

## eAir 1.1 Data sheet V1-0

| Parameter                                 | Unit                | Value                              |
|---|---------------------|------------------------------------|
| Air pressure                              | [bar]               | 12.5                               |
| Max. flow rate @ 10 bar                   | [l/min]             | 325                                |
| Max. flow rate @ 6.5 bar                  | [l/min]             | 360                                |
| Rated flow rate @10 bar                   | [l/min]             | 210                                |
| Device speed range                        | [rpm]               | 1000-3500                          |
| Rated speed                               | [rpm]               | 2500                               |
| Drive type                                |                     | Direct                             |
| Motor type                                |                     | Permanent Magnet Synchronous Motor |
| Motor rated output power @ 3000 rpm       | [kW]                | 3.8                                |
| Motor rated torque                        | [Nm]                | 12.0                               |
| Motor max. torque                         | [Nm]                | 24.0                               |
| Motor rated phase to phase voltage (Y/ Δ) | [V <sub>RMS</sub> ] | 400 / 230                          |
| Motor rated current (Y/ Δ)                | [A <sub>RMS</sub> ] | 8.3 / 14.4                         |
| Motor max. current (Y/ Δ)                 | [A <sub>RMS</sub> ] | 17 / 29.4                          |
| Overload operating mode @ 200 %           | [s]                 | 60                                 |
| Safety valve setup                        | [bar]               | 13                                 |
| Oil residue                               | [ppm]               | <3                                 |
| Oil Quantity                              | [l]                 | ~1.5                               |
| Nominal oil temperature                   | [°C]                | 70                                 |
| Maximum air/oil temperature               | [°C]                | 105                                |
| Noise level                               | [dB(A)]             | 68                                 |
| Minimum/Maximum ambient temperature*      | [°C]                | -30* / +45                         |
| Maximum relative humidity                 | [%]                 | 85                                 |
| Protection class                          |                     | IP 55                              |
| Base length                               | [mm]                | 550                                |
| Base width                                | [mm]                | 425                                |
| Base height                               | [mm]                | 357                                |
| Approved compressor oil                   |                     | Acc. DIN ISO 3448 VG46             |
| Cooling Type                              |                     | Air cooled                         |
| Weight dry                                | [kg]                | approx. 41                         |



\* In order to start-up the compressor at ambient temperatures below + 3 °C, e.g. after parking the vehicle outside overnight in the winter, the additionally available “**Low-Temperature Hardware- and Software Option**” for the compressor is **mandatory** to avoid ice building up inside the compressor. Not complying with this direction could block the minimum pressure valve resulting in an overpressure situation inside the compressor, damage to the air end and loss of warranty.

Operating temperature is depending on weather the compressor is equipped with or without the available eAir low temperature option and it has to be distinguished between initial start-up e.g. in the morning and normal operation during driving.

For normal driving operation, the ambient operating range is  $-30\text{ °C} / +45\text{ °C}$  **with or without** the low temperature option. When operating the compressor at ambient air temperatures below  $-15\text{ °C}$ , we recommend using synthetic hydraulic oil.

For initial start-up of the compressor the ambient operating temperature **with** low temperature option is as for driving operation  $-30\text{ °C} / +45\text{ °C}$ .

**Without** low temperature option the initial start-up ambient operating range is  $+3\text{ °C} / +45\text{ °C}$ . If the compressor is ordered without low temperature option, it is recommended to park the bus inside overnight in the winter, to avoid icing inside the compressor.

## Motor MNF 80/4-090-A Data Sheet

| Parameter                            | Unit                     | Value      |      |
|--------------------------------------|--------------------------|------------|------|
|                                      |                          | Y          | Δ    |
| Power                                | [kW]                     | 3.8        |      |
| Torque (rated)                       | [Nm]                     | 12         |      |
| Torque (max)                         | [Nm]                     | 24         |      |
| Speed (rated)                        | [rpm]                    | 3000       |      |
| Speed (max)                          | [rpm]                    | 3500       |      |
| Freq.                                | [Hz]                     | 100        |      |
| Pole pairs                           |                          | 2          |      |
| Current (rated)                      | [A <sub>RMS</sub> ]      | 8.3        | 14.4 |
| Current (max)                        | [A <sub>RMS</sub> ]      | 17.0       | 29.4 |
| Motor voltage (rated phase to phase) | [V <sub>RMS</sub> ]      | 400        | 230  |
| DC-link voltage                      | [V]                      | >560       | >325 |
| <b>Phase:</b>                        |                          |            |      |
| k <sub>E</sub>                       | [V <sub>RMS</sub> /krpm] | 54.8       | 54.8 |
| R <sub>Ph,20</sub>                   | [Ohm]                    | 1.25       | 1.25 |
| L <sub>d</sub>                       | [mH]                     | 9.2        | 9.2  |
| L <sub>q</sub>                       | [mH]                     | 21.4       | 21.4 |
| <b>Line to line:</b>                 |                          |            |      |
| k <sub>E,LL</sub>                    | [V <sub>RMS</sub> /krpm] | 95         | 54.8 |
| R <sub>LL,20</sub>                   | [Ohm]                    | 2.5        | 0.83 |
| L <sub>LL,d</sub>                    | [mH]                     | 18.4       | 6.1  |
| L <sub>LL,q</sub>                    | [mH]                     | 42.8       | 14.3 |
| <b>Connection</b>                    |                          |            |      |
| Connection                           |                          | Y          | Δ    |
| Moment of inertia                    | [kgm <sup>2</sup> ]      | 0.00245    |      |
| Weight                               | [kg]                     | 12         |      |
| Protection class                     |                          | IP55       |      |
| Thermal class                        |                          | F          |      |
| Thermal protection                   |                          | PTC        |      |
| Cooling type                         |                          | Air cooled |      |
| Rotational direction*                |                          | Clockwise  |      |



In order to run the motor, a frequency inverter capable of conducting **sensorless control** for permanent magnet motors is needed, because the motor has no own position sensor or encoder.



\*The Rotational Direction is defined according to DIN-EN60034-8 (looking on the motor shaft). For the eAir 1.1 application the motor has to run counterclockwise (left) and therefore the rotational direction in the inverter has to be inverted.

