# TECHNICAL DOCUMENTATION

according Directive 2010/30/EU and corresponding Regulation (EU) No. 811/2013 (Energy Labelling),

Dircetive 2009/125/EC and corresponding Regulation (EU) No. 813/2013 (Ecodesign)

**iDM**
DIE **ENERGIE**FAMILIE

| Model: | iPump T 3-13 |
|---|---|
| Type of heat pump: | Brine-to-water heat pump |
| Low-temperature heat pump: (Yes/No) | Yes |
| Temperature application: (35°C/55°C) | low temperature (35°C) |
| Equipped with supplementary heater: (Yes/No) | Yes |
| Heat pump combination heater: (Yes/No) | Yes |

| | | **Climate condition** | | | | | | | **Climate condition** | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | cold | average | warm | | | | | cold | average | warm | |
| **Rated heat output** | $P_{rated}$ | 13.5 | 13.3 | 13.4 | kW | **Seasonal space heating efficiency** | $\eta_s$ | | 227 | 213 | 224 | % |

| Outdoor temperature $T_j$ | | Declared capacity for part load (indoor temperature = 20 °C) | | | | Outdoor temperature Tj | | Declared capacity for part load (indoor temperature = 20 °C) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| $T_j$ = − 15 °C | $P_{dh}$ | - | - | - | kW | $T_j$ = − 15 °C | $COP_d$ | - | - | - | --- |
| $T_j$ = − 7 °C | $P_{dh}$ | 8.2 | 11.8 | - | kW | $T_j$ = − 7 °C | $COP_d$ | 5.34 | 4.09 | - | --- |
| $T_j$ = +2 °C | $P_{dh}$ | 5.1 | 7.3 | 13.4 | kW | $T_j$ = +2 °C | $COP_d$ | 6.63 | 5.60 | 3.84 | --- |
| $T_j$ = +7 °C | $P_{dh}$ | 3.2 | 4.6 | 8.6 | kW | $T_j$ = +7 °C | $COP_d$ | 7.39 | 6.71 | 5.00 | --- |
| $T_j$ = +12 °C | $P_{dh}$ | 2.8 | 2.8 | 3.9 | kW | $T_j$ = +12 °C | $COP_d$ | 6.51 | 6.96 | 7.04 | --- |
| $T_j$ = Bivalenz temperature ($T_{biv}$) | $P_{dh}$ | 13.5 | 13.3 | 13.4 | kW | $T_j$ = Bivalenz temperature ($T_{biv}$) | $COP_d$ | 3.82 | 3.70 | 3.84 | --- |
| $T_j$ = Operation limit temperature (TOL) | $P_{dh}$ | 13.5 | 13.3 | 13.4 | kW | $T_j$ = Operation limit temperature (TOL) | $COP_d$ | 3.82 | 3.70 | 3.84 | --- |
| Bivalenz temperature (Tbiv) | $T_{biv}$ | -22.0 | -10.0 | 2.0 | °C | Operation limit temperature | TOL | -22.0 | -10.0 | 2.0 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | | | kW | Cycling interval capacity for heating | $COP_{cyc}$ | | | | --- |
| Degradation co-efficient | $C_{dh}$ | 0.9 | 0.9 | 0.9 | --- | Heating water operating limit temperature | WTOL | 62 | 62 | 62 | °C |

| **Power consumption in modes other than active mode** | | | | | | **Supplementary heater** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Thermostat-off mode | $P_{TO}$ | 0.025 | 0.025 | 0.025 | kW | Rated heat output (*) | $P_{sup}$ | 1-6 | 1-6 | 1-6 | kW |
| Standby mode | $P_{SB}$ | 0.025 | 0.025 | 0.025 | kW | | | | | | |
| Off-mode | $P_{OFF}$ | 0.025 | 0.025 | 0.025 | kW | Type of energy input | | electrical | | | |
| Crankase heater mode | $P_{CK}$ | 0 | 0 | 0 | kW | | | | | | |

| **Other items** | | | | | | **For air-to-water heat pumps:** | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Capacity control | | variable | | | | Rated air flow rate, outdoors | --- | n.a. | n.a. | n.a. | m³/h |
| Sound power levels, indoors/outdoors | $L_{WA}$ | - / 41 | - / 41 | - / 41 | dB | **For water- or brine-to-water heat pumps:** | | | | | |
| Annual energy consumption | $Q_{HE}$ | 5,661 | 4,974 | 3,222 | kWh | Rated brine or water flow rate, outdoor heat exchanger | --- | 1.6 | 1.6 | 1.6 | m³/h |

| **For heat pump combination heater:** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Declared load profile** | | XL | | | | Water heating energy efficiency | $\eta_{wh}$ | | 106 | | % |
| Daily electricity consumption | $Q_{elec}$ | 7.25 | | | kWh | Daily fuel consumption | $Q_{fuel}$ | n.a. | n.a. | n.a. | kWh |
| Annual electricity consumption | AEC | 1,573 | | | kWh | Annual fuel consumption | AFC | n.a. | n.a. | n.a. | GJ |

**Contact details:**

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Dirctive 2009/125/EC and corresponding Regulation (EU) No. 813/2013 (Ecodesign)

**DIE ENERGIE**FAMILIE

| Model: | iPump T 3-13 |
|---|---|
| Type of heat pump: | Brine-to-water heat pump |
| Low-temperature heat pump: (Yes/No) | Yes |
| Temperature application: (35°C/55°C) | high temperature (55°C) |
| Equipped with supplementary heater: (Yes/No) | Yes |
| Heat pump combination heater: (Yes/No) | Yes |

| | | **Climate condition** | | | |
|---|---|---|---|---|---|
| | | cold | average | warm | |
| **Rated heat output** | $P_{rated}$ | 10.4 | 10.0 | 10.4 | kW |

| Outdoor temperature $T_j$ | | Declared capacity for part load (indoor temperature = 20 °C) | | | |
|---|---|---|---|---|---|
| $T_j = -15$ °C | $P_{dh}$ | - | - | - | kW |
| $T_j = -7$ °C | $P_{dh}$ | 6.3 | 9.0 | - | kW |
| $T_j = +2$ °C | $P_{dh}$ | 3.8 | 5.3 | 10.4 | kW |
| $T_j = +7$ °C | $P_{dh}$ | 2.7 | 3.7 | 6.7 | kW |
| $T_j = +12$ °C | $P_{dh}$ | 2.7 | 2.9 | 3.0 | kW |
| $T_j$ = Bivalenz temperature ($T_{biv}$) | $P_{dh}$ | 10.4 | 10.4 | 10.4 | kW |
| $T_j$ = Operation limit temperature (TOL) | $P_{dh}$ | 10.4 | 10.4 | 10.4 | kW |
| Bivalenz temperature (Tbiv) | $T_{biv}$ | -22.0 | -10.0 | 2.0 | °C |
| Cycling interval capacity for heating | $P_{cych}$ | | | | kW |
| Degradation co-efficient | $C_{dh}$ | 0.9 | 0.9 | 0.9 | --- |

| Power consumption in modes other than active mode | | | | | |
|---|---|---|---|---|---|
| Thermostat-off mode | $P_{TO}$ | 0.026 | 0.026 | 0.026 | kW |
| Standby mode | $P_{SB}$ | 0.026 | 0.026 | 0.026 | kW |
| Off-mode | $P_{OFF}$ | 0.026 | 0.026 | 0.026 | kW |
| Crankase heater mode | $P_{CK}$ | 0 | 0 | 0 | kW |

| Other items | | | | | |
|---|---|---|---|---|---|
| Capacity control | | variable | | | |
| Sound power levels, indoors/outdoors | $L_{WA}$ | - / 41 | - / 41 | - / 41 | dB |
| Annual energy consumption | $Q_{HE}$ | 5,981 | 4,870 | 3,437 | kWh |

| For heat pump combination heater: | | | | | |
|---|---|---|---|---|---|
| Declared load profile | | XL | | | |
| Daily electricity consumption | $Q_{elec}$ | 7.25 | | | kWh |
| Annual electricity consumption | AEC | 1,573 | | | kWh |

| | | **Climate condition** | | | |
|---|---|---|---|---|---|
| | | cold | average | warm | |
| **Seasonal space heating efficiency** | $\eta_s$ | 163 | 162 | 164 | % |

| Outdoor temperature Tj | | Declared capacity for part load (indoor temperature = 20 °C) | | | |
|---|---|---|---|---|---|
| $T_j = -15$ °C | $COP_d$ | - | - | - | --- |
| $T_j = -7$ °C | $COP_d$ | 3.73 | 3.15 | - | --- |
| $T_j = +2$ °C | $COP_d$ | 4.96 | 4.34 | 2.94 | --- |
| $T_j = +7$ °C | $COP_d$ | 5.38 | 5.07 | 3.81 | --- |
| $T_j = +12$ °C | $COP_d$ | 5.93 | 6.22 | 5.10 | --- |
| $T_j$ = Bivalenz temperature ($T_{biv}$) | $COP_d$ | 2.94 | 2.94 | 2.94 | --- |
| $T_j$ = Operation limit temperature (TOL) | $COP_d$ | 2.94 | 2.94 | 2.94 | --- |
| Operation limit temperature | TOL | -22.0 | -10.0 | 2.0 | °C |
| Cycling interval capacity for heating | $COP_{cyc}$ | | | | --- |
| Heating water operating limit temperature | WTOL | 62 | 62 | 62 | °C |

| Supplementary heater | | | | | |
|---|---|---|---|---|---|
| Rated heat output (*) | $P_{sup}$ | 1-6 | 1-6 | 1-6 | kW |
| Type of energy input | | electrical | | | |

| For air-to-water heat pumps: | | | | | |
|---|---|---|---|---|---|
| Rated air flow rate, outdoors | --- | 1.6 | 1.6 | 1.6 | m³/h |
| For water- or brine-to-water heat pumps: | | | | | |
| Rated brine or water flow rate, outdoor heat exchanger | --- | n.a. | n.a. | n.a. | m³/h |

| Water heating energy efficiency | $\eta_{wh}$ | 106 | | | % |
|---|---|---|---|---|---|
| Daily fuel consumption | $Q_{fuel}$ | n.a. | n.a. | n.a. | kWh |
| Annual fuel consumption | AFC | n.a. | n.a. | n.a. | GJ |

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