KAESER COMPRESSORS®

KERR Compressor Engineers
Compressors • Vacuum Pumps • Blowers


# Heatless Regenerative Desiccant Dryers

**DC 2.0 - DC 11.3 Series**

Durable space-savers

Flow rate: 0.20 to 1.13 m³/min; Pressure 4 to 15 bar

**www.kerrcompressors.co.uk**

DC 2.0 – DC 11.3 series

# Durable space-savers

Reliable, quiet and efficient, DC series desiccant dryers from KAESER impress not only on account of their remarkably compact dimensions – thanks to high-quality and generously dimensioned components, these durable space-savers also guarantee impressively low life-cycle costs.

Configurable operating modes contribute even more energy-saving potential, whilst two high-performance silencers ensure a low-noise operation. Flexible compressed air connections and the ECO CONTROL SMART controller's standard-equipped network interface ensure easy installation and integration into the compressed air network.

## Long-lasting, service-friendly design

The durable design of DC 2.0 – 11.3 series desiccant dryers is evident thanks to such high-quality features as long-lasting aluminium desiccant tubes, maintenance-free shuttle valves and cartridges filled with a pressure-resistant desiccant material that remains stable in the presence of liquid water. For maximum protection of the desiccant material and the downstream piping network, these compact dryers are equipped with highly efficient KAESER FILTERS.

## High efficiency – ultra-low pressure dew points

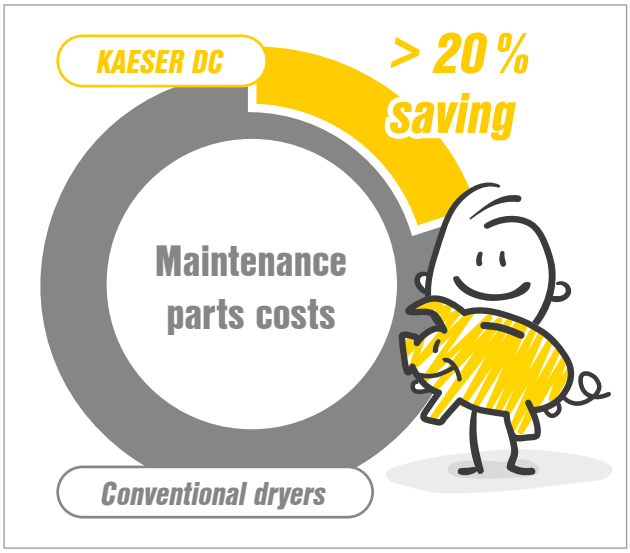
Optimised flow conditions ensure maximum desiccant regeneration capacity for minimal air demand. Even at sustained high load levels, the required pressure dew points (-40/-70 °C) are reliably achieved with minimal pressure loss, either in fixed cycles or via pressure dew point control. Moreover, further energy savings can be achieved if necessary by means of compressor synchronisation control or operation in Intermittent mode.

## Quick installation

For simple functional checks and swift element changes, efficient KAESER FILTERS are mounted on the outside of the machine, where flexible connections allow them to be attached to the upper valve block in variable positions. The electronic ECO-DRAIN condensate drain is delivered fully wired. The front panel offers simple and convenient access to the valves, silencers and ECO CONTROL SMART controller.

## Network connection

The ECO CONTROL SMART controller provides floating message contacts and a Modbus TCP interface is fitted as standard, allowing DC series desiccant dryers to be connected to a SIGMA AIR MANAGER 4.0 master controller and the SIGMA NETWORK. Operating parameters and messages are therefore available in real-time.




## Minimise maintenance costs

Where air demand is low, maintenance costs often play a decisive role in achieving lower life-cycle costs. Therein lies one of the DC series desiccant dryer's core strengths; in addition to their efficient operation, they also stand out for their particularly long maintenance intervals of 5 years for valves and desiccant material. This makes these durable space-savers especially economical.

In comparison with conventional dryers, more than 20% of the costs for maintenance parts can be saved, whilst further savings are contributed by the reduced number of maintenance tasks required for the valves and desiccant material.


**Image:** DC 11.3 with ECO-DRAIN on prefilter

DC 2.0 – DC 11.3 series

# Rainfilling


The more compact the layout of a desiccant dryer, the greater the need for an even filling of the desiccant material.

For this reason, the desiccant cartridges in KAESER DC series dryers are filled using a special procedure know as “Rainfilling”, whereby the desiccant material is trickled into the cartridge across a device fitted with special louvres. The louvres repeatedly deflect the desiccant beads at random, resulting in an evenly distributed desiccant bed that is particularly tightly packed. This offers several advantages:

It creates highly even flow channels within the desiccant bed, whilst the formation of bypass channels is reliably avoided. This ensures maximum contact between the desiccant beads and the compressed air and regeneration air, allowing the optimum amount of moisture to be absorbed and subsequently released.

An even throughflow also serves to ensure lower pressure losses.

(1) Desiccant beads
(2) Filling device
(3) Desiccant cartridge
(4) Louvres

Activated alumina desiccant

# Undoubtedly the right choice!

The DC series operates exclusively with activated alumina – a highly pressure-resistant material with excellent mechanical stability, that requires minimal energy for regeneration. This means that DC series dryers typically require up to 20% less regeneration air for a pressure dew point of -40 °C than dryers using molecular sieve.

Furthermore, only top-quality desiccant is used, consisting of uniform beads formed from a dust-proof material. These serve to ensure that the channels in the desiccant bed remain free from particulates, even with shifting airflows, thereby allowing their full capacity to be utilised. Thanks to the stability of the desiccant material in the presence of liquid water, DC series desiccant dryers can also dispense with multi-stage filling.

Not only does this facilitate servicing, it also enhances safety when working under extreme operating conditions, as it absorbs significantly less water than other desiccants without sintering and thus can be regenerated quickly. This allows the original pressure dew point to be more swiftly resumed. It can also be replaced at relatively moderate cost.

DC 2.0 – DC 11.3 series

# Long-lasting, reliable design

Desiccant dryers are often selected for sensitive applications, which tend to require a high level of compressed air availability. For this reason, DC series desiccant dryers are equipped with high-quality components for maximum reliability and minimal maintenance costs.


## Up to 20% longer service life

The cartridges, filled with water-resistant desiccant beads of activated alumina, are fixed in position using end caps. Inside, they feature an integrated stainless steel flow distributor and a coarse filter. Especially sized for a long service life, these cartridges benefit from a 5-year maintenance interval – up to 20% longer than the service life associated with conventional dryers.

## Maintenance-free shuttle valves

Unlike conventional dryers, these robust space-savers are equipped with premium-quality, maintenance-free shuttle valves, which are designed to cope with high pressure load changes. The recommended maintenance interval for both regeneration air valves is 5 years – whereas those fitted to conventional dryers often require annual maintenance and replacement every two years.


## Maximum protection with KAESER FILTERS

Optionally available with an electronic, level-controlled ECO-DRAIN condensate drain, the fully factory-wired prefilter protects the desiccant from dirt and oil aerosols. The afterfilter, meanwhile, protects the downstream piping network from the intake of particulates. Finally, a function-tested service unit ensures that the ECO-DRAIN performs efficiently and reliably.


## Fatigue strength as per AD regulations

In order to minimise the work and costs associated with inspections, the desiccant tubes are constructed from aluminium and designed in accordance with the TÜV's "AD" technical regulations, whilst the outer surface is anodised.

DC 2.0 – DC 11.3 series

# Dependable drying with energy cost savings

Achieving pressure dew points below 0 °C is always a challenge. This means it was even more important than ever for KAESER to draw on their decades of experience when designing their DC series desiccant dryers and to use only high-quality components throughout. In doing so, peak levels of energy efficiency have been achieved across the entire load range.


## Efficient regeneration

Swift and complete expansion of the compressed air ensures that its full regeneration capacity is utilised. For this purpose, rapid-switching valves featuring large opening cross-sections and two generously dimensioned ¼" high-performance silencers are fitted – guaranteeing dependable drying for minimal regeneration air demand.


## Fast-acting and generously dimensioned

A comparison with conventional dryers of the same power reveals that DC series desiccant dryers offer the following advantages: Firstly, they are equipped with two specific regeneration air valves and secondly, they feature especially high-performance coils and large opening cross-sections for exceptionally efficient regeneration and a long service life.


## Very low pressure losses

Thanks to generously dimensioned flow cross-sections and efficient KAESER FILTERS, DC series dryers deliver standout performance for a maximum pressure loss of 0.2 bar. The excellent particulate retention capacity of the pleated filter elements also means that pressure losses remain low throughout their entire service life.


## ECO CONTROL SMART

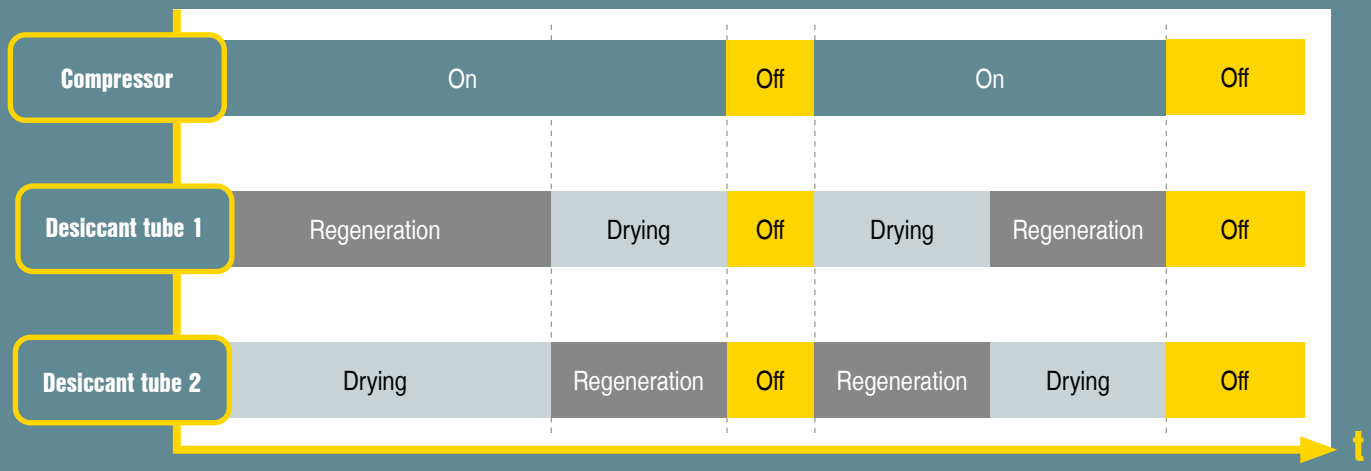
The ECO CONTROL SMART controller offers different operating modes that can be used to achieve additional energy savings. Pressure dew point control is also an option (accessory required: PDP control kit). This creates additional energy-saving potential for larger models at fluctuating levels of air demand.

DC 2.0 – DC 11.3 series

# Flexible operating modes

The ECO CONTROL SMART controller offers two particular operating modes that can be used to achieve additional energy savings:

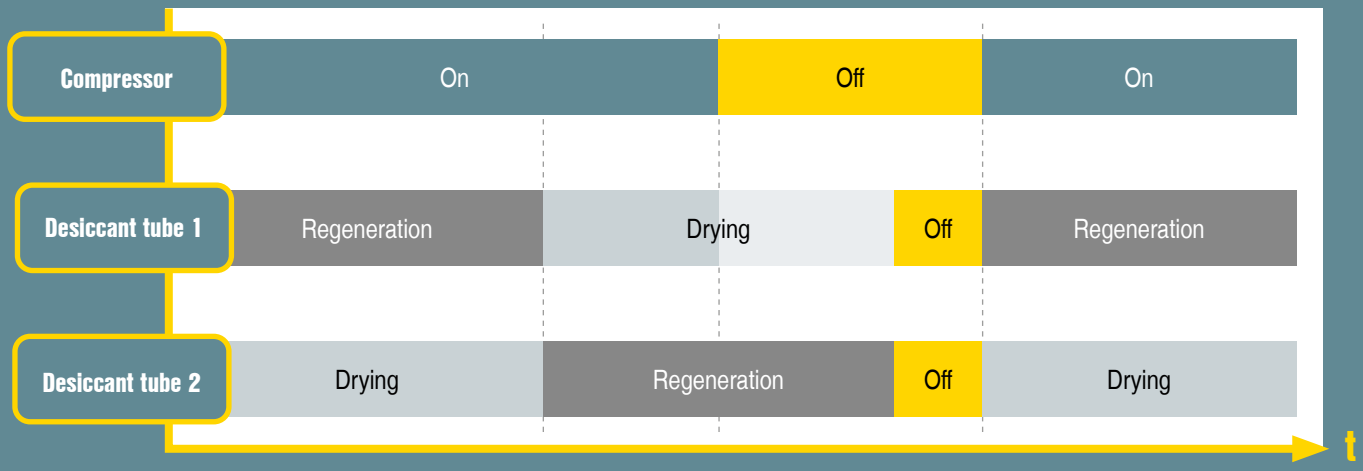
## Compressor synchronisation control




Upon receipt of a remote Off signal, the cycle will be stopped immediately. Upon receipt of a remote On signal, the cycle will be restarted.

**Benefit:** No compressed air will be used during this period.

## Intermittent operation




Upon receipt of a remote Off signal, regeneration will cease and the half-cycle will only be stopped once it has completed. This means that dried compressed air is still required. The next half-cycle starts upon receipt of a remote On signal.

**Benefit:** Upon receiving a remote On signal, a lower pressure dew point will be available immediately.

DC 2.0 – DC 11.3 series

# Compact.
# Quiet. Efficient.


Example: Space-saving wall installation in a corner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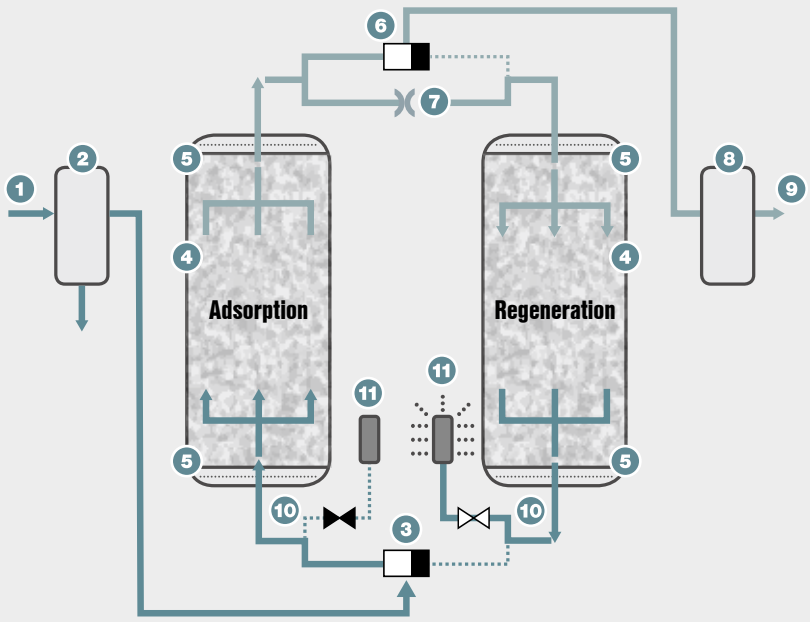
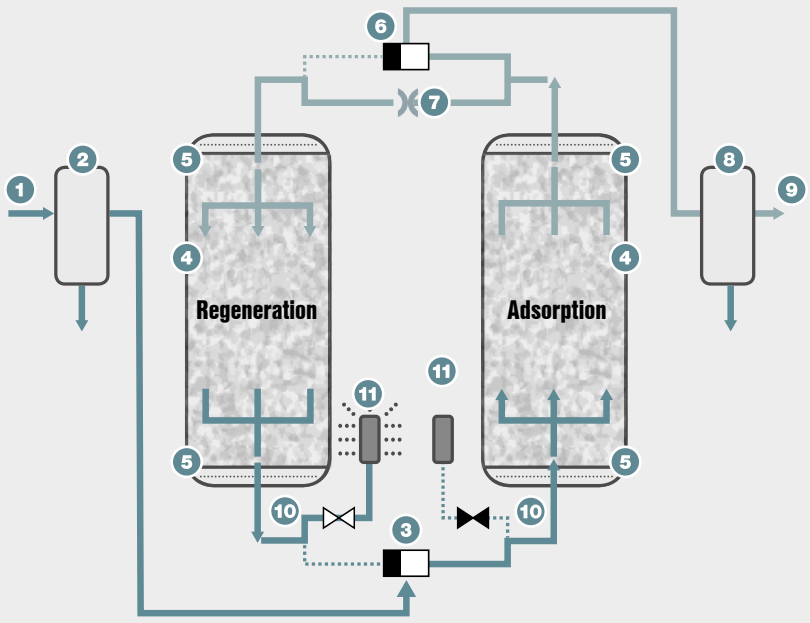
# How it works

### 1. Half-cycle




(1) Compressed air inlet
(2) Prefilter
(3) Shuttle valve, compressed air inlet
(4) Desiccant tube with desiccant cartridge
(5) Flow distributor
(6) Compressed air outlet
(7) Regeneration air aperture
(8) Afterfilter
(9) Shuttle valve, compressed air outlet
(10) Regeneration air outlet valve
(11) Silencer

### 2. Half-cycle




(1) Compressed air inlet
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(8) Afterfilter
(9) Shuttle valve, compressed air outlet
(10) Regeneration air outlet valve
(11) Silencer

DC 2.0 – DC 11.3 series

# Flexible connection, excellent accessibility

DC series desiccant dryers are equipped with efficient KAESER FILTERS mounted on the outside of the machine. Flexible connections allow them to be attached in variable positions to the upper valve block. The electronic ECO-DRAIN condensate drain is delivered fully wired. The front panel offers simple and convenient access to the valves, silencers and ECO CONTROL SMART controller.


## Variable connections

Flexible connections allow the KAESER FILTERS to be attached in variable positions to the upper valve block. The dryers are fitted with floor-mounting brackets as standard.

## Quick access

For simple functional checks and swift element changes, the KAESER FILTERS are mounted on the outside of the machine. The desiccant is stored in a cartridge featuring an integrated coarse filter. The front panel offers simple and convenient access to the valves and silencers.


## ECO-DRAIN with message contact

DC series desiccant dryers can be optionally specified with the ECO-DRAIN electronic condensate drain, which is delivered ex-works with full electrical connections including the message contact, and is integrated into the ECO CONTROL SMART controller.


## Important pressure values at a glance

The front panel on DC series dryers is equipped as standard with two pressure gauges for displaying the pressures in the desiccant tubes. This makes it simple to determine the current operating situation, as well as the pressure status when carrying out maintenance work.

ECO CONTROL SMART

# Network-capable as standard

**Pressure gauge**

### Working pressure at a glance.

Makes it simple to determine the current operating situation, as well as the pressure status when carrying out maintenance work.

**Status LEDs**

### Animated functional diagram.

Multicoloured LEDs visualise the process flow. Current status of the regeneration air valves is also displayed.

**Operating panel**

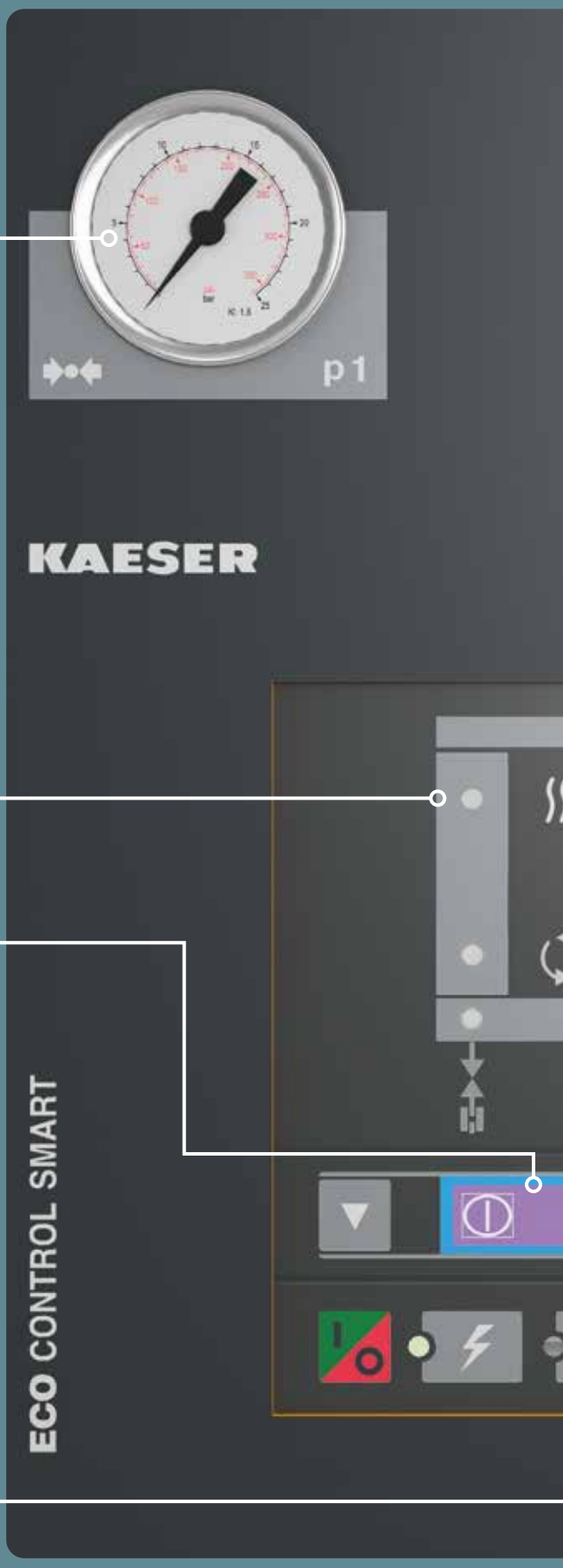
### Intuitive operation.

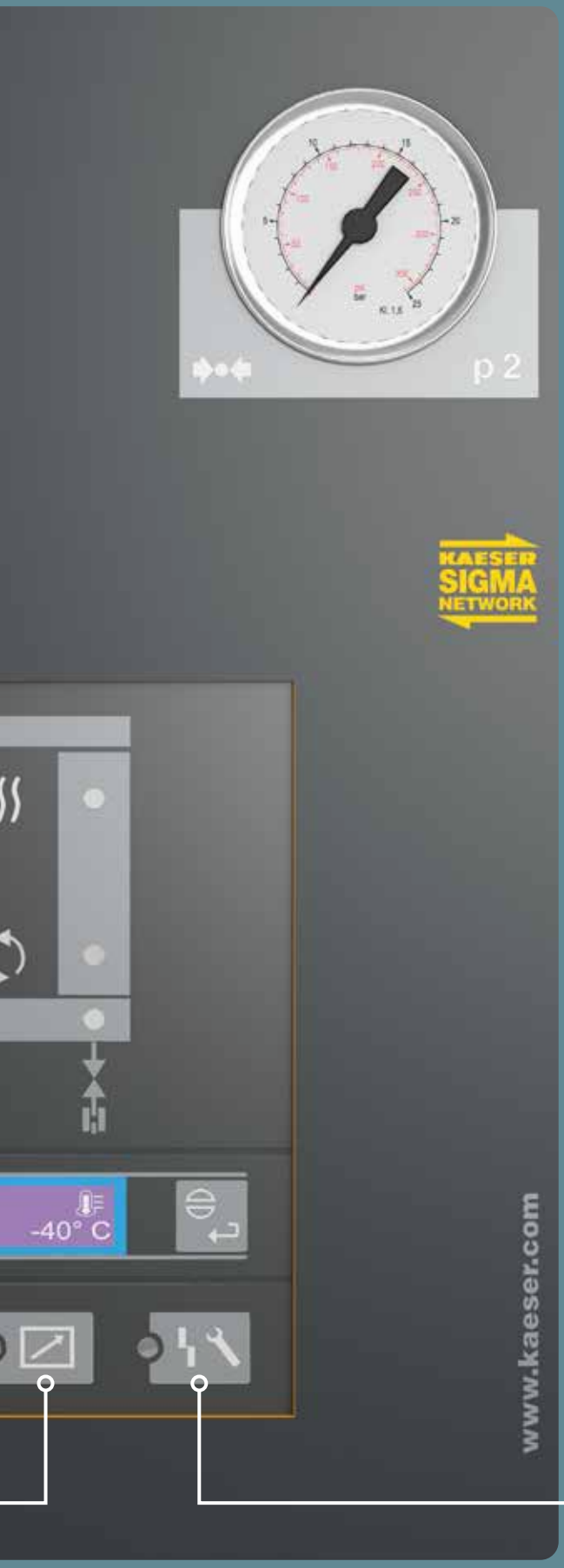
Operation is language-neutral, thanks to the use of intuitive icons. Detailed message content is displayed using numerical codes.

**Remote control**

### Flexible operating modes.

Controller operating mode can be selected between fixed cycle, compressor synchronisation control and Intermittent operation. Active remote control is also displayed.






## Network connection

### Pathway to the SIGMA NETWORK.

The ECO CONTROL SMART controller is equipped as standard with an Ethernet interface (Modbus TCP).

Configuration of the interface can be performed easily via the controller, allowing communication with master controllers such as the SIGMA AIR MANAGER 4.0.

## Floating inputs/outputs

### The hotline.

The controller offers the following floating inputs: Remote control, ECO-DRAIN message contact (factory-wired), PDP sensor (PDP kit accessory required).

The following floating outputs are available: “Controller on/off” operating message, “Maintenance timer expired” warning, ECO-DRAIN warning, “PDP sensor wire break” alarm, “PDP setpoint exceeded” alarm.

## Messages

### The essentials at a glance.

A multicoloured LED indicates all necessary maintenance, warning and alarm messages. The last 20 warning and alarm messages can be recorded in the message archive with a time stamp (mains voltage hours).

# Options


### Prefilter with manual condensate drain

The prefilter protects the desiccant from dirt and oil aerosols. Accumulated condensate can be drained off manually via a ball valve.


### Prefilter with electronic, level-controlled ECO-DRAIN condensate drain

The prefilter is optionally available with an electronic, level-controlled ECO-DRAIN condensate drain, delivered fully wired from the factory,


### Silicone-free version

DC 2.0 – 11.3 models are available as a special, silicone-free version in accordance with VW testing standard PV 3.10.7.

# Accessories

### Wall bracket

DC series desiccant dryers can be specified with a wall-mounting bracket. All necessary installation materials are included.

# View

**DC 2.0 model**

# Technical specifications

**Models DC 2.0 to 11.3**

| Model | Flow rate 1<br>m³/min | Min./max. gauge working pressure<br>bar | Pressure loss 1, 2<br>bar | Min./max. ambient temperature<br>°C | Max. temperature at compressed air inlet<br>°C | Maximum mass 2<br>kg | Compressed air connection at filters<br>G | Dimensions (with filters) W x D x H<br>mm | Power supply, ECO-DRAIN |
|---|---|---|---|---|---|---|---|---|---|
| **DC 2.0** | 0.20 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 35 | 1/2 | 340 (695) x 168 x 505 (545) | 95-240 V ±10% / 1 Ph / 50 - 60 Hz |
| **DC 3.7** | 0.37 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 42 | 1/2 | 340 (695) x 168 x 677 (717) | |
| **DC 5.0** | 0.50 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 51 | 1/2 | 340 (695) x 168 x 895 (935) | |
| **DC 5.9** | 0.59 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 60 | 1/2 | 340 (695) x 168 x 1112 (1152) | |
| **DC 7.6** | 0.76 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 70 | 3/4 | 380 (743) x 188 x 1005 (1045) | |
| **DC 11.3** | 1.13 | 2 / 15 | ≤ 0.2 | 2 / 50 | 50 | 82 | 3/4 | 380 (761) x 188 x 1255 (1300) | |

[1] In accordance with ISO 7183 Option A1: Reference point: 1 bar(abs), +20 °C, 0% relative humidity; operating point: Pressure dew point -40 °C, working pressure 7 bar(g), inlet temperature +35 °C, ambient temperature +20 °C, 100% relative humidity

[2] Including prefilter and afterfilter

# Calculating flow rate

Correction factors for deviating operating conditions (flow rate in m³/min x k...)

| Deviating working pressure p at dryer inlet | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **p bar$_{(g)}$** | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| **$k_p$** | 0.40 | 0.57 | 0.77 | 1.00 | 1.13 | 1.25 | 1.38 | 1.38 | 1.50 | 1.56 | 1.61 | 1.67 |

| Compressed air inlet temperature Ti | | | | | | |
|---|---|---|---|---|---|---|
| **Temperature (°C)** | 30 | 35 | 37.5 | 40 | 45 | 50 |
| **$k_i$** | 1.00 | 1.00 | 0.93 | 0.86 | 0.75 | 0.66 |

| Example: | | | |
|---|---|---|---|
| Gauge working pressure p | 10 bar(g) | -> | $k_p$ = 1.38 |
| Pressure dew point PDP | -40 °C | | |
| **Compressed air inlet temperature $T_i$** | +40 °C | -> | $k_{TI}$ = 0.86 |

| KAESER FILTER F 880 with flow rate of 88.50 m³/min |
|---|
| Max. possible flow rate under operating conditions |
| $V_{max}$ Operation = $V_{Reference}$ x $k_p$ x $k_{TI}$ |
| $V_{max}$ Operation = 0.76 m³/min x 1.38 x 0.86 = 0.90 m³/min |

# The world is our home

As one of the world's largest manufacturers of compressors, blowers and compressed air systems, KAESER KOMPRESSOREN is represented throughout the world by a comprehensive network of branches, subsidiaries and authorised distribution partners in over 140 countries.

By offering innovative, efficient and reliable products and services, KAESER KOMPRESSOREN's experienced consultants and engineers work in close partnership with customers to enhance their competitive edge and to develop progressive system concepts that continuously push the boundaries of performance and technology. Moreover, decades of knowledge and expertise from this industry-leading systems provider are made available to each and every customer via the KAESER group's advanced global IT network.

These advantages, coupled with KAESER's worldwide service organisation, ensure that every product operates at peak performance at all times, whilst providing maximum availability.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