

622/2HHP-021 ebmpapst Datasheet FansCo  
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**622/2HHP-021****INDEX**

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## 1 General

|                                       |                        |  |
|---------------------------------------|------------------------|--|
| Fan type                              | Fan                    |  |
| Rotational direction looking at rotor | clockwise              |  |
| Airflow direction                     | Air outlet over struts |  |
| Bearing system                        | Ball bearing           |  |
| Mounting position                     | any                    |  |

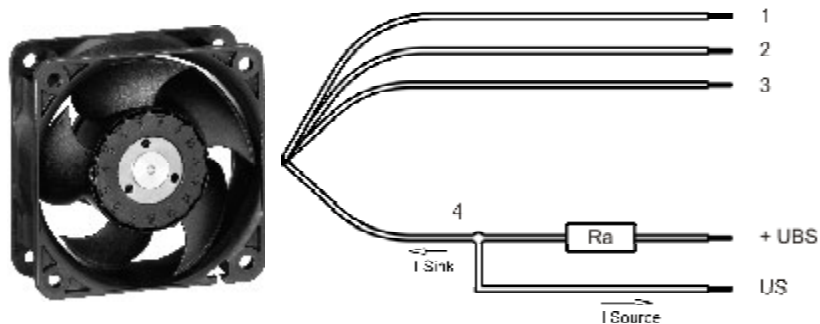
## 2 Mechanics

### 2.1 General

|                                                       |                                                                         |  |
|-------------------------------------------------------|-------------------------------------------------------------------------|--|
| Width                                                 | 60,0 mm                                                                 |  |
| Height                                                | 60,0 mm                                                                 |  |
| Depth                                                 | 25,0 mm                                                                 |  |
| Weight                                                | 0,070 kg                                                                |  |
| Housing material                                      | Plastic                                                                 |  |
| Impeller material                                     | Plastic                                                                 |  |
| Max. torque when mounted across both mounting flanges | wire outlet corner: 10 Ncm<br>remaining corners: 20 Ncm                 |  |
| Screw size                                            | ISO 4762 - M3 degreased, without an additional brace and without washer |  |

### 2.2 Connections

|                       |              |  |
|-----------------------|--------------|--|
| Electrical connection | Wires - Plug |  |
| Length of lead wire   | 217 mm       |  |
| Tolerance             | +/- 6,0 mm   |  |
| Wire gauge (AWG)      | 24           |  |
| Insulation diameter   | 1,50 mm      |  |
| Contact               | see drawing  |  |



|        | Colour | Operation |
|--------|--------|-----------|
| Wire 1 | red    | + UB      |
| Wire 2 | blue   | - GND     |
| Wire 3 | violet | PWM       |
| Wire 4 | white  | Tacho     |

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

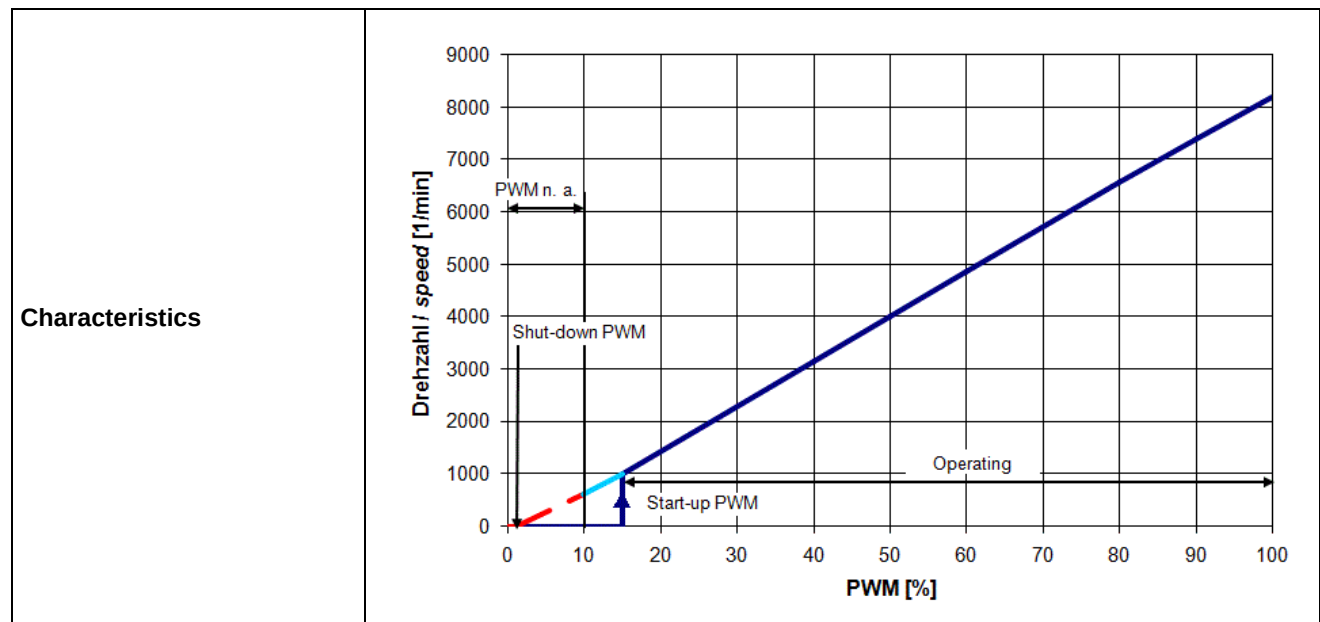
### 3 Operating Data

#### 3.1 Operating Data - Electrical Interface - Input

|               |     |
|---------------|-----|
| Control input | PWM |
|---------------|-----|

#### Features

|                                          |                       |                                    |
|------------------------------------------|-----------------------|------------------------------------|
| Input type                               | Open collector / TTL  |                                    |
| PWM - Frequency                          |                       | 21 kHz - 28 kHz<br>Typical: 25 kHz |
| Max. voltage for logic "Low"             |                       | 0,8 V                              |
| Max. voltage for logic "High"            | Open circuit voltage  | 5,25 V                             |
| Maximum source current                   | short circuit current | $\leq 5$ mA                        |
| 4 wire startup condition                 | PWM duty cycle        | $> 15$ %                           |
| 4 wire operation condition after startup | PWM duty cycle        | 10 % - 100 %                       |
| Shutdown condition                       | PWM duty cycle        | $< 1$ %                            |
| Typical time until warm restart          | After shutdown by PWM | $\sim 2,8$ s                       |



### 3.2 Electrical Operating Data

Measurement conditions: Normal air density = 1,2 kg/m<sup>3</sup>; 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.

$\Delta p = 0$ : corresp. to free air flow (see section 3.5)  
 I: corresp. to arithm. mean current value

| Name     | Condition             |
|----------|-----------------------|
| PWM 0001 | PWM: 100 %; f: 25 kHz |

| Features                     | Condition      | Symbol | Values      |             |             |
|------------------------------|----------------|--------|-------------|-------------|-------------|
| Voltage range                | $\Delta p = 0$ | U      | 10,8 V      |             | 13,2 V      |
| Nominal voltage              | $\Delta p = 0$ | $U_N$  |             | 12,0 V      |             |
| Power consumption            | $\Delta p = 0$ | P      | 3,0 W       | 3,7 W       | 4,5 W       |
| Tolerance                    | PWM 0001       |        | +/- 17,5 %  | +/- 12,5 %  | +/- 12,5 %  |
| Current consumption          | $\Delta p = 0$ | I      | 280 mA      | 310 mA      | 340 mA      |
| Tolerance                    | PWM 0001       |        | +/- 17,5 %  | +/- 12,5 %  | +/- 12,5 %  |
| Speed                        | $\Delta p = 0$ | n      | 7.650 1/min | 8.200 1/min | 8.950 1/min |
| Tolerance                    | PWM 0001       |        | +/- 12,5 %  | +/- 7,5 %   | +/- 10,0 %  |
| Starting current consumption |                |        |             | 1.300 mA    |             |

| Name     | Condition            |
|----------|----------------------|
| PWM 0002 | PWM: 50 %; f: 25 kHz |

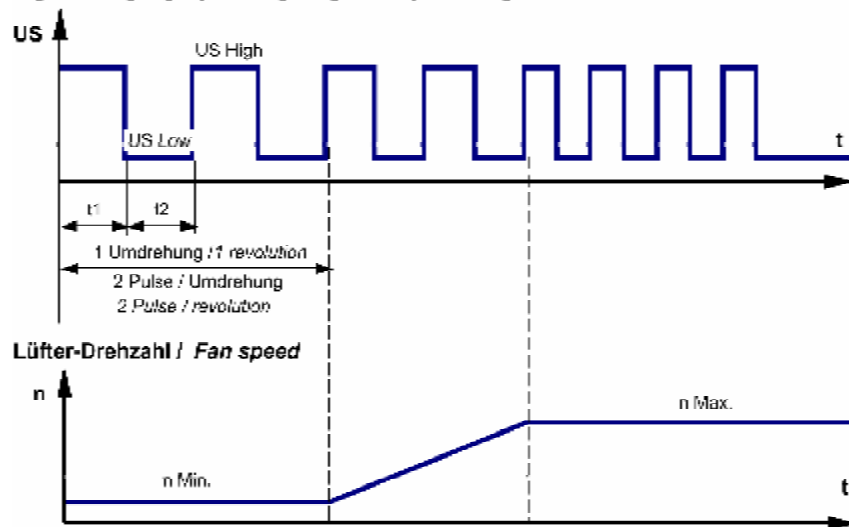
| Features            | Condition      | Symbol | Values      |             |             |
|---------------------|----------------|--------|-------------|-------------|-------------|
| Voltage range       | $\Delta p = 0$ | U      | 10,8 V      |             | 13,2 V      |
| Nominal voltage     | $\Delta p = 0$ | $U_N$  |             | 12,0 V      |             |
| Power consumption   | $\Delta p = 0$ | P      | 0,8 W       | 1,0 W       | 1,2 W       |
| Tolerance           | PWM 0002       |        | +/- 17,5 %  | +/- 12,5 %  | +/- 12,5 %  |
| Current consumption | $\Delta p = 0$ | I      | 80 mA       | 80 mA       | 90 mA       |
| Tolerance           | PWM 0002       |        | +/- 17,5 %  | +/- 12,5 %  | +/- 12,5 %  |
| Speed               | $\Delta p = 0$ | n      | 3.650 1/min | 4.150 1/min | 4.570 1/min |
| Tolerance           | PWM 0002       |        | +/- 12,5 %  | +/- 7,5 %   | +/- 12,5 %  |

### 3.3 Operating Data - Electrical Interface -Output

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

Signal-Ausgangsspannung / *Signal output voltage*

$$R_a = \frac{U_{BS} - U_{S \text{ Low}}}{I_{\text{Sink}}}$$

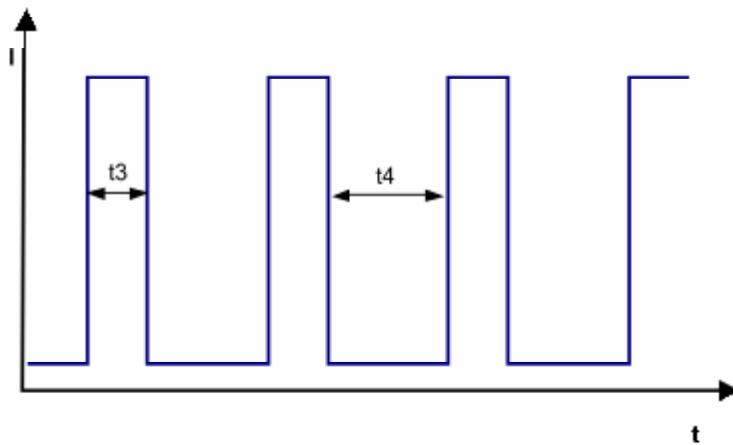


| Features                      | Note                                                                           | Values                         |
|-------------------------------|--------------------------------------------------------------------------------|--------------------------------|
| Tacho operating voltage (UBS) |                                                                                | $\leq 30 \text{ V}$            |
| Tacho signal Low              | I sink: 2 mA                                                                   | $\leq 0,5 \text{ V}$           |
| Tacho signal High             | I source: 0 mA                                                                 | 30 V                           |
| Maximum sink current          |                                                                                | 4 mA                           |
| Maximum source current        |                                                                                | 0 mA                           |
| External resistor             | External resistor $R_a$ from UBS to US required. All voltages measured to GND. |                                |
| Tacho frequency               | $(2 \times n) / 60$                                                            |                                |
| Tacho isolated from motor     | No                                                                             |                                |
| Slew rate                     |                                                                                | $\Rightarrow 0,5 \text{ V/us}$ |

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

### 3.4 Electrical Features

|                                    |                          |  |
|------------------------------------|--------------------------|--|
| Electronic function                | None                     |  |
| Reversed polarity protection       | Rectifying diode         |  |
| Max. residual current at $U_n$     | $I_F \leq 10 \text{ mA}$ |  |
| Locked rotor protection            | Auto restart             |  |
| Locked rotor current at $U_n$      | approx. 1.300 mA         |  |
| Clock signal t3/t4 at locked rotor | Typical: 0,5 s / 2,8 s   |  |



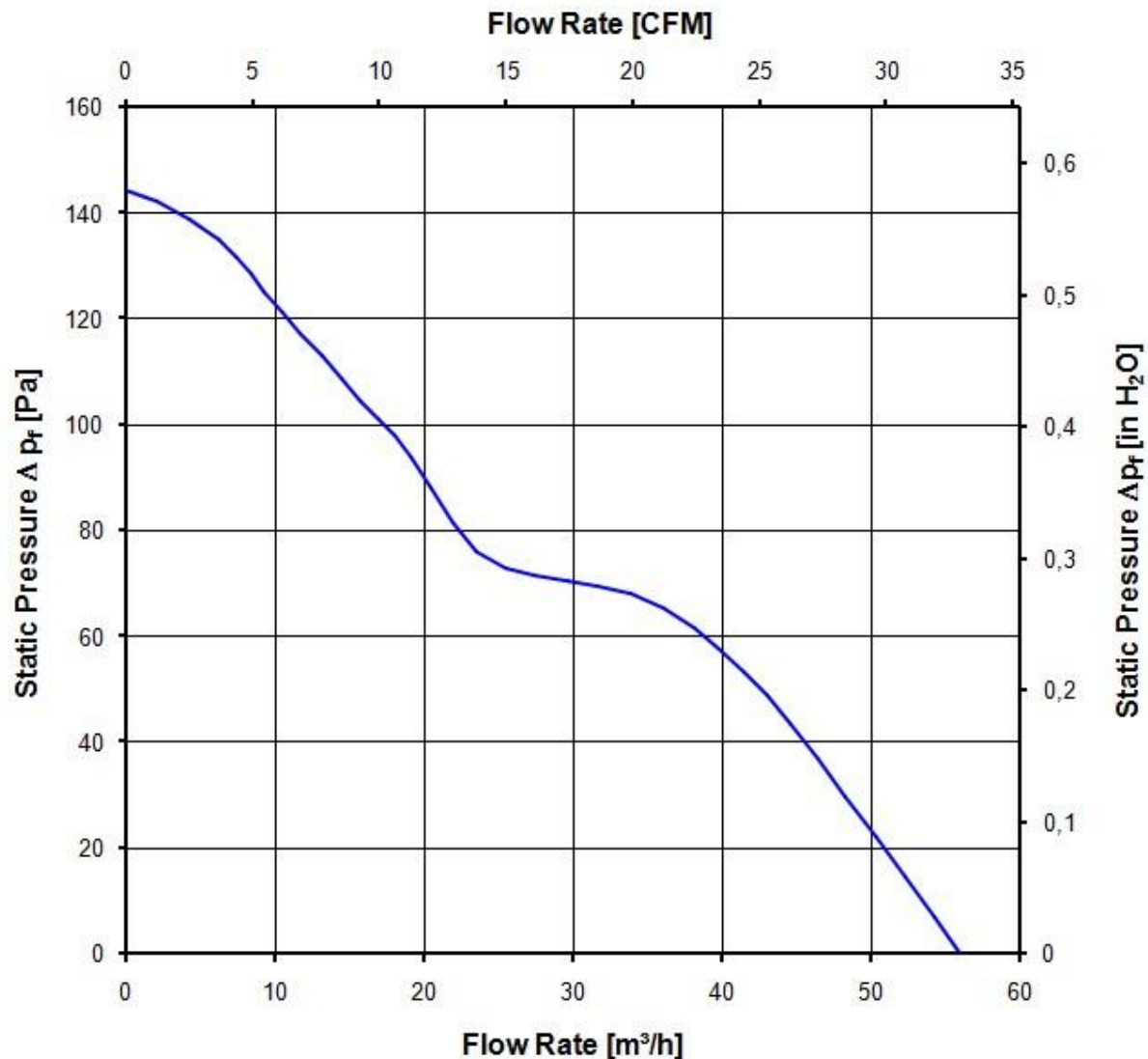
**This fan is at over voltage and max. ambient temperature not continuous lock safe!**

### 3.5 Aerodynamic

Measurement conditions: Measured with a double chamber intake rig acc. to DIN EN ISO 5801.  
 Normal air density = 1,2 kg/m<sup>3</sup>; Temperature 23°C +/- 3°C;  
 In the intake and outlet area should not be any solid obstruction within 0,5 m.

a.) Operation condition:

|                                                                 |                        |
|-----------------------------------------------------------------|------------------------|
| at free air flow                                                |                        |
| Max. free-air flow ( $\Delta p = 0 / \dot{V} = \text{max.}$ )   | 56,0 m <sup>3</sup> /h |
| Max. static pressure ( $\Delta p = \text{max.} / \dot{V} = 0$ ) | 145 Pa                 |





### 3.6 Sound Data

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

a.) Operation condition:

|                                                                 |                                |  |
|-----------------------------------------------------------------|--------------------------------|--|
| at free air flow                                                |                                |  |
| Optimal operating point                                         | 40,0 m <sup>3</sup> /h @ 51 Pa |  |
| Sound power level at the optimal operating point                | 5,6 bel(A)                     |  |
| Sound pressure level at free air flow, measured in rubber bands | 43,0 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\*)

|                          |                                                               |  |
|--------------------------|---------------------------------------------------------------|--|
| Humidity requirements    | humid heat, constant; according to DIN EN 60068-2-78, 14 days |  |
| Water exposure           | None                                                          |  |
| Radiation exposure       | None                                                          |  |
| Dust requirements        | None                                                          |  |
| Salt fog requirements    | None                                                          |  |
| Harmful gas requirements | None                                                          |  |

\*) Permitted application area:

The product is intended for use in sheltered rooms with controlled temperature and controlled humidity. Directly exposure to water must be avoided.

Pollution degree 1 (according DIN EN 60664-1)

There is either no pollution or it occurs only dry, non-conductive pollution. The pollution has no negative impact. Please require severity levels and specification parameters from the responsible development departments

## 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. | 500 VAC / 1 Min.<br><br>500 VAC / 1 Sec. |  |
| 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 |
| VDE | Yes |
| CSA | Yes |
| CCC | No  |

The approval tests are observed to:

U approval max.: 13,2 V @ TU approval max.: 70,0 °C

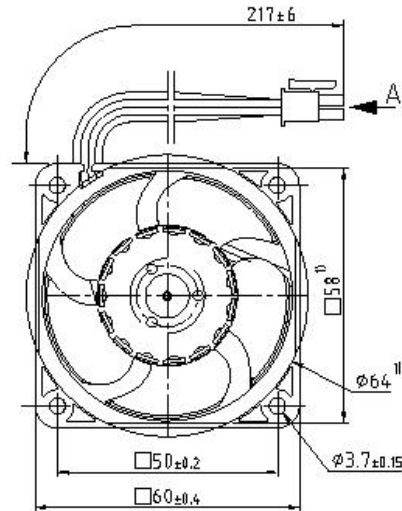
## 6 Reliability

### 6.1 General

|                                   |           |  |
|-----------------------------------|-----------|--|
| Life expectancy L10 at TU = 40 °C | 65.000 h  |  |
| Life expectancy L10 at TU max.    | 32.500 h  |  |
| Life expectancy L10 Delta (40 °C) | 130.000 h |  |

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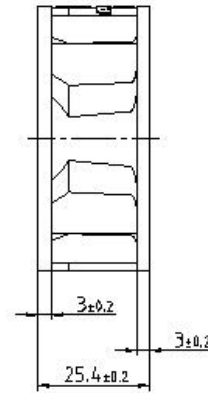
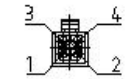
Späterer Nach DIN ISO 1000 beschriften



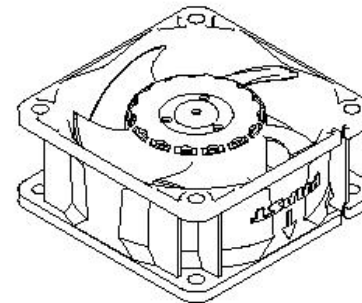
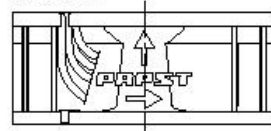
#### Steckerbelegung

Pin1 = rot (+)  
 Pin2 = weiss (Tacho)  
 Pin3 = blau (GND)  
 Pin4 = violett (PWM)

#### Ansicht A



#### Flanschseite



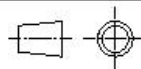
#### 1) Maße für Montagewand

Axialspiel bei

- Kugellagerung (K) : 0 (mit Federausgleich)
- Gleitlagerung (G) :

Tolerierung: DIN 7167  
 Allgemeintoleranzen: DIN ISO 2768-mK-E

|                                           |       |           |                                                                                      |            |         |
|-------------------------------------------|-------|-----------|--------------------------------------------------------------------------------------|------------|---------|
|                                           |       |           |  | Artikel    | Maßstab |
|                                           | Datum | Name      |                                                                                      |            |         |
| Bearbeitet                                |       |           |  | Zchg.-Nr.  | Blatt   |
|                                           | Index | Aend.-Nr. |                                                                                      |            |         |
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