**W3G650-GC45-53**

# EC axial fan - HyBlade

sickle-shaped blades (S series)

with square full nozzle

**ebm-papst Mulfingen GmbH & Co. KG**
Bachmühle 2 · D-74673 Mulfingen
Phone +49 7938 81-0
Fax +49 7938 81-110
info1@de.ebmpapst.com
www.ebmpapst.com

Limited partnership · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRA 590344

General partner Elektrobau Mulfingen GmbH · Headquarters Mulfingen
Amtsgericht (court of registration) Stuttgart · HRB 590142

ErP2015 EXCEEDS THE NORM

## Nominal data

| | |
|---|---|
| **Type** | **W3G650-GC45-53** |
| **Motor** | **M3G084-FA** |

| | | |
|---|---|---|
| Phase | | 1~ |
| Nominal voltage | VAC | 230 |
| Frequency | Hz | 50/60 |
| Method of obtaining data | | ml |
| Speed (rpm) | $min^{-1}$ | 710 |
| Power consumption | W | 254 |
| Current draw | A | 1.6 |
| Max. back pressure | Pa | 75 |
| Max. back pressure | inH2O | 0.3 |
| Min. ambient temperature | °C | -25 |
| Max. ambient temperature | °C | 45 |

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

## Data according to ErP Directive

| | | Actual | Req. 2015 |
|---|---|---|---|
| 01 Overall efficiency $\eta_{es}$ | % | 44.3 | 29.1 |
| 02 Measurement category | | A | |
| 03 Efficiency category | | Static | |
| 04 Efficiency grade N | | 55.2 | 40 |
| 05 Variable speed drive | | Yes | |

| | | |
|---|---|---|
| 09 Power consumption $P_{ed}$ | kW | 0.19 |
| 09 Air flow $q_v$ | $m^3/h$ | 5875 |
| 09 Pressure increase $p_{fs}$ | Pa | 48 |
| 10 Speed (rpm) n | $min^{-1}$ | 715 |
| 11 Specific ratio* | | 1.00 |

Data obtained at optimum efficiency level.
The ErP data is determined using a motor-impeller combination in a standardized measurement setup.

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

LU-119981



ebmpapst

# EC axial fan - HyBlade

sickle-shaped blades (S series)

with square full nozzle

## Technical description

| | |
|---|---|
| **Weight** | 22 kg |
| **Fan size** | 650 mm |
| **Rotor surface** | Painted black |
| **Electronics housing material** | Die-cast aluminum |
| **Blade material** | Press-fitted sheet steel blank, sprayed with PP plastic |
| **Fan housing material** | Sheet steel, pre-galvanized and coated with black plastic |
| **Guard grille material** | Steel, phosphated and coated with black plastic |
| **Number of blades** | 5 |
| **Airflow direction** | "V" |
| **Direction of rotation** | Counterclockwise, viewed toward rotor |
| **Degree of protection** | IP54; installation- and position-dependent |
| **Insulation class** | "B" |
| **Moisture (F) / Environmental (H) protection class** | F3-1 |
| **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** | - Output 10 VDC, max. 1.1 mA<br>- Tach output<br>- Motor current limitation<br>- Soft start<br>- Control input 0-10 VDC / PWM<br>- Thermal overload protection for electronics/motor<br>- Line undervoltage detection |
| **EMC immunity to interference** | According to EN 61000-6-2 (industrial environment) |
| **EMC circuit feedback** | According to EN 61000-3-2/3 |
| **EMC interference emission** | According to EN 61000-6-3 (household environment) |
| **Touch current according to IEC 60990 (measuring circuit Fig. 4, TN system)** | <= 3.5 mA |
| **Electrical hookup** | With plug |
| **Motor protection** | Thermal overload protector (TOP) internally connected |
| **With cable** | Variable |
| **Protection class** | I (with customer connection of protective earth) |
| **Conformity with standards** | EN 60335-1; CE |
| **Approval** | UL 2111 |



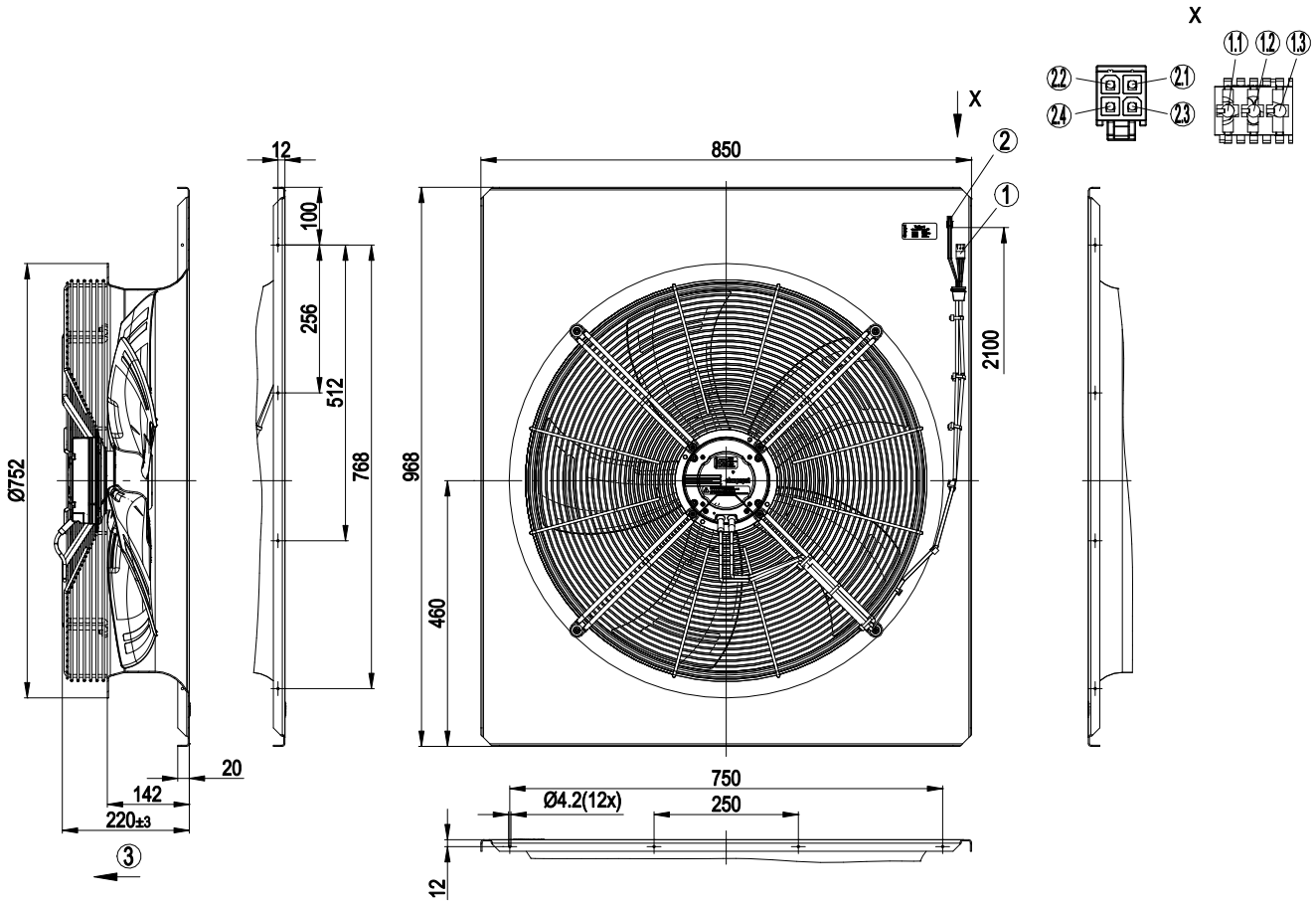
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC axial fan - HyBlade

sickle-shaped blades (S series)

with square full nozzle

## Product drawing




Cable length from motor

| | |
|---|---|
| 1 | Cable PVC AWG18 with 3-pole connector housing (Stocko EH688-003-00D-512), 3x flat push-on receptacle 6.3x0.8 |
| 1.1 | PE (green/yellow) |
| 1.2 | N (blue) |
| 1.3 | L (black) |
| 2 | Cable PVC AWG22 with 4-pole socket housing (Stocko EH 715-004-003-960),<br>4x socket (RBB 8230020) |
| 2.1 | 0-10 V (yellow) |
| 2.2 | +10 V (red) |
| 2.3 | Tach output (white) |
| 2.4 | GND (blue) |
| 3 | Direction of air flow "V" |



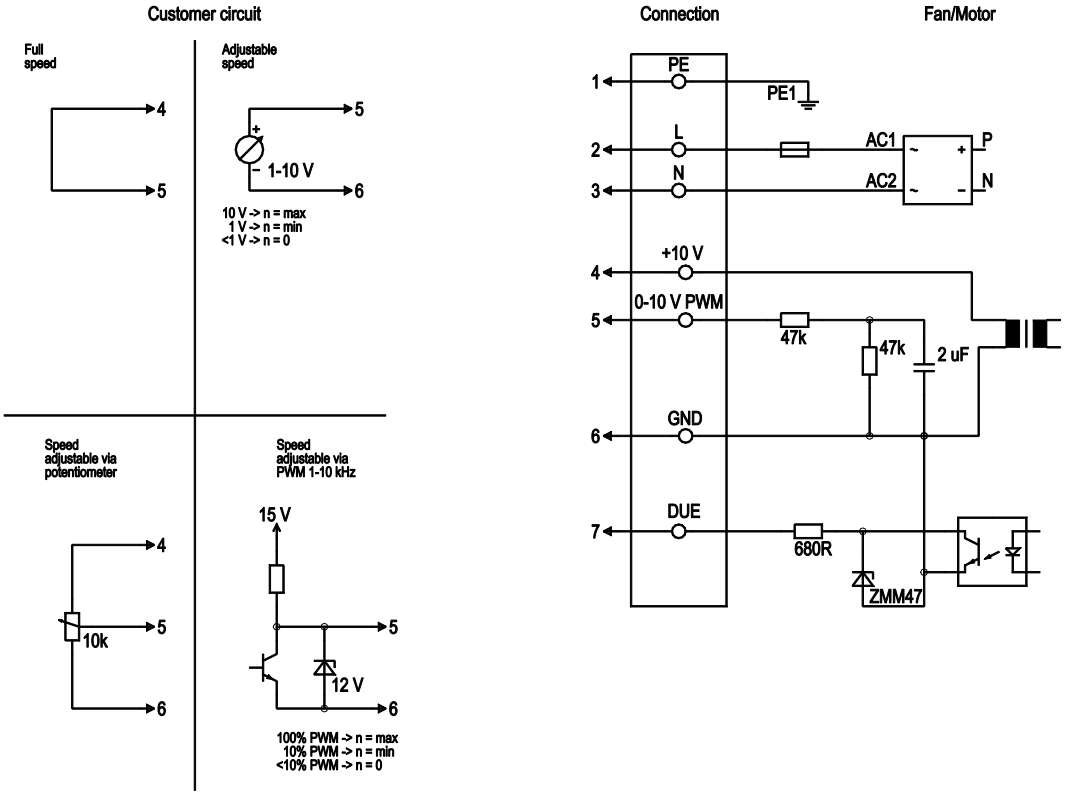
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC axial fan - HyBlade

sickle-shaped blades (S series)

with square full nozzle

## Connection diagram




| No. | Conn. | Designation | Color | Function/assignment |
|---|---|---|---|---|
| 1 | 1 | PE | green/yellow | Protective earth |
| 1 | 2 | L | black | Power supply, phase, 50/60 Hz |
| 1 | 3 | N | blue | Power supply, neutral conductor, 50/60 Hz |
| 2 | 4 | +10 V | red | Voltage output +10 V max. 1.1 mA electrically isolated |
| 2 | 5 | 0-10 V PWM | yellow | Control input 0-10 V or PWM, electrically isolated |
| 2 | 6 | GND | blue | Reference ground for control interface, electrically isolated |
| 2 | 7 | Tach | white | Tach output electrically isolated,<br>Isink = 10 mA max., 1 pulse/revolution |



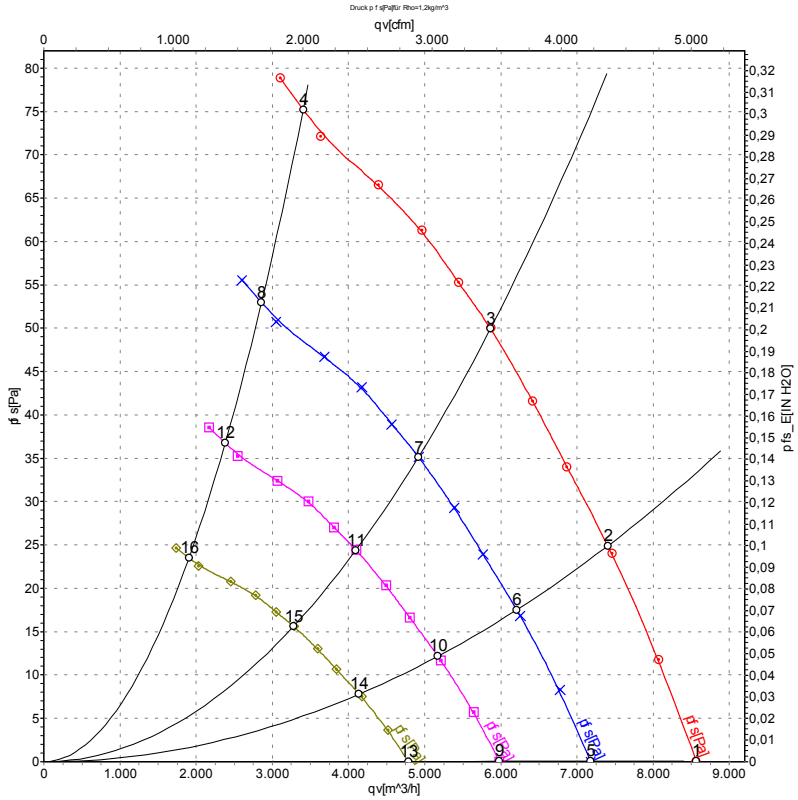
ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com

# EC axial fan - HyBlade

sickle-shaped blades (S series)

with square full nozzle

## Curves: Air performance 50 Hz




Measurement: LU-119981-1

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.

## Measured values

| | U | f | n | $P_{ed}$ | I | $LpA_{in}$ | $LwA_{in}$ | $LwA_{out}$ | qv | $p_{fs}$ | qv | $p_{fs}$ |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | V | Hz | $min^{-1}$ | W | A | dB(A) | dB(A) | dB(A) | $m^3/h$ | Pa | CFM | inH2O |
| 1 | 230 | 50 | 710 | 136 | 0.89 | 54 | 61 | 61 | 8565 | 0 | 5040 | 0.00 |
| 2 | 230 | 50 | 710 | 173 | 1.10 | 56 | 63 | 63 | 7400 | 25 | 4355 | 0.10 |
| 3 | 230 | 50 | 710 | 199 | 1.25 | 56 | 64 | 64 | 5865 | 50 | 3450 | 0.20 |
| 4 | 230 | 50 | 710 | 254 | 1.60 | 62 | 70 | 71 | 3405 | 75 | 2005 | 0.30 |
| 5 | 230 | 50 | 600 | 80 | 0.52 | 50 | 57 | 57 | 7175 | 0 | 4225 | 0.00 |
| 6 | 230 | 50 | 600 | 102 | 0.65 | 52 | 59 | 59 | 6205 | 18 | 3655 | 0.07 |
| 7 | 230 | 50 | 600 | 117 | 0.74 | 52 | 60 | 60 | 4920 | 35 | 2895 | 0.14 |
| 8 | 230 | 50 | 600 | 148 | 0.92 | 58 | 66 | 67 | 2860 | 53 | 1680 | 0.21 |
| 9 | 230 | 50 | 500 | 46 | 0.30 | 46 | 53 | 53 | 5980 | 0 | 3520 | 0.00 |
| 10 | 230 | 50 | 500 | 59 | 0.38 | 48 | 55 | 55 | 5175 | 12 | 3045 | 0.05 |
| 11 | 230 | 50 | 500 | 68 | 0.43 | 48 | 56 | 56 | 4100 | 24 | 2410 | 0.10 |
| 12 | 230 | 50 | 500 | 85 | 0.53 | 54 | 62 | 63 | 2380 | 37 | 1400 | 0.15 |
| 13 | 230 | 50 | 400 | 24 | 0.16 | 41 | 48 | 49 | 4785 | 0 | 2815 | 0.00 |
| 14 | 230 | 50 | 400 | 30 | 0.19 | 43 | 50 | 50 | 4140 | 8 | 2435 | 0.03 |
| 15 | 230 | 50 | 400 | 35 | 0.22 | 43 | 51 | 52 | 3280 | 16 | 1930 | 0.06 |
| 16 | 230 | 50 | 400 | 44 | 0.27 | 49 | 58 | 58 | 1905 | 24 | 1120 | 0.10 |

U = Power supply · f = Frequency · n = Speed (rpm) · $P_{ed}$ = Power consumption · I = Current draw · $LpA_{in}$ = Sound pressure level intake side · $LwA_{in}$ = Sound power level intake side
$LwA_{out}$ = Sound power level outlet side · qv = Air flow · $p_{fs}$ = Pressure increase



ebm-papst Mulfingen GmbH & Co. KG · Bachmühle 2 · D-74673 Mulfingen · Phone +49 (0) 7938 81-0 · Fax +49 (0) 7938 81-110 · info1@de.ebmpapst.com · www.ebmpapst.com