**614 N/2HH-138**

Customer specification: Lenze
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**Special features according to QMH 2-5.4.7 and company standard 1-23.00 have the following definitions:**

**"A"** : Product features or process parameters which influence the safety of a product or the compliance of legal requirements. (Must not necessary verified and documented 100%. Standards and legal requirements must be considered.)

**"FK"** : Product features or process parameters which influence the fit and function of a product or which have to be controlled or documented for some other reasons (e.g. Customer requirements).

## 1 General

| | | |
|---|---|---|
| Fan type | Fan | |
| Rotational direction looking at rotor | clockwise | **FK** |
| Airflow direction | Air outlet over struts | **FK** |
| Bearing system | Ball bearing | |
| Lubrication | see sectional drawing of the bearing | |
| Mounting position<br>Tolerance | any | |
| Balancing grade | 40,0 | **FK** |
| Impeller weight | 23,0 g | |

## 2 Mechanics

### 2.1 General

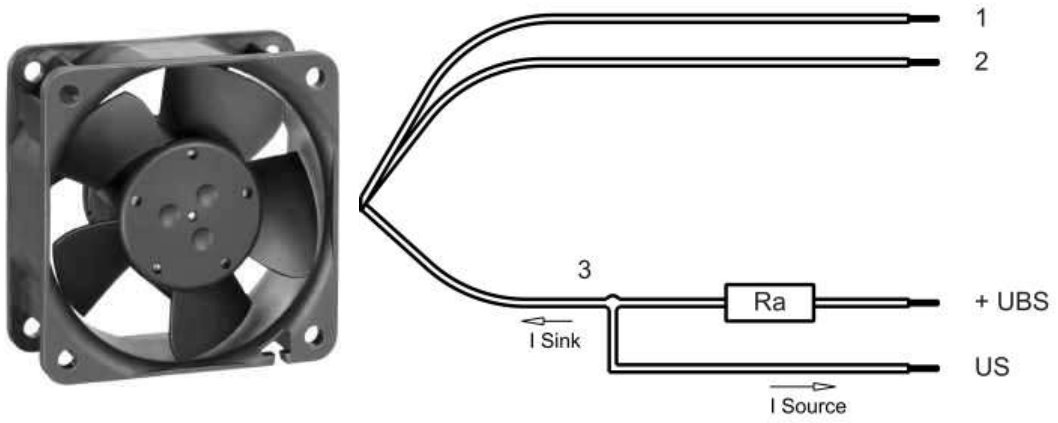
| | | |
|---|---|---|
| Width | 60,0 mm | |
| Height | 60,0 mm | |
| Depth | 25,0 mm | |
| Diameter | 0,0 mm | |
| Weight | 0,066 kg | |
| Housing material | Plastic | |
| Impeller material | Plastic | |
| Max. torque when mounted across both mounting flanges<br>Screw size | wire outlet corner: 20 Ncm<br>remaining corners: 40 Ncm<br>ISO 4762 - M3 degreased, without an additional brace and without washer | |

### 2.2 Motor

| | | |
|---|---|---|
| Type of motor | Electronically commutated external rotor | |
| Diameter of the motor | 22,0 mm | |
| Height of the motor | 6,0 mm | |
| Number of phases | 1 | |
| Number of windings | 1 | |
| Operating mode | Continuous duty | |
| Insulation material class | E | |

## 2.3 Connections

| | | |
|---|---|---|
| Electrical connection | Wires - Plug | |
| Length of lead wire<br>Tolerance | 94 mm<br>+- 10,0 mm | |
| Length of tube<br>Tolerance | | |
| Wire gauge (AWG) | 24 | |
| Insulation diameter | 1,55 mm | |
| Plug | see drawing | |
| Contact | see drawing | |




| | Colour | Operation |
|---|---|---|
| Wire 1 | red | + UB |
| Wire 2 | blue | - GND |
| Wire 3 | white | Tacho |

The auxilliaries shown on the schematic diagram (which are required for the intended use) are not part of our delivery.

## 3 Operating Data

### 3.1 Operating Data - Electrical Interface - Input

| | |
|---|---|
| Control input | None |

### 3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C; Motor axis horizontal;warm-up time before measuring 5 minutes (unless otherwise specified).In the intake and outlet area should not be any solid obstruction within 0,5 m.

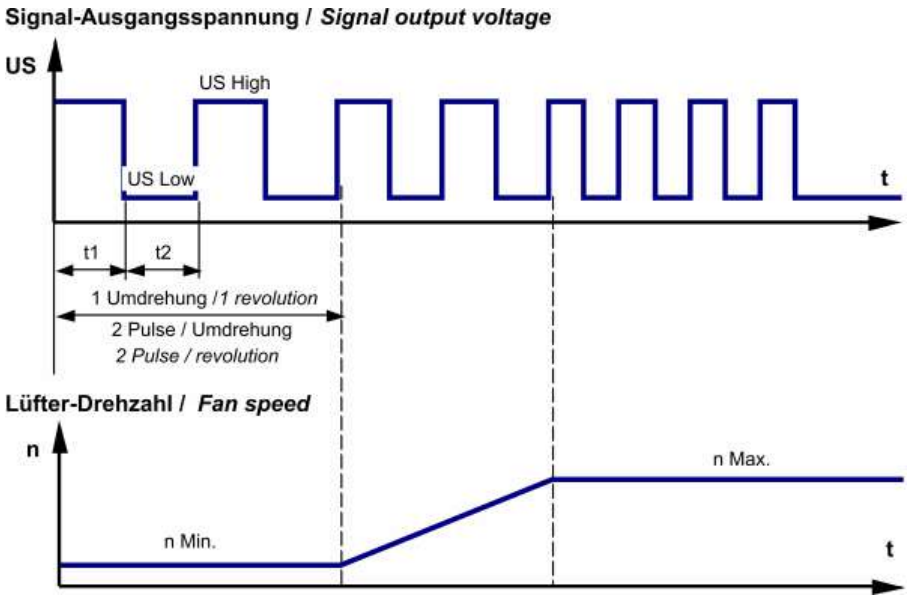
Δp = 0: corresp. to free air flow (see section 3.5)
I: corresp. to arithm. mean current value

| Features | Condition | Symbol | Values | | |
|---|---|---|---|---|---|
| Voltage range | Δp = 0 | U | 18,0 V | | 26,0 V |
| Nominal voltage | Δp = 0 | $U_N$ | | 24,0 V | |
| Power consumption<br>Tolerance | Δp = 0<br>0001 | P | 1,6 W<br>+- 17,5 % | 2,9 W<br>+- 12,5 % | 3,5 W<br>+- 17,5 % |
| Current consumption<br>Tolerance | Δp = 0<br>0001 | I | 90 mA<br>+- 17,5 % | 120 mA*)<br>+- 12,5 % | 135 mA<br>+- 17,5 % |
| Speed<br>Tolerance | Δp = 0<br>0001 | n | 5.300 1/min<br>+- 15,0 % | 6.850 1/min*)<br>+- 10,0 % | 7.300 1/min<br>+- 15,0 % |
| Starting current consumption | | | | 690 mA | |

*) Attention: Marked values are "FK" features

### 3.3 Operating Data - Electrical Interface -Output

| | |
|---|---|
| Tacho type | /2 (Open collector) |




$$Ra = \frac{UBS - US\ Low}{I\ Sink}$$

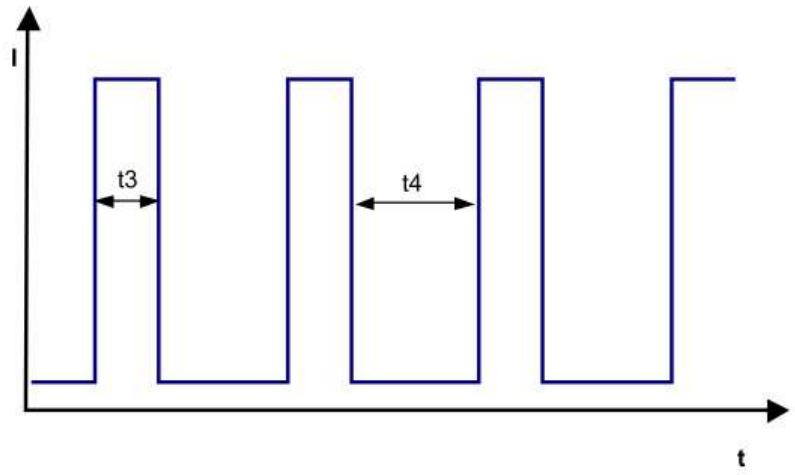
| Features | Note | Values |
|---|---|---|
| Tacho operating voltage (UBS) | | <= 28 V |
| Tacho signal Low *) | I sink: 2 mA | <= 0,4 V |
| Tacho signal High *) | I source: 0 mA | <= 28 V |
| Maximum sink current | | <= 4 mA |
| External resistor | External resistor Ra from UBS to US required. All voltages measured to GND. | |
| Tacho frequency *) | (2 x n) / 60 | |
| Tacho isolated from motor | No | |
| Slew rate | | => 0,5 V/us |

*) Attention: Marked values are "FK" features

| | |
|---|---|
| Alarm type | None |

### 3.4 Electrical Features

| | | |
|---|---|---|
| Electronic function | None | |
| Reversed polarity protection<br>Max. residual current at Un | Rectifying diode<br>IF <= 5 uA | **A** |
| Locked rotor protection | Auto restart | **A** |
| Locked rotor current at Un | approx. 690 mA | |
| Clock signal t3/t4 at locked rotor | Typical: 0,2 s / 1,1 s<br>t3: 0,06 s... 0,77 s<br>t4: 0,3 s... 3,6 s | |




### 3.5 Aerodynamic

| | |
|---|---|
| Measurement conditions: | Measured with a double chamber intake rig acc. to DIN 24163 Part 3.<br>Normal air density = 1,2 kg/m3; Temperature 23°C +/- 3°C;<br>In the intake and outlet area should not be any solid obstruction within 0,5 m. |

a.) Operation condition:

| |
|---|
| 6.850 1/min at free air flow |

| | | |
|---|---|---|
| Max. free-air flow (Δp = 0 / $\dot{V}$ = max.) | 54,0 m3/h | **FK** |
| Max. static pressure (Δp = max. / $\dot{V}$ =0) | 120 Pa | **FK** |

### 3.6 Sound Data

| | |
|---|---|
| Measurement conditions: | Sound pressure level: 1 Meter distance between microphone and the air intake.<br>Sound power level: Acc. to DIN 45635 part 38 (ISO 10302)<br>Measured in a semianchoic chamber with a background noise level of Lp(A) < 5 dB(A)<br>For further measurement conditions see section 3.5 |

a.) Operation condition:

| |
|---|
| 6.850 1/min at free air flow |

| | | |
|---|---|---|
| Optimal operating point | 34,0 m3/h @ 33 Pa | |
| Sound power level at the optimal operating point | 5,6 bel(A) | |
| Sound pressure level at free air flow, measured in rubber bands | 42,0 dB(A) | |

## 4 Environment

### 4.1 General

| | | |
|---|---|---|
| Min. permitted ambient temperature TU min. | -20 °C | |

| | | |
|---|---|---|
| Max. permitted ambient temperature TU max. | 70 °C | |
| Min. permitted storage temperature TL min. | -40 °C | |
| Max. permitted storage temperature TL max. | 80 °C | |

### 4.2 Climatic requirements*)

*) Permittet application area:
The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

### 4.3 Mechanical requirements

not specified

### 4.4 EMC

not specified

## 5 Safety

### 5.1 Electrical Safety

| | | |
|---|---|---|
| Dielectric strength<br>DIN EN 60950 (VDE 0805) and DIN EN 60335 (VDE 0700)<br>A.) Type test<br>Measuring conditions: After 48h of storage at 95% R.H. and 25°C.<br>No arcing or breakdown is allowed!<br>All connections together to ground.<br>B.) Routine test<br>Measuring conditions: At indoor climate.<br>No arcing or breakdown is allowed!<br>All connections together to ground. | Not applicable<br><br>Not applicable | **A** |
| Isolation resistance<br>Measuring conditions: After 48h of storage at 95% R.H. and 25°C measured with U=500 VDC for 1 min. | RI > 10 MOhm | |
| Air and leakage distances | 1,0 mm / 1,2 mm | |
| Protection class | III | |

### 5.2 Approval Tests

| | |
|---|---|
| CE | Yes |
| UL | Yes / UL507, Electric Fans |
| VDE | Yes / Approval acc. to EN 60950 (VDE 0805) - Information technology equipment - Part 1 Safety - Connection to a SELV circuit. |
| CSA | Yes / C22.2 No. 113-M1984 Fans and Ventilators |
| CCC | No |

The approval tests are observed to:
U approval max.:28,0 V @ TU approval max.: 70,0 °C

## 6 Reliability

### 6.1 General

| | | |
|---|---|---|
| Life expectancy L10 at TU = 20 °C | | |
| Life expectancy L10 at TU = 40 °C | 60.000 h | |
| Life expectancy L10 at TU = 60 °C | 37.500 h | |
| Life expectancy L10 at TU max. | 30.000 h | |
| Life expectancy L15 at TU = 45 °C | | |
| Life expectancy L10 Delta (40 °C) | 120.000 h | |

### 6.2 Additional Data

not specified