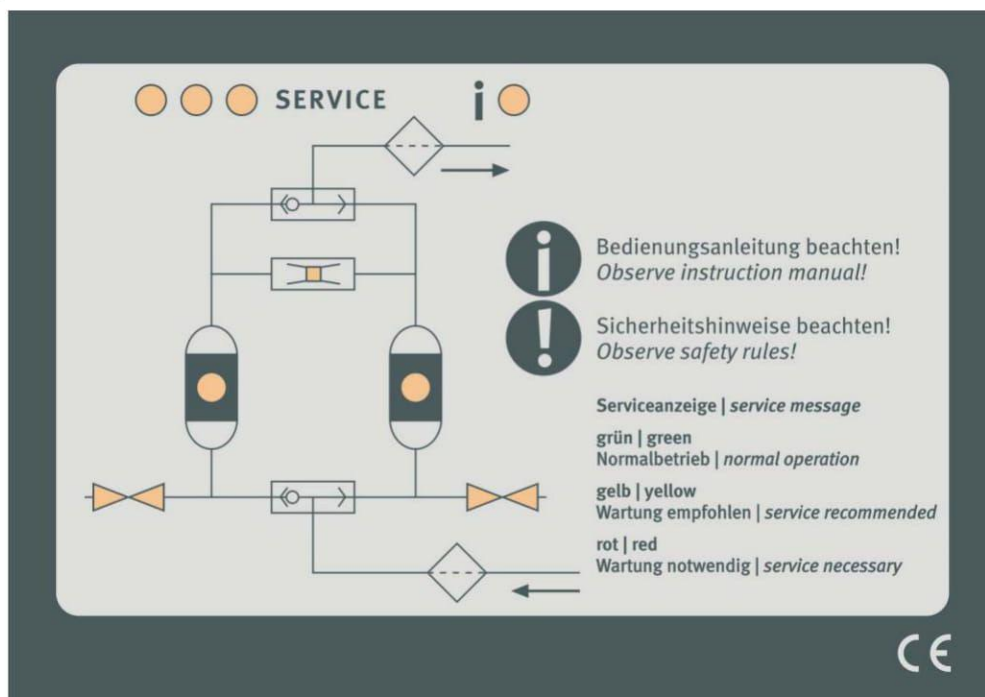


# EVERMATIC 20

## 230V / 50-60 Hz

### Operating manual



Stand: 08/2020



# Contents

<b>Contents .....</b>	<b>2</b>
<b>1. General information .....</b>	<b>3</b>
<b>2. Warranties .....</b>	<b>3</b>
<b>3. Safety notes .....</b>	<b>4</b>
<b>4. Symbols used.....</b>	<b>5</b>
<b>5. Intended purpose.....</b>	<b>5</b>
<b>6. Intended use.....</b>	<b>5</b>
<b>7. Technical data .....</b>	<b>6</b>
7.1 Controller.....	6
<b>8. Electrical connection.....</b>	<b>7</b>
<b>9. Display layout.....</b>	<b>8</b>
<b>10. Service LED .....</b>	<b>8</b>
<b>11. Behaviour after connecting to Power supply .....</b>	<b>9</b>
<b>12. Operation .....</b>	<b>9</b>
<b>13. DIL-Switch functions and modification .....</b>	<b>9</b>
<b>14. Compressor synchronic functioning .....</b>	<b>11</b>
<b>15. EC Declaration of conformity .....</b>	<b>13</b>

# 1. General information

Please read these instructions carefully before starting any installation work or performing operational steps.

Having the basic knowledge of this manual is mandatory for carrying out programming steps and the daily use of this controller.

Incorrect use or lack of know-how in the **EVERMATIC** controller can cause damage to components and affect the operation of the adsorption dryer.

In principle, only instructed personnel or experts should be able to access the password-protected parameter. This also applies in the event of an alarm. The reason why an alarm is triggered must be analysed and rectified. Expertise in the field of compressed air is therefore a mandatory requirement!

Never switch the controller off completely, not even when an alarm is triggered, otherwise the dryer will remain operating on one vessel without regenerating the other vessel. This has a negative effect on the compressed air quality.

# 2. Warranties

For the conditions necessary for compliance with the warranty, please refer to our "General Terms of Sales and Delivery"

The warranty shall be void if:

- The controller is used for anything other than its intended use.
- The instructions in this operating manual are not observed.
- External influences (e.g. incorrect supply voltage, short circuit, etc.) cause damage to the controller.
- Damage is caused because an incorrect tool has been used.
- Damage is caused due to incorrect or faulty installation.
- The controller is used even though defects are evident.
- An unfortunate or incorrect installation is chosen.
- The design data on the type plate is disregarded.
- Damage occurs after installation completed by unqualified personnel.
- Fundamental demands on the electrical work are disregarded.

### 3. Safety notes



**Failure to observe the safety instructions can cause injuries and damage the controller or adsorption dryer. Please observe not only the instructions in this operating manual but also the general applicable safety regulations!**

1. The **EVERMATIC** controller may only be operated and serviced after this operating manual has been read.
2. The **EVERMATIC** controller may only be used for the intended purpose, as described in this operating manual.
3. The operator must ensure that only instructed and authorized personnel operate the **EVERMATIC** controller.
4. Only suitably instructed and qualified expert staff may carry out maintenance and repair work.
5. The **EVERMATIC** controller must only be used in an operationally safe state.
  - a. Operating instructions must be accessible.
  - b. Any use of the **EVERMATIC** controller in conjunction with other system components must comply with the design data.
  - c. Everyone working with the device must know and observe the safety instructions.
6. When disassembling parts of the housing and components of the **EVERMATIC** controller, make sure
  - a. that the mains power plug is disconnected and is protected from reconnecting.
  - b. that corresponding and suitable tools are used which are designed to be used for electrical purposes.
7. The **EVERMATIC** controller may only be operated when all components (e.g. after maintenance work) have been refitted and are complete. The housings must also be closed again. Safety devices on the equipment must not be removed or remained inoperative!
8. The performance data stipulated in this manual must not be exceeded.
9. Alterations and modifications may only be made with the approval from BERG Kompressoren GmbH. Unauthorised modifications excludes all liability of any resulting damage.
10. The **EVERMATIC** controller must not be used if damage is evident or suspected.
11. If strange noises or odours are detected, switch the **EVERMATIC** controller off immediately.

## 4. Symbols used

The symbols used in the technical documentation have the following meanings:



### **Important!**

This symbol draws attention to information and recommendation concerning the correct and economical use of the EVERMATIC controller.



### **Electrical hazard!**

This symbol indicates electrical hazards. This work must only be carried out by qualified personnel.



### **General Alert!**

This symbol marks general safety instructions.

## 5. Intended purpose

The controller must only be used to control adsorption dryers manufactured by **BERG Kompressoren GmbH** in compressed air systems. It needs a supply of electrical energy.

The **EVERMATIC** controller operates as a time control. The controller has no possibility of measuring pressure dew point. With this controller a program running is constantly repeated, regardless of the outgoing air quality.

## 6. Intended use

The controller is exclusively designed to control adsorption dryers manufactured by **BERG Kompressoren GmbH**! If the controller is used on other manufacturers adsorption dryers, this must be agreed with the manufacturer. Other safety guidelines may apply here!

The controller must only be used in the following areas:



- The controller must be installed in a weatherproof location (exposure to sun should be avoided).
- The location must be dry (safety class IP54).
- The location must be free from freezing.



- The location must be free from vibrations.
- The location must not be in a potentially explosive atmosphere.
- It must be accessible for mounting the dryer and its parts.
- With low dust concentration.
- There must be no risk of lightning or other forms of external energy.
- It must be free from aggressive or corrosive substances.



The controller must only be operated within the allowable operating conditions. These are stipulated on the type plate and in the operating manual. Any other use is considered improper and the manufacturer accepts no liability.

The controller must not be converted in any way and its components must not be modified. The use of components other than the original parts from the manufacturer is not permitted, unless this has been agreed with the manufacturer.

For the nominal performance data of the controller, please read chapter 7 "Technical data"

## 7. Technical data

### 7.1 Controller

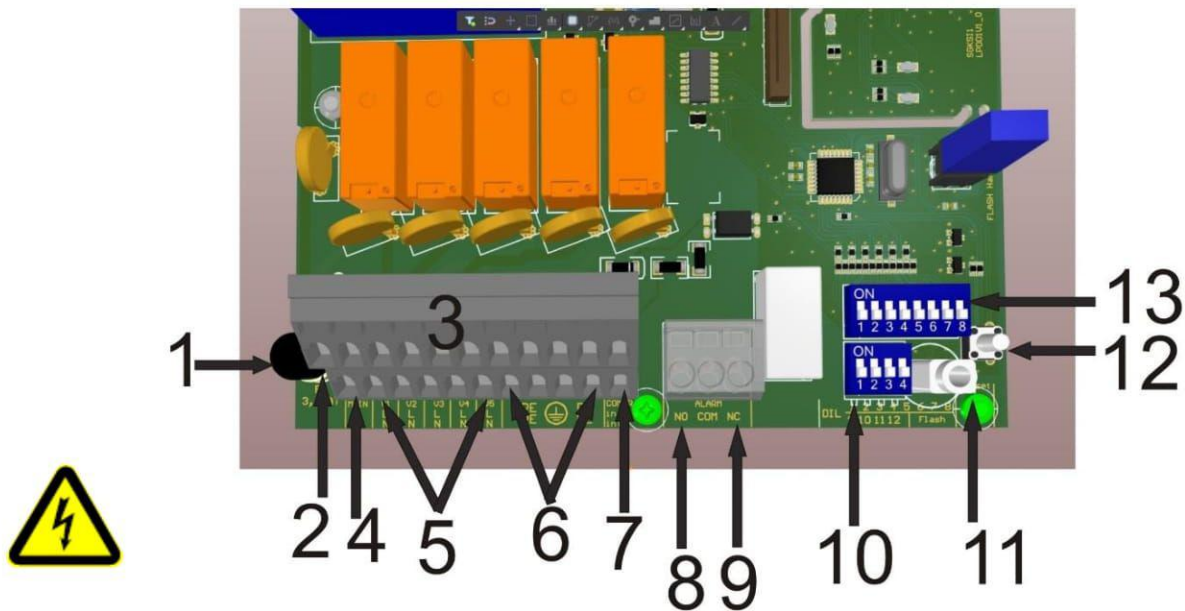


Specifications	
Max. wire cross-section for terminal connections	1,5 mm <sup>2</sup>
Fuse	T3,15 A ; 250V
Power supply	230 V , 50/60 Hz
Valve outputs	230 V, 50/60 Hz
Outputs	potential free alarm contact 230V AC / 30V DC max. switching capacity 5 A
Application temperature	- 10°C up to + 60°C
Housing type	Bopla RCP 160 F
Dimensions W x H x D	166 x 160 x 82,5
Weight	approx. 500 gr
EMC immunity	EN 50081
EMC interference emission	EN 50082
Type of protection	IP54

## 8. Electrical connection

The Power supply is 230 V AC. The supply of the electronics is galvanically isolated via transformer.

The pin assignment of the controller looks like this:



Connection clamps on the double terminal block from left to right:

- 1 = Fuse 3,15 AT
- 2 = Net/Main (L)
- 3 = Valve 1 -5 (L) Upper clamps are mains for earth/ground
- 4 = Valve 1 (N) Neutral conductor power supply
- 5 = Valve 1-5 (N) Neutral conductor valve 1-5 (conductor above each)
- 6 = Main safety clamps (8 pc., 4 down, 4 up)
- 7 = Compr (L/N) 230 V Inlet for compressor synchronization
- 8 = Alarm relay NO (potential free alarm contact as switch-over)
- 9 = Alarm relay NC (potential free alarm contact as switch-over)
- 10 = DIL Switch 9-12
- 11 = PC Connection (only to flash the software by the manufacturer)
- 12 = Reset switch (only available through Service)
- 13 = DIL Switch 1-8

Set-up DIL Switch see chapter 13.

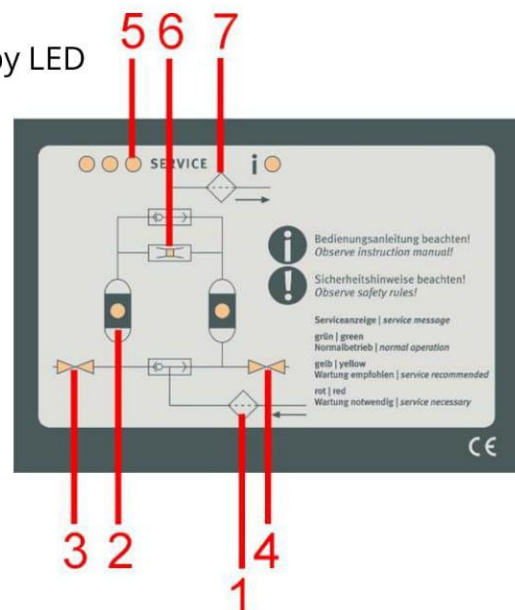
The housing is equipped on the bottom with 1 pcs. M12, 3 pcs. M16 and 1 pcs. M25 (with 4 cable inlets) cable glands for connecting the following lines:

- Power supply (M16)
- Compressor synchronic function signal (M16)
- Potential free alarm contact (M16)
- Valve 1-5 (M12 and M25 )

## 9. Display layout

The display of the controller EVERMATIC shows the following symbols:

- 1 – Symbol „Prefilter“
- 2 – Symbol „Active adsorbing vessel shown by LED“
- 3 – Symbol „Active expansion valve left shown by LED“
- 4 – Symbol „Active expansion valve right shown by LED“
- 5 – „Traffic Light“ Service
- 6 – Symbol pressure-equalizing (opt.) shown by LED
- 7 – Symbol „After filter“



## 10. Service LED

The „Traffic light“ LED is built up as follows:

- LED green: Normal operation
- LED yellow: Prepare service (LED changes to yellow after 365 days)
- LED red: Service (LED changes to red after 380 days)

Further the device has a potential free alarm contact. This function can be switched on and off with DIL-Switch 7 (0 = On ; 1 = Off).

The reset of the Service traffic light can only be done by authorized personnel!



## 11. Behaviour after connecting to Power supply

After the connection to the power supply, at first there is a waiting time for the pressure build-up (60 sec, fixed set point).

Then a short cycle is run five times with 50% shorter times, without taking into consideration the dew point input, in order to bring the dryer to a defined status. The synchronic running of the compressor is not active.

## 12. Operation

The controller is present and only has to be connected to the power supply. In standard program the cycle time is 10 minutes. Here for example:

- 4 ½ Minutes Adsorption (the other vessel is regenerated at the same time)
- 1 Minute Pressure build- up (both expansion valves are closed)
- 4 ½ Minutes Adsorption of the just regenerated side (the side that was just in Adsorption, will now be regenerated at the same time)

A further operation is not provided.

The function of the device should be checked by checking the LED`s on the front-display for function.

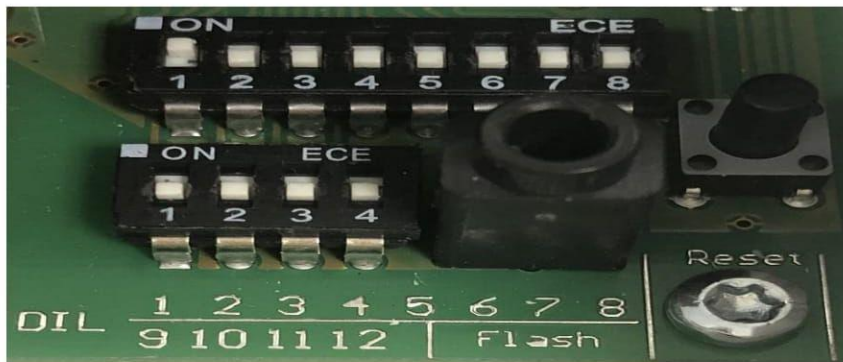
## 13. DIL-Switch functions and modification

In the terminal box of the EVERMATIC there are DIL switches. To reach these the cover of the box needs to be opened.

The control has 12 DIL switches total (1 x 8 = switch 1-8 and 1x4 = switch 9 and 12) as configurable inlets

- Switch 1-3 are used to set the regeneration time.
- Switch 4-6 are used to set the pressure build-up time.
- Switch 7 is used to switch the potential free alarm contact on or off.

- Switch 8 is used to activate the compressor synchronic function.
- Switch 9 is used to change between standard and prolonged times with the DIL switches 1-6
- Switch 10 is used to deactivate the delay time
- Switch 11 no function
- Switch 12 is used for service. The cycle is run with 10x speed. Please activate only in pressure-less operation.



**The times are as following:**

**3/4 Valve** (Regeneration time 270s and Pressure build up time 60s are standard settings)

Regeneration time	150s	180s	210s	240s	270s	300s	330s	360s
1	0	0	0	0	<b>1</b>	1	1	1
2	0	0	1	1	<b>0</b>	0	1	1
3	0	1	0	1	<b>0</b>	1	0	1
Pressure build time	60s	80s	100s	120s	150s	180s	240s	300s
4	<b>0</b>	0	0	0	1	1	1	1
5	<b>0</b>	0	1	1	0	0	1	1
6	<b>0</b>	1	0	1	0	1	0	1

**5 Valve & HP** (Regeneration time 480s and Pressure Build Up time 60s are standard settings)

Regeneration time	240s	300s	360s	420s	480s	600s	720s	900s
1	0	0	0	0	<b>1</b>	1	1	1
2	0	0	1	1	<b>0</b>	0	1	1
3	0	1	0	1	<b>0</b>	1	0	1

Pressure buildup time	60s	80s	100s	120s	150s	180s	240s	300s
4	0	<b>0</b>	0	0	1	1	1	1
5	0	<b>0</b>	1	1	0	0	1	1
6	0	<b>1</b>	0	1	0	1	0	1

### Function and switching state of the DIL-Switch 7 – 12:

- Switch 7    1 = Potential-free alarm contact for service deactivated  
               0 = Potential-free alarm contact for service activated (pre configured)
- Switch 8    also see Chapter 14  
               1 = Compressor synchronic function enabled  
               0 = Compressor synchronic function disabled ( Standard setting )
- Switch 9    1 = 5 Valve & HP Software selected  
               0 = 3/4 Valve Software selected ( Standard setting )
- Switch 10   1 = delay time deactivated  
               0 = delay time 3 sec. activated (pre-configured)
- Switch 11   in reserve
- Switch 12   1 = Service activated  
               0 = Service deactivated (pre-configured)

## 14. Compressor synchronic functioning

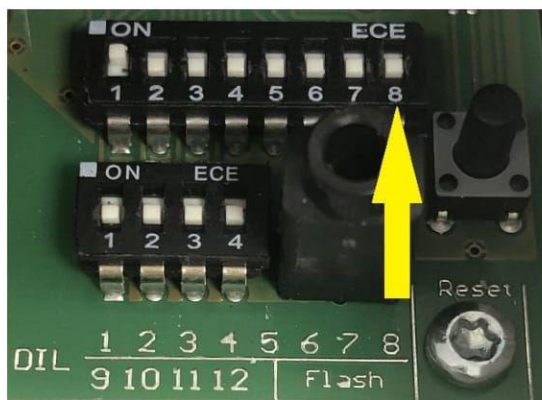
The controller EVERMATIC can be used with the compressor synchronic function. The controller only lets the Dryer work, when the compressor is running and produces air. Over an integrated memory function the controller logs its position in the running cycle, and continuous the cycle at these step, when the compressor starts to run again and produces air.

After turning on the power the control always performs 5 cycles before the compressor synchronization is activated and depending on the signal on the terminal "Compr. inL und inN" opens the expansion or closes it.

This is particularly useful for applications with low consumption, but which require dry compressed air.

To do this, a switched 230 V signal from the compressor must be controlled to the "Compr." Terminal (see page 8). It makes sense to use the on/off signal of the compressor.

You must also set DIL switch No. 8 to ON. Only then is the compressor synchronization activated and the green LED of the service lights flashes every 2 sec. when the first 5 cycles are performed to signal the configured status.



Here fore you should now, that this installation only makes sense, if the dryer is installed in front of the Vessel. Otherwise the Vessel volume will be pushed over the dryer without being regenerated. To achieve the wanted dew-point there is a permanent running of the compressor necessary.



## 15. EC Declaration of conformity

### EC Declaration of conformity

We, the authorised representative,

BERG KOMPRESSOREN GmbH

hereby declare that for the products listed below:

Controller for adsorption dryer, EVERMATIC 20

in accordance with the requirements of the guideline

EMC Guideline 89/336/EEC

conforms to the essential protection requirements which are determined in the Council Directive on the approximation of the laws of the Member States relating to the electromagnetic compatibility (89/336/EEC). This declaration applies to all samples which are produced according to the respective production documents.

To assess the product with regard to electromagnetic compatibility, the following standards have been consulted:

EN 61000-6-3 Electromagnetic compatibility; Generic standard. Emission standard for residential, commercial and light-industrial environments

EN 61000-6-1 Electromagnetic compatibility; Immunity for residential, commercial and light-industrial environments

Any modifications made to the equipment which have not been approved by the manufacturer will result in cancelation of this declaration.

Signed:



Martin Safari,  
Managing Director