

R3G560-8317080795  
8317080795

# EC centrifugal fan - RadiCal

backward-curved, single-intake

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## Nominal data

|                          |                   |            |
|--------------------------|-------------------|------------|
| Type                     | R3G560-8317080795 |            |
| Motor                    | M3G150-FF         |            |
| Phase                    |                   | 3~         |
| Nominal voltage          | VAC               | 400        |
| Nominal voltage range    | VAC               | 380 .. 480 |
| Frequency                | Hz                | 50/60      |
| Method of obtaining data |                   | ml         |
| Status                   |                   | prelim.    |
| Speed (rpm)              | min <sup>-1</sup> | 1780       |
| Power consumption        | W                 | 3350       |
| Current draw             | A                 | 5.1        |
| Min. ambient temperature | °C                | -40        |
| Max. ambient temperature | °C                | 50         |

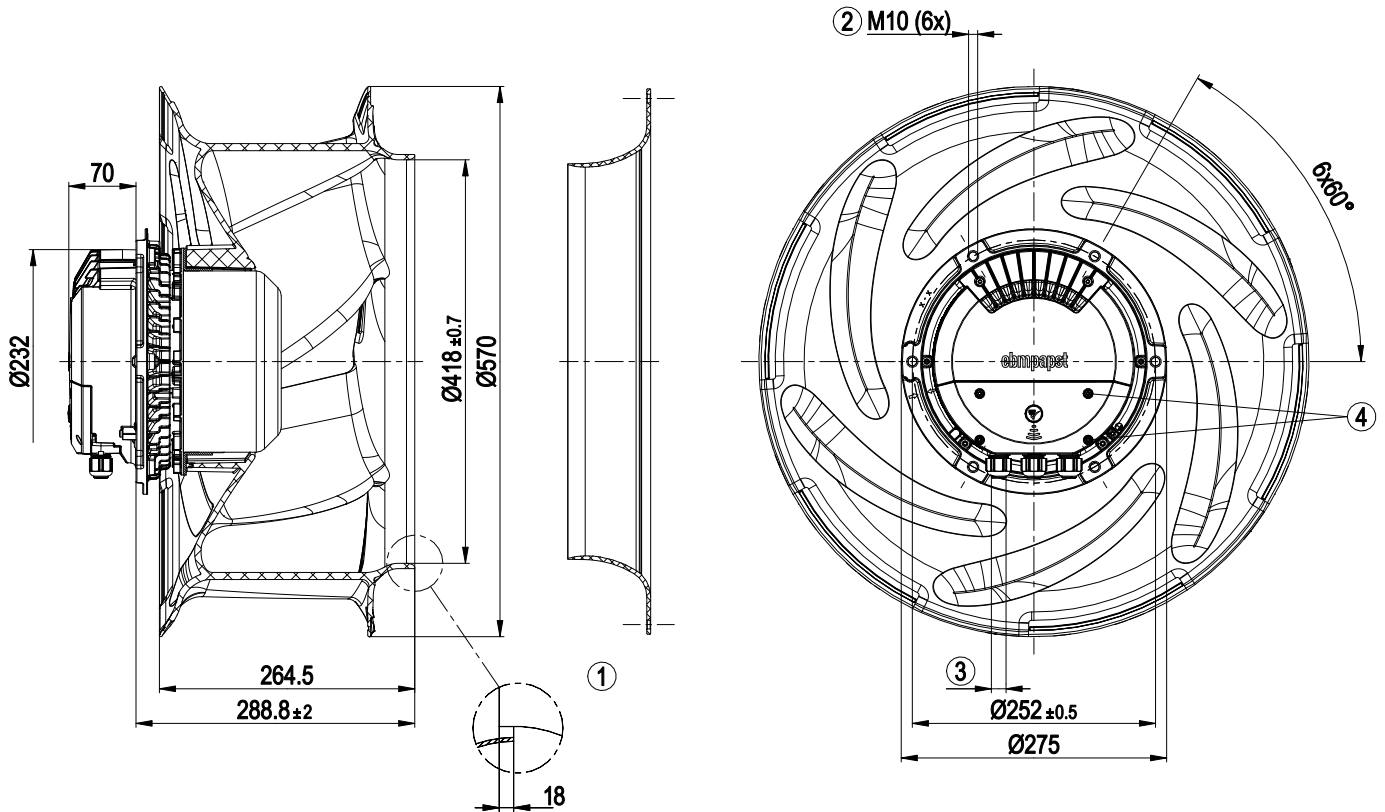
ml = Max. load · me = Max. efficiency · fa = Free air · cs = Customer specification · ce = Customer equipment  
Subject to change



## Technical description

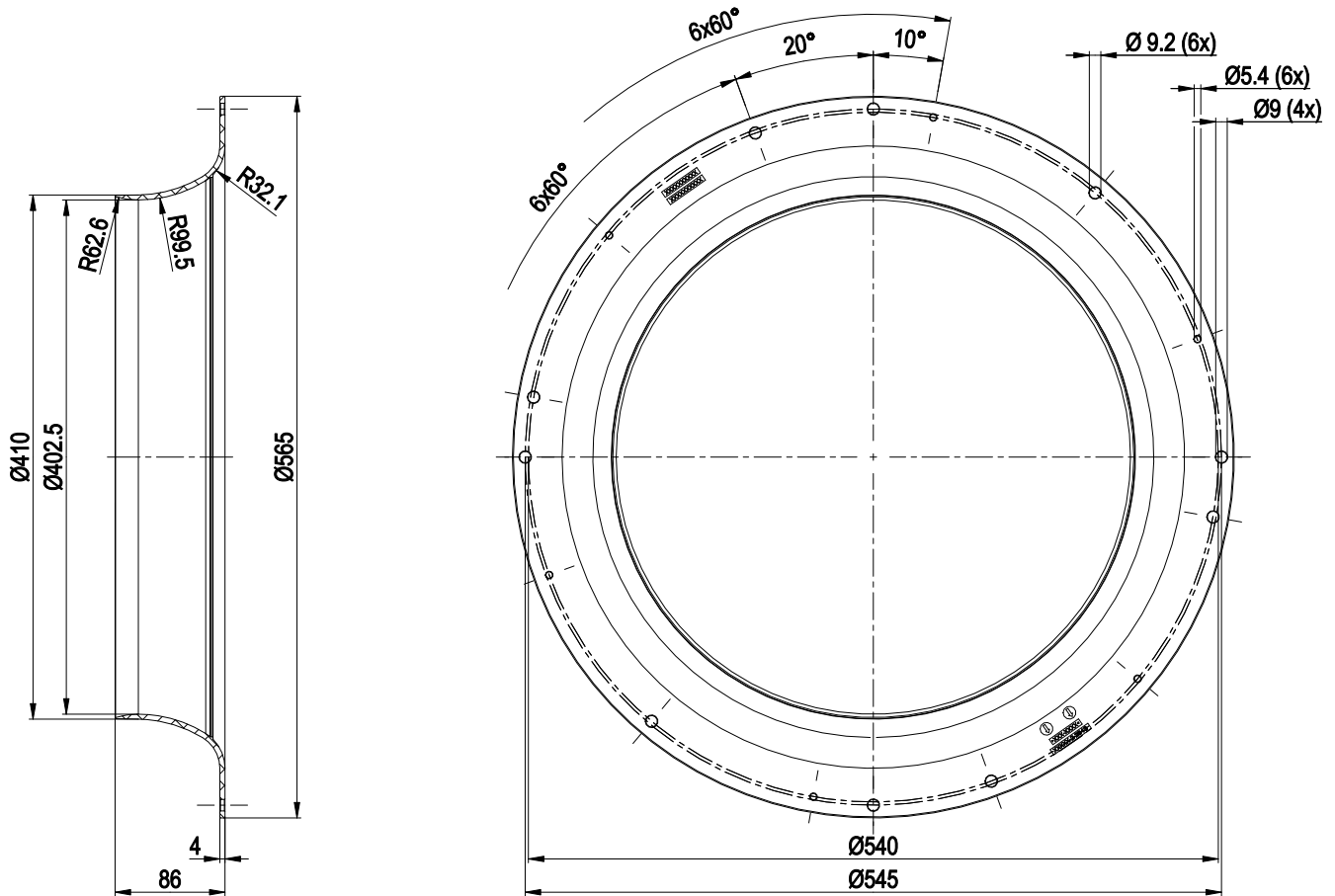
|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|----------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Size                                                                       | 560 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Motor size                                                                 | 150                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Rotor surface                                                              | Painted black                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Electronics housing material                                               | Die-cast aluminum                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Impeller material                                                          | PP plastic                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Number of blades                                                           | 6                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Direction of rotation                                                      | Clockwise, viewed toward rotor                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Degree of protection                                                       | IP55                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Insulation class                                                           | "F"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Moisture (F) / Environmental (H) protection class                          | H1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Ambient temperature note                                                   | Occasional start-up at temperatures between -40°C and -25°C is permitted. For continuous operation at ambient temperatures below -25°C (such as refrigeration applications), use must be made of a fan design with special low-temperature bearings.                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Max. permitted ambient temp. for motor (transport/storage)                 | +80 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Min. permitted ambient temp. for motor (transport/storage)                 | -40 °C                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| Installation position                                                      | Shaft horizontal or rotor on bottom; rotor on top on request                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Condensation drainage holes                                                | On rotor side                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Mode                                                                       | S1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Motor bearing                                                              | Ball bearing                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Technical features                                                         | <ul style="list-style-type: none"> <li>- Operation and alarm display with LED</li> <li>- External 15-50 VDC input (parameterization)</li> <li>- Alarm relay</li> <li>- Integrated PI controller</li> <li>- Configurable inputs/outputs (I/O)</li> <li>- MODBUS V6.0</li> <li>- Motor current limitation</li> <li>- RFID - ISO 15693 compatible</li> <li>- RS-485 MODBUS-RTU</li> <li>- Soft start</li> <li>- Voltage output 3.3-24 VDC, Pmax = 800 mW</li> <li>- Control interface with SELV potential safely disconnected from the mains</li> <li>- Thermal overload protection for electronics/motor</li> <li>- Line undervoltage / phase failure detection</li> </ul> |
| EMC immunity to interference                                               | According to EN 61000-6-2 (industrial environment)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| EMC interference emission                                                  | According to EN 61000-6-3 (household environment), except EN 61000-3-2 for professionally used equipment with a total rated power greater than 1 kW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system) | <= 3.5 mA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| Electrical hookup                                                          | Terminal box                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Protection class                                                           | I (with customer connection of protective earth)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Conformity with standards                                                  | EN 61800-5-1;CE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Approval                                                                   | EAC ; UL 1004-7 + 60730-1; CSA C22.2 No. 77 + CAN/CSA-E60730-1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## Product drawing



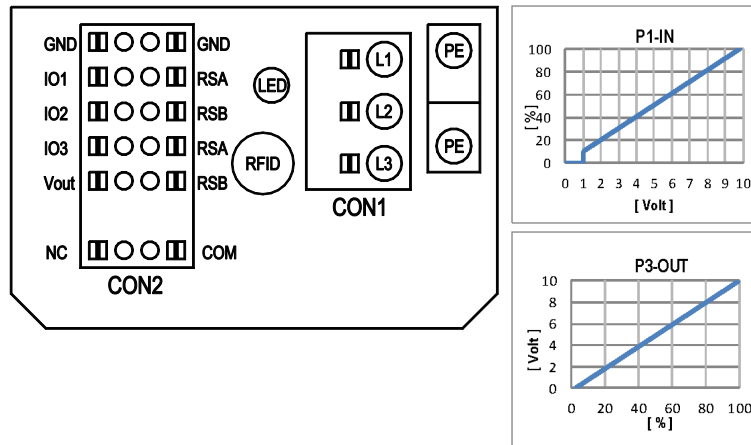
|   |                                                                           |
|---|---------------------------------------------------------------------------|
| 1 | Accessory part: Inlet ring 56902-2-2943 not included in scope of delivery |
| 2 | Max. clearance for screw 20 mm                                            |
| 3 | Cable diameter min. 4 mm, max. 10 mm, tightening torque $4 \pm 0.6$ Nm    |
| 4 | Tightening torque $1.5 \pm 0.2$ Nm                                        |

## Accessory part



Inlet ring 56902-2-2943, tightening torque 5.5±0.8Nm for M5 screw

## Connection diagram



| No. | Conn. | Designation | Function/assignment                                                                                                                                                                                                                                                                                                                             |
|-----|-------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|     | CON1  | L1, L2, L3  | Power supply, phase, see nameplate for voltage range                                                                                                                                                                                                                                                                                            |
|     | PE    | PE          | Protective earth                                                                                                                                                                                                                                                                                                                                |
|     | CON2  | RSA         | RS485 interface for MODBUS, RSA; SELV                                                                                                                                                                                                                                                                                                           |
|     | CON2  | RSB         | RS485 interface for MODBUS, RSB; SELV                                                                                                                                                                                                                                                                                                           |
|     | CON2  | GND         | Reference ground for control interface, SELV                                                                                                                                                                                                                                                                                                    |
|     | CON2  | IO1         | Function parameterizable (see "Optional interface functions" table)<br>Factory setting:<br>Digital input - high active, function: Disable input, SELV<br>- inactive: Pin open or applied voltage < 1.5 VDC<br>- active: applied voltage 3.5-50 VDC<br>Reset function: Triggering of error reset on change of state from "enabled" to "disabled" |
|     | CON2  | IO2         | Function parameterizable (see "Optional interface functions" table)<br>Factory setting:<br>Analog input 0-10 V / PWM, Ri=100 kΩ, function: Set value<br>Characteristic curve parameterizable (see input characteristic curve P1-IN), SELV                                                                                                       |
|     | CON2  | IO3         | Function parameterizable (see "Optional interface functions" table)<br>Factory setting:<br>Analog output 0-10 V, max. 5 mA, function: Fan modulation level<br>Characteristic curve parameterizable (see output characteristic curve P3-OUT), SELV                                                                                               |
|     | CON2  | Vout        | Voltage output 3.3-24 VDC ±5%, Pmax=800 mW, voltage parameterizable<br>Factory setting: 10 VDC<br>short-circuit-proof, supply for external devices, SELV<br>alternatively: 15-50 VDC input for parameterization via MODBUS without line voltage                                                                                                 |
|     | CON2  | COM         | Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) / min. 10 mA, reinforced insulation on supply side and on control interface side                                                                                                                                                                   |
|     | CON2  | NC          | Status relay, floating status contact, break for failure                                                                                                                                                                                                                                                                                        |
|     |       | LED         | green: status = good, ready for operation<br>orange: status = warning<br>red: status = failure                                                                                                                                                                                                                                                  |
|     |       | P1-IN       | Input characteristic curve                                                                                                                                                                                                                                                                                                                      |
|     |       | P3-OUT      | Output characteristic curve                                                                                                                                                                                                                                                                                                                     |

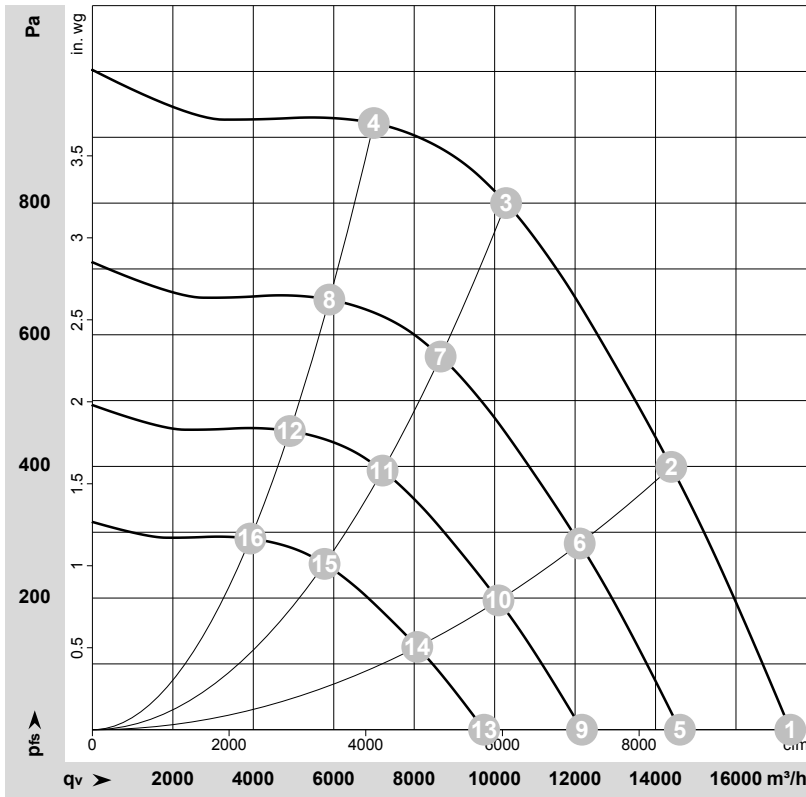
## Terminal/plug assignment

|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|-------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------|---------------------------------------------------------------------------------------------|----------|---|------------------------------------------|---------------------------------|------------------------------------------------------------------------------|---------------------------------|------------------|-------------------------|----------------------------------------------|--------------------------------|----------------------|-----------------------------------|-------------------------------------|---------------------------------|-------------------|--|
| ○ configurable option                                                                                                         |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
| For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.0 |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
| CON2                                                                                                                          | configurable IO mode                                                                                       | electrical specification                                                                                                                    | configurable IO functions: normal / inverse                                                                                                                              | MODBUS Register for IO mode configuration | OUTPUT                                  |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Din1 (active high): digital input       | not active: pin open or applied voltage < 1,5VDC<br>active: applied voltage 3,5-50VDC, SELV | D158 [0] | ○ | switch: fan enable / disable             | (selected directly via IO mode) | D16A [...] D16C [...] D148 [...] D12E [...] D104 [...] D147 [...] D101 [...] | (selected directly via IO mode) | signal: tach out | signal: diagnostics out | D130 [0] D130 [1] D130 [2] D130 [5] D130 [4] | signal: fan modulation level % | signal: actual speed | signal: system modulation level % | signal: remote control output 0-10V | pulse input for auto-addressing | D00C [1] D130 [4] |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Ain1 0-10V/PWM: analog input            | RI=100K, characteristic curve parameterizable, f <sub>PWM</sub> =1k..10KHz SELV             | D158 [2] | ○ | switch: control function: heating (pos.) |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Tach out (open collector output)        | U <sub>max</sub> =50VDC, I <sub>max</sub> =20mA SELV                                        | D158 [5] | ○ | switch: parameter set: #1 / #2           |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Diagnostics out (open collector output) | U <sub>max</sub> =50VDC, I <sub>max</sub> =20mA SELV                                        | D158 [6] | ○ |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Din2 (active high): digital input       | not active: pin open or applied voltage < 1,5VDC<br>active: applied voltage 3,5-50VDC, SELV | D159 [0] | ○ |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Ain2 0-10V/PWM: analog input            | RI=100K, characteristic curve parameterizable, f <sub>PWM</sub> =1k..10KHz SELV             | D159 [2] | ○ |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Ain2 4-20mA: analog input               | RI=125R, characteristic curve parameterizable, SELV                                         | D159 [3] | ○ |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Din3 (active high): digital input       | not active: pin open or applied voltage < 1,5VDC<br>active: applied voltage 3,5-50VDC, SELV | D15A [0] |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           | Din3 (active low): digital input        | active: pin open or applied voltage 3,5-50VDC<br>not active: applied voltage < 1,5VDC, SELV | D15A [1] |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
| IO3                                                                                                                           | PWMIn3: digital input                                                                                      | 40Hz - 10KHz characteristics parameterizable<br>not active: pin open or applied voltage 3,5-50VDC<br>active: applied voltage < 1,5VDC, SELV | function parameterizable, max. 5mA max output frequency 300Hz SELV<br>0-10V max. 5mA, max output frequency 300Hz SELV<br>0-10V max. 5mA, max output frequency 300Hz SELV | MODBUS RTU, specification V6.0, SELV      | D15A [7] D15A [4] D15A [5] D15A [6]     | ○                                                                                           |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
| RSA<br>RSB                                                                                                                    | RS485 bus connection,                                                                                      |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
| Yout                                                                                                                          | voltage output                                                                                             | voltage parameterizable 3.3...24VDC +/- 5.5%, Pmax=800mW, short-circuit-proof, supply for external devices, SELV                            | D16E [...]                                                                                                                                                               |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               | alternatively: input auxiliary power supply for parameterization via RS485/MODBUS RTU without line voltage | 15...50VDC                                                                                                                                  |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |
|                                                                                                                               |                                                                                                            |                                                                                                                                             |                                                                                                                                                                          |                                           |                                         |                                                                                             |          |   |                                          |                                 |                                                                              |                                 |                  |                         |                                              |                                |                      |                                   |                                     |                                 |                   |  |

◦ configurable option

For further information and additional functions see EC Control Software, Fan-Set-App, or MODBUS Parameter Specification V6.0

## Curves: Air performance 50 Hz



$\rho = 1.15 \text{ kg/m}^3 \pm 2 \%$

Measurement: 13283

Air performance measured according to ISO 5801 installation category A. For detailed information on the measurement setup, contact ebm-papst. Intake sound level: Sound power level according to ISO 13347 / sound pressure level measured at 1 m distance from fan axis. The values given are valid under the specified measuring conditions and may vary due to conditions of installation. For deviations from the standard configuration, the parameters have to be checked on the installed unit.

## Fan performance

|    | Wired | U   | f  | n                 | P <sub>ed</sub> | I    | LpA <sub>in</sub> | LwA <sub>in</sub> | LwA <sub>out</sub> | q <sub>v</sub>    | p <sub>fs</sub> | q <sub>v</sub> | p <sub>fs</sub> |
|----|-------|-----|----|-------------------|-----------------|------|-------------------|-------------------|--------------------|-------------------|-----------------|----------------|-----------------|
|    |       | V   | Hz | min <sup>-1</sup> | W               | A    | dB(A)             | dB(A)             | dB(A)              | m <sup>3</sup> /h | Pa              | cfm            | in. wg          |
| 1  | 3~    | 400 | 50 | 1780              | 1835            | 2.89 | 87                | 92                | 96                 | 17350             | 0               | 10210          | 0.00            |
| 2  | 3~    | 400 | 50 | 1780              | 2817            | 4.33 | 79                | 86                | 91                 | 14390             | 400             | 8470           | 1.61            |
| 3  | 3~    | 400 | 50 | 1780              | 3350            | 5.10 | 71                | 78                | 84                 | 10285             | 800             | 6055           | 3.21            |
| 4  | 3~    | 400 | 50 | 1780              | 3094            | 4.75 | 78                | 85                | 89                 | 6995              | 920             | 4120           | 3.69            |
| 5  | 3~    | 400 | 50 | 1500              | 1094            | 1.72 | 82                | 88                | 92                 | 14605             | 0               | 8595           | 0.00            |
| 6  | 3~    | 400 | 50 | 1500              | 1680            | 2.59 | 75                | 82                | 86                 | 12115             | 286             | 7130           | 1.15            |
| 7  | 3~    | 400 | 50 | 1500              | 1984            | 3.04 | 66                | 74                | 80                 | 8655              | 569             | 5095           | 2.28            |
| 8  | 3~    | 400 | 50 | 1500              | 1847            | 2.83 | 74                | 80                | 85                 | 5890              | 654             | 3465           | 2.63            |
| 9  | 3~    | 400 | 50 | 1250              | 633             | 1.00 | 78                | 83                | 87                 | 12170             | 0               | 7165           | 0.00            |
| 10 | 3~    | 400 | 50 | 1250              | 972             | 1.50 | 70                | 77                | 82                 | 10095             | 199             | 5940           | 0.80            |
| 11 | 3~    | 400 | 50 | 1250              | 1148            | 1.76 | 62                | 69                | 76                 | 7215              | 395             | 4245           | 1.59            |
| 12 | 3~    | 400 | 50 | 1250              | 1069            | 1.64 | 69                | 76                | 80                 | 4910              | 454             | 2890           | 1.82            |
| 13 | 3~    | 400 | 50 | 1000              | 324             | 0.51 | 72                | 77                | 82                 | 9735              | 0               | 5730           | 0.00            |
| 14 | 3~    | 400 | 50 | 1000              | 498             | 0.77 | 64                | 71                | 76                 | 8075              | 127             | 4755           | 0.51            |
| 15 | 3~    | 400 | 50 | 1000              | 588             | 0.90 | 56                | 63                | 70                 | 5770              | 253             | 3395           | 1.02            |
| 16 | 3~    | 400 | 50 | 1000              | 547             | 0.84 | 63                | 70                | 74                 | 3925              | 291             | 2310           | 1.17            |

Wired = Wiring · U = Voltage · f = Frequency · n = Speed (rpm) · P<sub>ed</sub> = Power consumption · I = Current draw · LpA<sub>in</sub> = Sound pressure level intake side · LwA<sub>in</sub> = Sound power level intake side  
LwA<sub>out</sub> = Sound power level outlet side · q<sub>v</sub> = Air flow · p<sub>fs</sub> = Pressure increase