 20 different languages

- **Sigma Control** records service to create a complete event history
- **Sigma Control** operates as a programmable lead/lag controller to match load and usage in two-unit installations
- **Sigma Control** has a user-friendly interface with menu-guided displays

Input

- Functional status and operating parameters of all main and peripheral system components
- System service requirements
- Compressed air usage





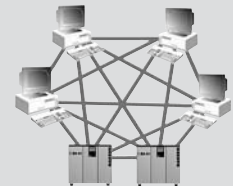
The Hardware:

- Industrial PC
- Real-time operating system
- Plain text display
- Stabilized 24 V DC power supply
- User-friendly interface
- 230 V relay output capacity, 24 V DC transistor outputs
- Open system architecture



The Software:

- Five different compressor control configuration choices
- Programmable timers and lead/lag control
- Service and operational event memory
- Preprogrammed with 20 different languages
- Software update capability
- One software package for all compressors



The Network:

- 'Dial in' to the compressor system
- Three serial interfaces:
 - RS 232 modem/printer
 - RS 485 lead/lag control
 - Profibus
- 4-20 mA analog output
- Volt-free outputs
- Universal connection worldwide
- Digital inputs and outputs



Output:

- System monitoring
- Maintenance trending
- System security
- Air demand tracking

System Feedback

System Monitoring



Using the service record, routine maintenance can be scheduled before it becomes critical. Preventing downtime saves critical resources and increases production.

Maintenance Trending



Monitoring the compressed air system's history, components, and functions helps accurately trouble-shoot potential concerns and identify overall system problems.

System Security



Strict password-controlled permissions and protective devices ensure system security. Levels range from basic “read-only” access to full access with reporting and adjustment capabilities.

Air Demand Tracking



Tracking the facility's compressed air usage, and reviewing long-term consumption identifies the correct compressor control configuration.

Meeting system requirements

Five Different Control Configurations:

- **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.
- **Vario Control:** Uses a smart variable idle timer to adjust the idle period according to compressor starts, resulting in more energy savings.
- **Modulation Control*:** Regulates air delivery using a proportional controller to provide a constant output pressure.
- **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.

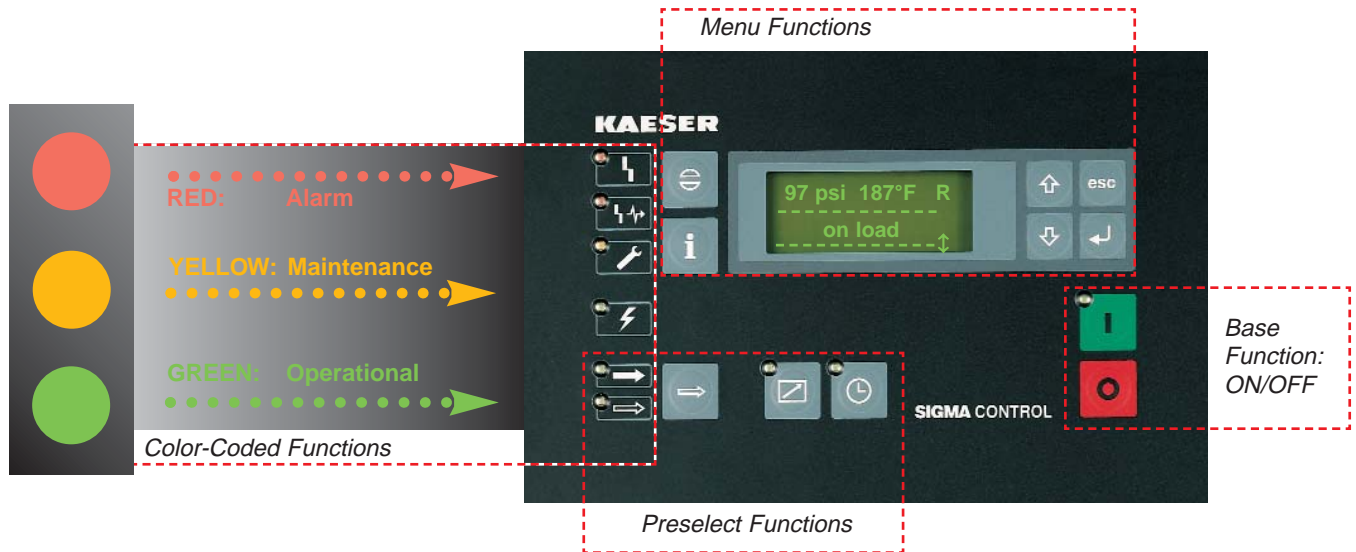
** Requires equipment in addition to Sigma Control*

Technology Made Simple

Easy-to-understand, color-coded signal functions:



- Red: Alarm
- Yellow: Maintenance
- Green: Operational

Sigma Control features easily understood icons, symbols, and touch keys. LEDs indicate important functions and operational status. Menu-guided displays feature clear function choices.








Function Keys on the Control Panel





Base Function

-  **ON Key**
Switches ON compressor in automatic self control operation. Green LED indicates 'Compressor ON'.
-  **OFF Key**
Switches the compressor OFF.

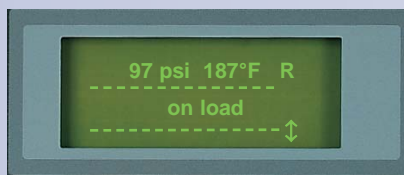
Preselect Functions

-  **Idle Key**
Switches the compressor from load to idle.
-  **Idle Icon**
Green LED indicates 'Compressor idling, no air supply'.
-  **Load Icon**
Green LED indicates 'Compressor on Load, air being supplied'.
-  **Remote ON Key**
Switches remote control ON and OFF. Green LED illuminates under external control.
-  **Timer ON/OFF Key**
Switches the timer ON and OFF. Green LED indicates 'Timer ON'.







Color-Coded Functions

-  **Alarm Icon**
Red LED indicates 'Malfunctioning compressor'. Compressor is shut down on alarm.
-  **Communication Alarm Icon**
Red LED indicates 'Data communication to other systems interrupted'.
-  **Maintenance Icon**
Yellow LED indicates 'Maintenance due' or 'Maintenance counter expired' or 'Warning'.
-  **Power ON Icon**
Green LED indicates 'Main switch ON, power supply available'.

Plain Text Display



Menu Functions

-  **Up Key**
Scrolls up line by line.
-  **Down Key**
Scrolls down line by line.
-  **Escape Key**
Returns to next higher level.
-  **Enter Key**
Indicates jump to next sub-menu or accepts value.
-  **Acknowledge Key**
Acknowledges alarms and, when permitted, resets the alarm memory.
-  **Info Key**
Access to additional information or to the event information memory.

Hardware

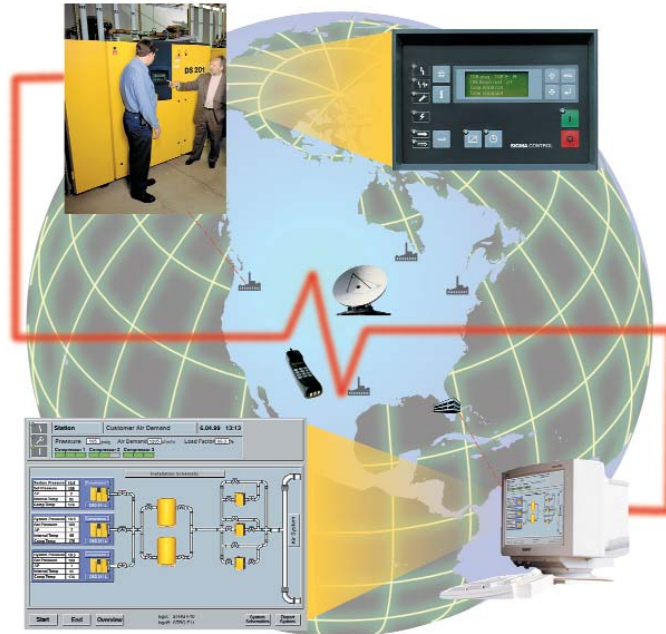
- Electronic controller based on an industrial PC with Intel® processor, real-time operating system, EEPROM/SRAM
- User-friendly interface, LEDs, plain text display (four lines, 16 characters)
- Stabilized 24 V DC power supply
- Analog inputs and outputs (4-20 mA)
- 230/115 V relay outputs (dry contacts)
- 24 V inputs and outputs, overload and short circuit proof, internal undervoltage monitoring
- Internal temperature monitoring
- Three serial interfaces:
 - RS 232 modem/printer
 - RS 485 lead/lag control
 - Profibus
- Real-time clock
- Buffer battery for RAM and real-time clock

User's software/functions

User interface fitted with LEDs, touch keys, and icons for all important switching functions. Menu-guided operation with plain text display.

Displays:

- Status data: Messages, statistics, utilization, utilization in %, motor starts/time interval, last run on load, last run in idle, last alarm (type of alarm), last maintenance (type of maintenance), highest pressure memory, maximum and minimum pressure memory



- Analog data: Air main pressure, airoend discharge temperature, differential pressure across fluid separator*, cooling water temperature*, motor temperature*
- Hour meter for various operating modes and service hour meter for maintenance work
- Memory stores 100 events with date and time

* optional - available only if sensor is installed

Interface software

- Communication software for transfer of all important data via the Profibus interface

Functions and settings

- Test routine for testing the function of the user interface
- Timer with several programming options: four daily settings, four weekly settings, and four annual (holiday) settings
- Additional functions can be programmed on spare channels
- Configuration menu for settings is protected by password
- Data interfaces can be set up and activated
- Integrated programmable lead/lag controller for two compressors

Sigma Control and PC Inside are trademarks of Kaeser Compressors, Inc. Intel is a registered trademark of Intel Corporation

KAESER COMPRESSORS

Built for a lifetime.™

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Member:



The Air Systems Specialist

With over 80 years of experience, Kaeser is the air systems specialist. Our extensive 100,000 square foot facility allows us to provide unequalled product availability. With service centers nationwide and our 24-hour emergency parts guarantee, Kaeser customers can rely on the best after-sales support in the industry. Kaeser stands committed to providing the highest quality air system for your specific compressed air needs.