

# EC centrifugal fan

backward curved, single inlet

R3G500-AP15-03 ebmpapst Datasheet  
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## Nominal data

|                          |                   |            |
|--------------------------|-------------------|------------|
| Type                     | R3G500-AP15-03    |            |
| Motor                    | M3G150-FF         |            |
| Phase                    |                   | 3~         |
| Nominal voltage          | VAC               | 400        |
| Nominal voltage range    | VAC               | 380 .. 480 |
| Frequency                | Hz                | 50/60      |
| Type of data definition  |                   | ml         |
| State                    |                   | prelim.    |
| Speed                    | min <sup>-1</sup> | 1780       |
| Power input              | W                 | 2870       |
| Current draw             | A                 | 4.4        |
| Min. ambient temperature | °C                | -25        |
| Max. ambient temperature | °C                | 45         |

ml = Max. load · me = Max. efficiency · fa = Running at free air · cs = Customer specs · cu = Customer unit  
Subject to alterations

## Data according to ErP directive

|                       |        |
|-----------------------|--------|
| Installation category | A      |
| Efficiency category   | Static |
| Variable speed drive  | Yes    |
| Specific ratio*       | 1.01   |

\* Specific ratio =  $1 + p_b / 100\,000\text{ Pa}$

|                                |                   | Actual | Request 2013 | Request 2015 |
|--------------------------------|-------------------|--------|--------------|--------------|
| Overall efficiency $\eta_{es}$ | %                 | 64.7   | 52.3         | 56.3         |
| Efficiency grade N             |                   | 70.4   | 58           | 62           |
| Power input $P_{ed}$           | kW                | 2.86   |              |              |
| Air flow $q_v$                 | m <sup>3</sup> /h | 8020   |              |              |
| Pressure increase $p_{fs}$     | Pa                | 789    |              |              |
| Speed n                        | min <sup>-1</sup> | 1790   |              |              |

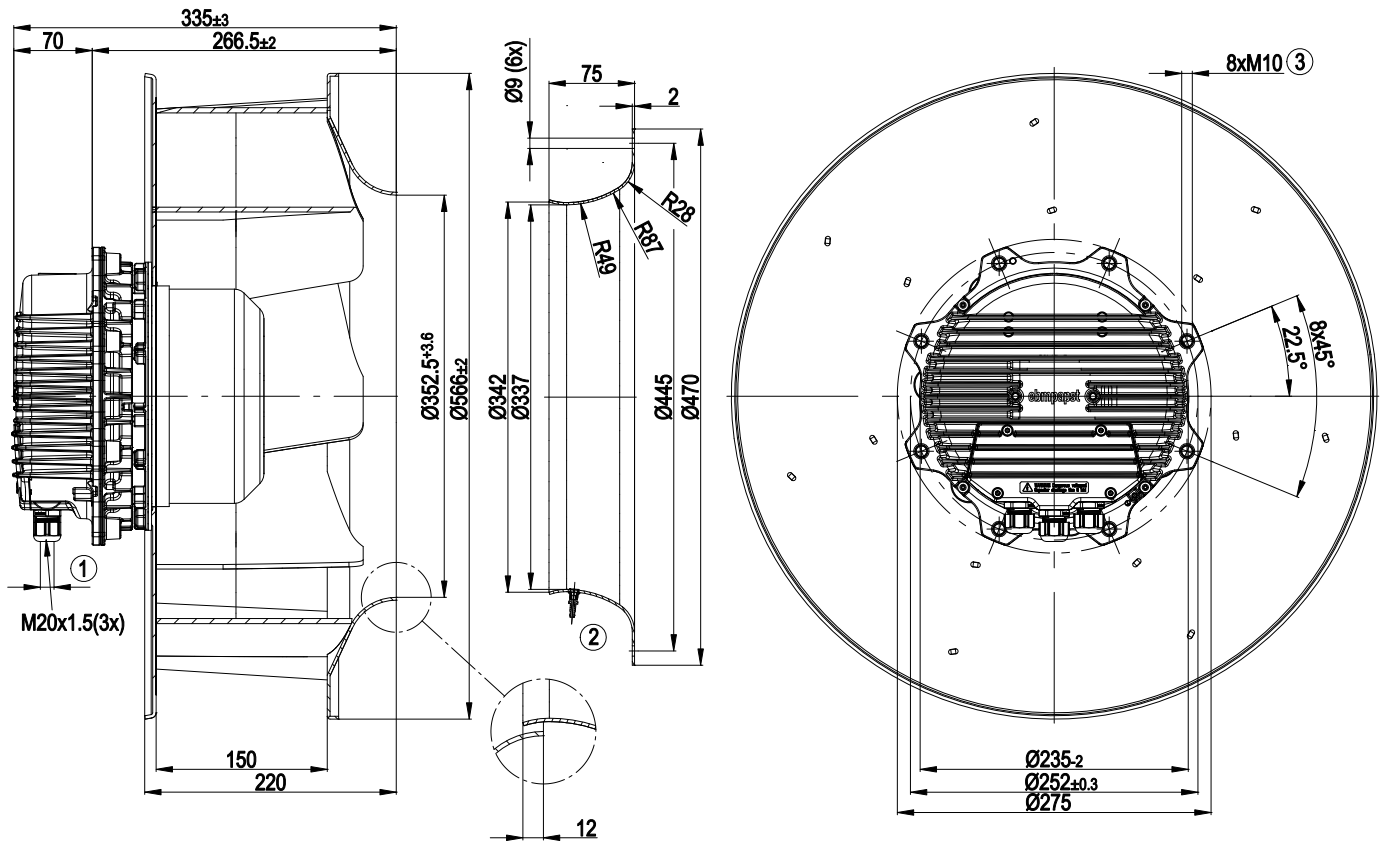
Data definition with optimum efficiency. LU-111345  
The ErP data is determined using a motor-impeller combination in a standardised measurement configuration.



## Technical features

|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Mass                                                    | 23.6 kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Size                                                    | 500 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Surface of rotor                                        | Coated in black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Material of electronics housing                         | Die-cast aluminium                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Material of impeller                                    | Aluminium sheet                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Number of blades                                        | 7                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Direction of rotation                                   | Clockwise, seen on rotor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Type of protection                                      | IP 54                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Insulation class                                        | "F"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Humidity class                                          | F4-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Max. permissible ambient motor temp. (transp./ storage) | +80 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Min. permissible ambient motor temp. (transp./storage)  | -40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Mounting position                                       | Shaft horizontal or rotor on bottom                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Condensate discharge holes                              | Rotor-side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Operation mode                                          | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Motor bearing                                           | Ball bearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Technical features                                      | <ul style="list-style-type: none"> <li>- Output 10 VDC</li> <li>- Output 20 VDC</li> <li>- Output for slave 0-10 V</li> <li>- Input for sensor 0-10 V or 4-20 mA</li> <li>- Alarm relay</li> <li>- Integrated PID controller</li> <li>- Motor current limit</li> <li>- PFC, passive</li> <li>- RS485 ebmBUS</li> <li>- Soft start</li> <li>- Control input 0-10 VDC / PWM</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Over-temperature protected electronics / motor</li> <li>- Line undervoltage / phase failure detection</li> </ul> |
| EMC interference immunity                               | Acc. to EN 61000-6-2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| EMC interference emission                               | Acc. to EN 61000-6-3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Electrical leads                                        | Via terminal box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Motor protection                                        | Reverse polarity and locked-rotor protection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Protection class                                        | I (if protective earth is connected by customer)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Product conforming to standard                          | CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Approval                                                | CSA C22.2 Nr.77; EAC; UL 2111; VDE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |

## Product drawing

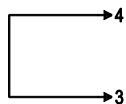


- |   |                                                                                                    |
|---|----------------------------------------------------------------------------------------------------|
| 1 | Cable diameter: min. 4 mm, max. 10 mm                                                              |
| 2 | Accessory part: Inlet nozzle 64025-2-4013 not included in delivery, other inlet nozzles on request |
| 3 | Depth of screw max. 25 mm                                                                          |

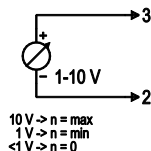
## Connection screen

## Customer circuit

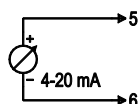
Full speed



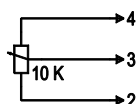
Speed setting



Setting of values, e.g. via pressure

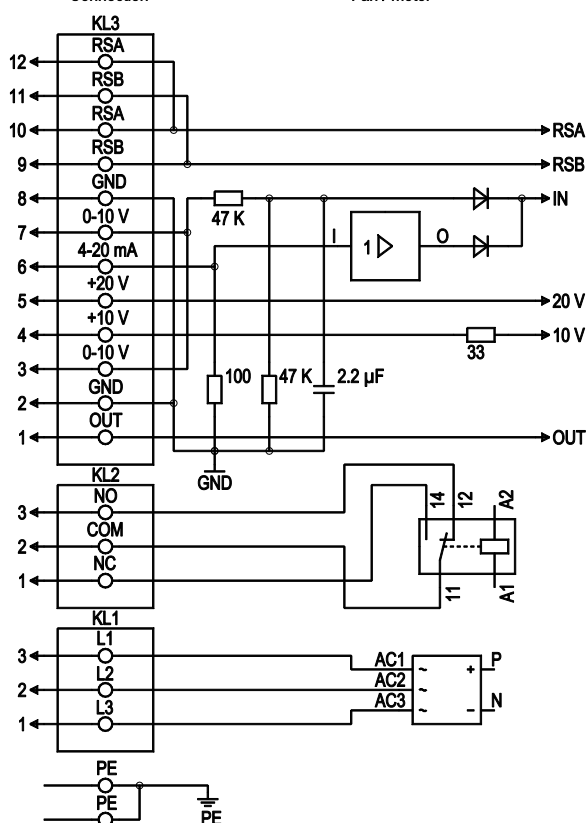


Speed setting via potentiometer



## Connection

## Fan / motor

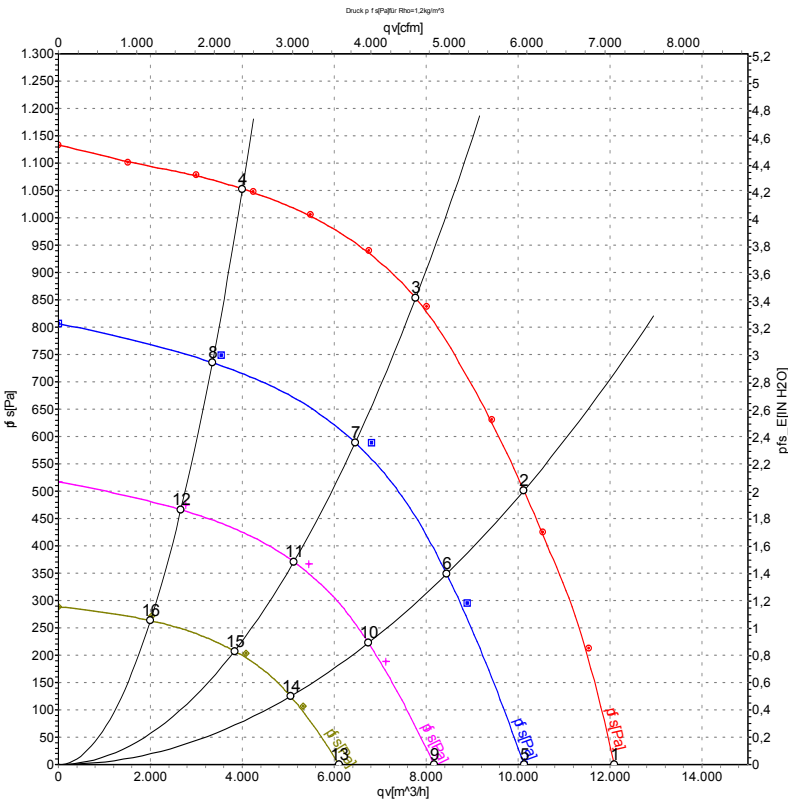


| No. | Conn.   | Designation | Function / assignment                                                                                                                                                                     |
|-----|---------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PE  |         | PE          | Protective earth connection                                                                                                                                                               |
| KL1 | 1, 2, 3 | L1, L2, L3  | Supply voltage, 50/60 Hz                                                                                                                                                                  |
| KL2 | 1       | NC          | Floating status message contact, normally closed connection                                                                                                                               |
| KL2 | 2       | COM         | Floating status message contact, changeover contact, common connection (2 A, max. 250 VAC, min. 10 mA, AC1)                                                                               |
| KL2 | 3       | NO          | Floating status message contact, normally open connection                                                                                                                                 |
| KL3 | 1       | OUT         | Analog output, 0-10 VDC, max. 3 mA, SELV, output of the current level control coefficient: 1 V equates to 10 % level control coefficient. 10 V equate to 100 % level control coefficient. |
| KL3 | 2, 8    | GND         | Reference mass for control interface, SELV                                                                                                                                                |
| KL3 | 3, 7    | 0-10 V      | Use control / actual value input 0-10 VDC, impedance 100 kΩ only as alternative to 4-20 mA input, SELV                                                                                    |
| KL3 | 4       | +10 V       | Voltage output 10 VDC (+/-3 %), max. 10 mA, supply voltage for ext. devices (e.g. potentiometers), SELV                                                                                   |
| KL3 | 5       | +20 V       | Voltage output 20 VDC (+25 %/-10 %), max. 50 mA, supply voltage for ext. devices (e.g. sensors), SELV                                                                                     |
| KL3 | 6       | 4-20 mA     | Use control / actual value input 4-20 mA, impedance 100 Ω, only as alternative to 0-10 V input, SELV                                                                                      |
| KL3 | 9, 11   | RSB         | RS485 interface for ebmBus, RSB, SELV                                                                                                                                                     |
| KL3 | 10, 12  | RSA         | RS485 interface for ebmBus, RSA, SELV                                                                                                                                                     |

# EC centrifugal fan

backward curved, single inlet

## Charts: Air flow 50 Hz



Air performance measured as per ISO 5801 Installation category A. For detailed information on the measuring set-up, please contact ebm-papst. Suction-side noise levels: L<sub>wA</sub> measured as per ISO 13347 / L<sub>pA</sub> measured with 1m distance to fan axis. The values given are valid under the measuring conditions mentioned above and may vary according to the actual installation situation. With any deviation from the standard set-up, the specific values have to be checked and reviewed with the unit installed.

## Measured values

|    | U   | f  | n                 | P <sub>ed</sub> | I    | L <sub>pA<sub>in</sub></sub> | L <sub>wA<sub>in</sub></sub> | L <sub>wA<sub>out</sub></sub> | q <sub>v</sub>    | p <sub>ts</sub> |
|----|-----|----|-------------------|-----------------|------|------------------------------|------------------------------|-------------------------------|-------------------|-----------------|
|    | V   | Hz | min <sup>-1</sup> | W               | A    | dB(A)                        | dB(A)                        | dB(A)                         | m <sup>3</sup> /h | Pa              |
| 1  | 400 | 50 | 1780              | 1735            | 2.65 | 87                           | 94                           | 98                            | 12090             | 0               |
| 2  | 400 | 50 | 1780              | 2484            | 3.78 | 78                           | 86                           | 90                            | 10120             | 500             |
| 3  | 400 | 50 | 1780              | 2870            | 4.40 | 73                           | 80                           | 86                            | 7775              | 850             |
| 4  | 400 | 50 | 1780              | 2389            | 3.62 | 78                           | 85                           | 91                            | 4005              | 1050            |
| 5  | 400 | 50 | 1500              | 973             | 1.50 | 80                           | 89                           | 94                            | 10130             | 0               |
| 6  | 400 | 50 | 1500              | 1373            | 2.11 | 72                           | 80                           | 86                            | 8445              | 358             |
| 7  | 400 | 50 | 1500              | 1575            | 2.41 | 69                           | 76                           | 82                            | 6460              | 606             |
| 8  | 400 | 50 | 1500              | 1329            | 2.05 | 72                           | 80                           | 85                            | 3345              | 752             |
| 9  | 400 | 50 | 1200              | 499             | 0.86 | 75                           | 82                           | 88                            | 8170              | 0               |
| 10 | 400 | 50 | 1200              | 711             | 1.13 | 67                           | 74                           | 81                            | 6745              | 228             |
| 11 | 400 | 50 | 1200              | 798             | 1.28 | 63                           | 70                           | 76                            | 5125              | 380             |
| 12 | 400 | 50 | 1200              | 677             | 1.08 | 66                           | 73                           | 79                            | 2665              | 477             |
| 13 | 400 | 50 | 900               | 225             | 0.44 | 66                           | 74                           | 82                            | 6100              | 0               |
| 14 | 400 | 50 | 900               | 303             | 0.57 | 59                           | 66                           | 72                            | 5050              | 128             |
| 15 | 400 | 50 | 900               | 338             | 0.63 | 57                           | 63                           | 68                            | 3835              | 212             |
| 16 | 400 | 50 | 900               | 299             | 0.57 | 58                           | 65                           | 71                            | 2005              | 271             |

U = Supply voltage · f = Frequency · n = Speed · P<sub>ed</sub> = Power input · I = Current draw · L<sub>pA<sub>in</sub></sub> = Sound pressure level inlet side · L<sub>wA<sub>in</sub></sub> = Sound power level inlet side · L<sub>wA<sub>out</sub></sub> = Sound power level outlet side  
q<sub>v</sub> = Air flow · p<sub>ts</sub> = Pressure increase

