**S3G990-BW22-01**

# EC axial fan - HyBlade®

sickled blades (S series)

with guard grille for full nozzle

S3G990-BW22-01 ebmpapst Datasheet
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## Nominal data

| | |
|---|---|
| **Type** | **S3G990-BW22-01** |
| **Motor** | **M3G150-FF** |

| | | |
|---|---|---|
| Phase | | 3~ |
| Nominal voltage | VAC | 400 |
| Nominal voltage range | VAC | 380 .. 480 |
| Frequency | Hz | 50/60 |
| Type of data definition | | ml |
| Speed | $min^{-1}$ | 740 |
| Power input | W | 1160 |
| Current draw | A | 1.8 |
| Max. back pressure | Pa | 105 |
| Min. ambient temperature | °C | -25 |
| Max. ambient temperature | °C | 60 |

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* | 1.00 |

* Specific ratio = 1 + $p_{fs}$ / 100 000 Pa

| | | Actual | Request 2013 | Request 2015 |
|---|---|---|---|---|
| Overall efficiency $\eta_{es}$ | % | 49.3 | 30.1 | 34.1 |
| Efficiency grade N | | 55.2 | 36 | 40 |
| Power input $P_{ed}$ | kW | 1.16 | | |
| Air flow $q_v$ | $m^3/h$ | 17895 | | |
| Pressure increase $p_{fs}$ | Pa | 107 | | |
| Speed n | $min^{-1}$ | 740 | | |

Data definition with optimum efficiency. LU-114461
The ErP data is determined using a motor-impeller combination in a standardised measurement configuration.

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## Technical features

| | |
|---|---|
| **Mass** | 32.5 kg |
| **Size** | 990 mm |
| **Surface of rotor** | Coated in black |
| **Material of electronics housing** | Die-cast aluminium, coated in black |
| **Material of blades** | Aluminium sheet insert, sprayed with PP plastic |
| **Material of guard grille** | Steel, coated in black plastic (RAL9005) |
| **Number of blades** | 5 |
| **Blade angle** | -5° |
| **Direction of air flow** | "V" |
| **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; rotor on top on request |
| **Condensate discharge holes** | Rotor-side |
| **Operation mode** | S1 |
| **Motor bearing** | Ball bearing |
| **Technical features** | - Output 10 VDC, max. 10 mA<br>- Output 20 VDC, max. 50 mA<br>- Output for slave 0-10 V<br>- Input for sensor 0-10 V or 4-20 mA<br>- External 24 V input (programming)<br>- External release input<br>- Alarm relay<br>- Integrated PID controller<br>- Motor current limit<br>- PFC, passive<br>- RS485 MODBUS RTU<br>- Soft start<br>- Control input 0-10 VDC / PWM<br>- Over-temperature protected electronics / motor<br>- Line undervoltage / phase failure detection |
| **EMC interference immunity** | Acc. to EN 61000-6-2 (industrial environment) |
| **EMC interference emission** | Acc. to EN 55022 (Class B, household environment) |
| **Touch current acc. IEC 60990 (measuring network Fig. 4, TN system)** | <= 3.5 mA |
| **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** | EN 61800-5-1; CE |
| **Approval** | C22.2 Nr.77 + CAN/CSA-E60730-1; EAC; UL 1004-7 + 60730 |

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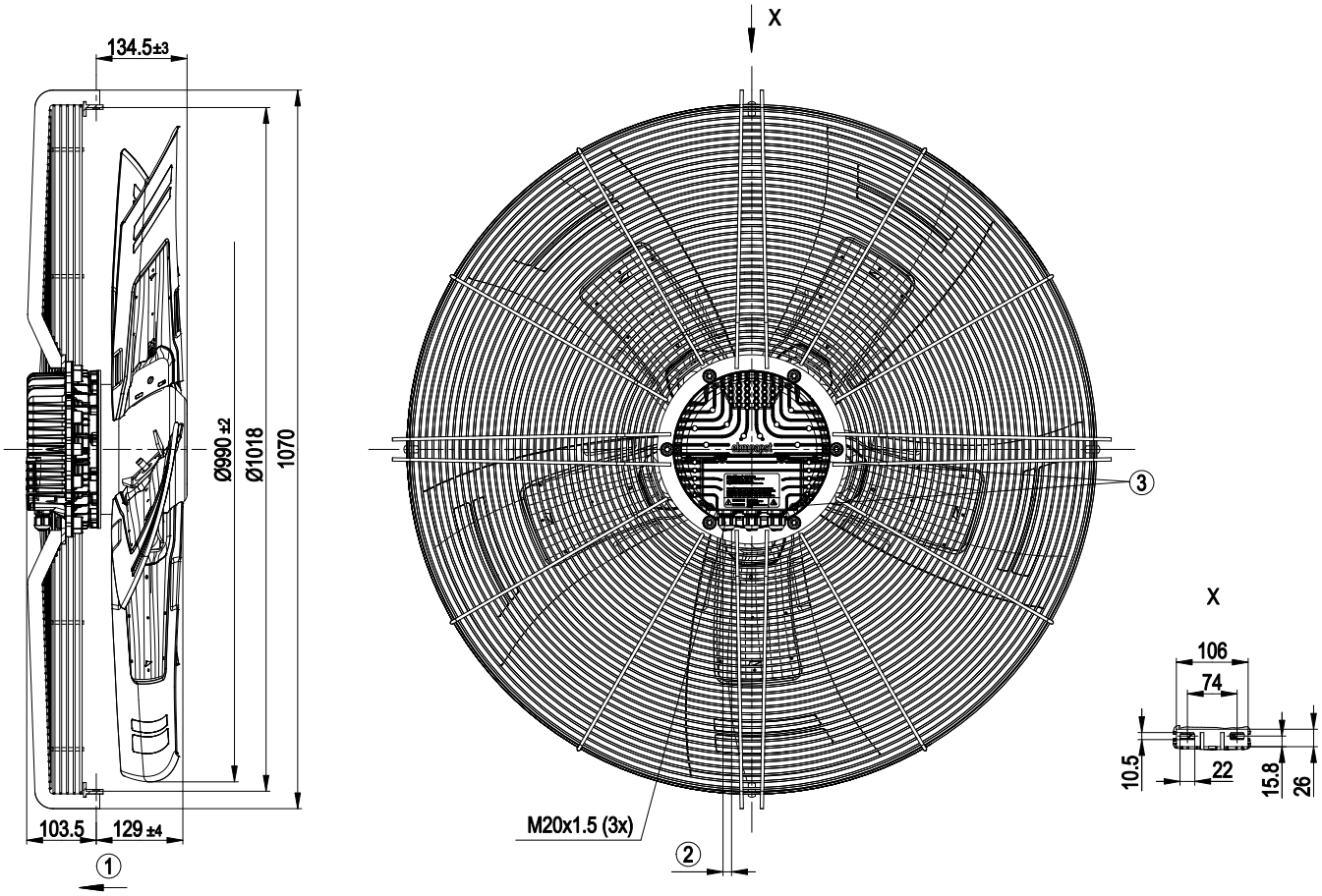
## Product drawing




| | |
|---|---|
| 1 | Direction of air flow "V" |
| 2 | Cable diameter: min. 4 mm, max. 10 mm; tightening torque: 4±0.6 Nm |
| 3 | Tightening torque 3.5±0.5 Nm |

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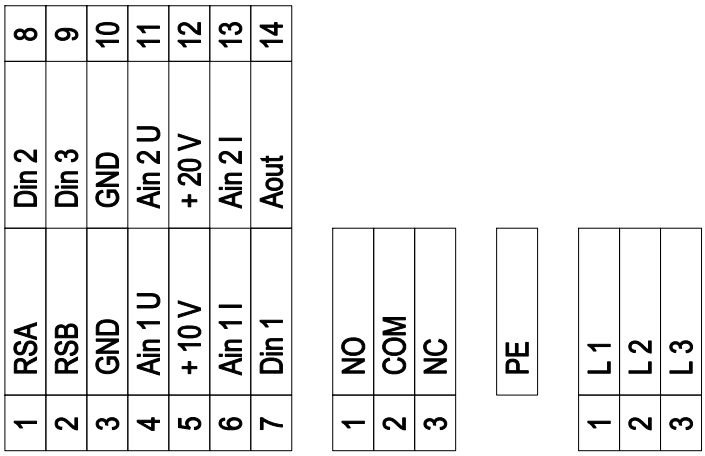
## Connection screen




| No. | Conn. | Designation | Function / assignment |
|---|---|---|---|
| KL 1 | 1 | L1 | Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz |
| KL 1 | 2 | L2 | Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz |
| KL 1 | 3 | L3 | Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz |
| PE | | PE | Earth connection, PE connection |
| KL 2 | 1 | NO | Status relay, floating status contact; normally open; close with error |
| KL2 | 2 | COM | Status relay; floating status contact; changeover contact; common connection; contact rating 250 VAC / max. 2 A (AC1) / min. 10 mA |
| KL2 | 3 | NC | Status relay, floating status contact; break with error |
| KL 3 | 1 | RSA | Bus connection RS-485, RSA, MODBUS RTU; SELV |
| KL 3 | 2 | RSB | Bus connection RS-485, RSB, MODBUS RTU; SELV |
| KL 3 | 3 / 10 | GND | Signal ground for control interface; SELV |
| KL 3 | 4 | Ain1 U | Analogue input 1, set value: 0-10 V, Ri = 100 kΩ, parametrisable curve, only usable as alternative to input Ain1; SELV |
| KL 3 | 5 | + 10 V | Fixed voltage output 10 VDC, +10 V ±3%, max. 10 mA, short-circuit-proof, power supply for external devices (e.g. potentiometer), SELV |
| KL 3 | 6 | Ain1 I | Analogue input 1, set value: 4-20 mA; Ri = 100 Ω, parametrisable curve, only usable as alternative to input Ain1 U; SELV |
| KL 3 | 7 | Din1 | Digital input 1: enabling of electronics,<br>enabling: open pin or applied voltage 5-50 VDC<br>disabling: bridge to GND or applied voltage <1 VDC<br>reset function: triggers software reset after a level change to <1 VDC; SELV |
| KL 3 | 8 | Din2 | Digital input 2: parameter set switch 1/2, according to EEPROM setting, the valid/used parameter set can be selected via bus or via digital input DIN2.<br>Parameter set 1: open pin or applied voltage 5-50 VDC<br>Parameter set 2: bridge to GND or applied voltage <1 VDC; SELV |
| KL 3 | 9 | Din3 | Digital input 3: controller function of integrated controller, according to EEPROM setting, the controller function of the integrated controller is normally/inversely selectable per bus or per digital input<br>normal: open pin or applied voltage 5-50 VDC<br>inverse: bridge to GND or applied voltage <1 VDC; SELV |
| KL 3 | 11 | Ain2 U | Analogue input 2, actual value: 0-10 V, Ri = 100 kΩ, parametrisable curve, only usable as alternative to input Ain2; SELV |
| KL 3 | 12 | + 20 V | Fixed voltage output 20 VDC, +20 V +25/-10%, max. 50 mA, short-circuit-proof, power supply for external devices (e.g. sensors); SELV |

| No. | Conn. | Designation | Function / assignment |
|---|---|---|---|
| KL 3 | 13 | Ain2 I | Analogue input 2, actual value: 4-20 mA, Ri = 100 Ω, parametrisable curve, only usable as alternative to input Ain2 U; SELV |
| KL 3 | 14 | Aout | Analogue output 0-10 VDC, max. 5 mA, output of the current motor level control coefficient / motor speed parametrisable curve; SELV |

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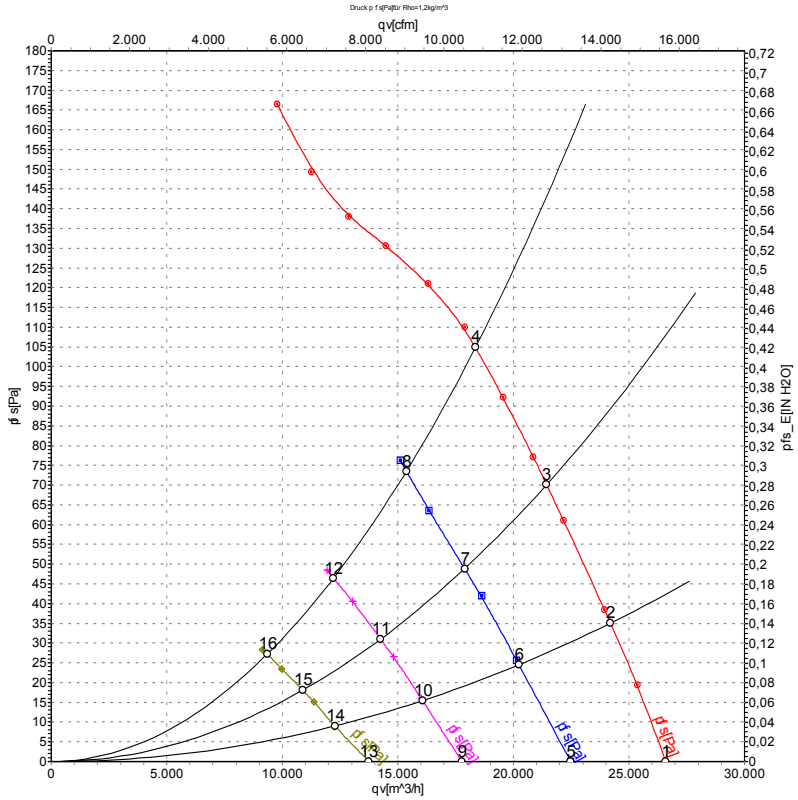
## Charts: Air flow 50 Hz




Measurement: LU-114461
Measurement: LU-115197
Measurement: LU-115198
Measurement: LU-118523

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: LwA measured as per ISO 13347 / LpA 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 | $P_{ed}$ | I | $LpA_{in}$ | $LwA_{in}$ | $LwA_{out}$ | qv | $p_{fs}$ |
|---|---|---|---|---|---|---|---|---|---|---|
| | V | Hz | $min^{-1}$ | W | A | dB(A) | dB(A) | dB(A) | $m^3/h$ | Pa |
| 1 | 400 | 50 | 740 | 677 | 1.07 | 69 | 77 | 77 | 26590 | 0 |
| 2 | 400 | 50 | 740 | 849 | 1.32 | 67 | 75 | 75 | 24200 | 35 |
| 3 | 400 | 50 | 740 | 1020 | 1.55 | 69 | 76 | 76 | 21440 | 70 |
| 4 | 400 | 50 | 740 | 1160 | 1.80 | 70 | 77 | 77 | 18360 | 105 |
| 5 | 400 | 50 | 615 | 365 | 0.62 | 65 | 72 | 72 | 22470 | 0 |
| 6 | 400 | 50 | 615 | 462 | 0.76 | 63 | 70 | 69 | 20240 | 25 |
| 7 | 400 | 50 | 615 | 548 | 0.88 | 63 | 70 | 70 | 17890 | 49 |
| 8 | 400 | 50 | 615 | 629 | 0.99 | 64 | 71 | 71 | 15370 | 74 |
| 9 | 400 | 50 | 490 | 195 | 0.41 | 59 | 66 | 65 | 17770 | 0 |
| 10 | 400 | 50 | 490 | 245 | 0.49 | 57 | 64 | 63 | 16070 | 16 |
| 11 | 400 | 50 | 490 | 291 | 0.55 | 57 | 64 | 63 | 14250 | 31 |
| 12 | 400 | 50 | 490 | 327 | 0.59 | 58 | 65 | 64 | 12220 | 46 |
| 13 | 400 | 50 | 375 | 93 | 0.27 | 52 | 59 | 58 | 13740 | 0 |
| 14 | 400 | 50 | 375 | 117 | 0.30 | 50 | 58 | 57 | 12270 | 9 |
| 15 | 400 | 50 | 375 | 135 | 0.32 | 51 | 58 | 57 | 10880 | 18 |
| 16 | 400 | 50 | 375 | 161 | 0.36 | 51 | 58 | 57 | 9345 | 27 |

U = Supply voltage · f = Frequency · n = Speed · $P_{ed}$ = Power input · I = Current draw · $LpA_{in}$ = Sound pressure level inlet side · $LwA_{in}$ = Sound power level inlet side · $LwA_{out}$ = Sound power level outlet side
qv = Air flow · $p_{fs}$ = Pressure increase