

Operational mode Mains parallel operation
Energy efficiency¹⁾ **A++**
Seasonal heating efficiency²⁾ **254.6 %**

Fuel Natural gas

| Stepless modulation range | - 100 % - | - 50 % - |
|--|----------------|----------------|
| Electric output (P _{el}) | 22.0 kW | 11.0 kW |
| Thermal output ⁸⁾ (P _{th}) | | |
| with calorific value use (RT 30 °C) ⁹⁾ | 52.2 kW | 35.3 kW |
| with calorific value use (RT 40 °C) | 51.2 kW | 34.7 kW |
| without calorific value use (RT 60 °C) | 47.0 kW | 31.3 kW |
| Fuel consumption ¹⁾ | | |
| with calorific value use (RT 40 °C) | 67.9 kW | 41.6 kW |
| without calorific value use (RT 60 °C) | 68.1 kW | 41.6 kW |
| CHPP coefficient ³⁾ | 0,43 | 0,32 |

- All of the following information at rated power (100 %) and 40 °C return -

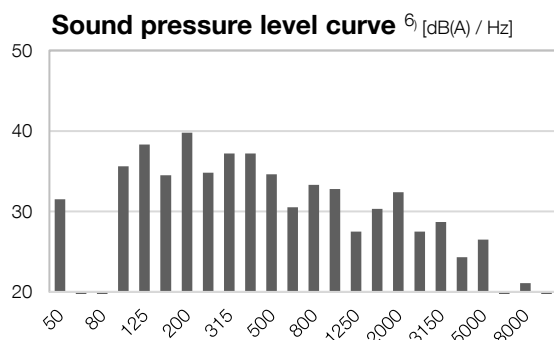
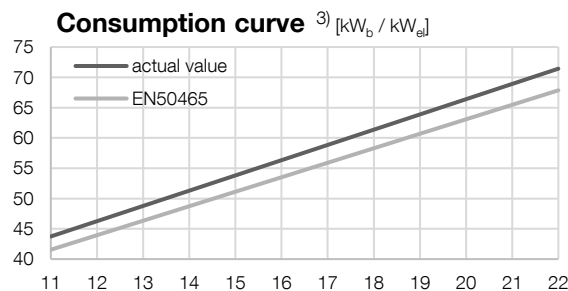
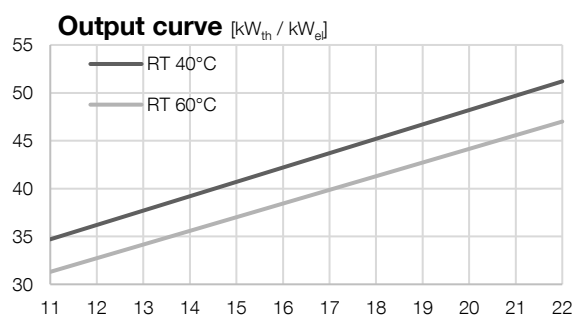
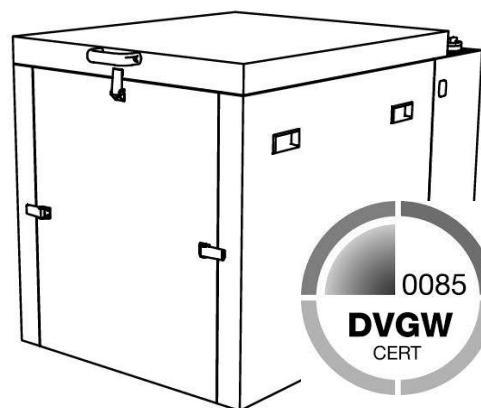
| Efficiency | - EN 50465 - | - actual value - |
|---|----------------|------------------|
| Total efficiency | 107.9 % | 102.5% |
| Electric efficiency | 32.4 % | 30.8 % |
| Thermal efficiency | 75.5 % | 71.7% |
| Primary energy savings ⁴⁾ | 35.4 % | 32.0 % |
| Primary energy factor f _{PE,WV} ⁷⁾ | 0.25 | 0.33 |
| Total annual use efficiency ⁴⁾ | 107.9 % | 102.5 % |

Gas-connection pressure 20-50 mbar
Gas-flow pressure ≥ 16 mbar
Flow rate with natural gas-H 7.1 Nm³/h (10.0 kWh/m³)
Flow temperature max. 90 °C
Return temperature max. 70 °C
Max. System pressure 4 bar (heating side)
Combustion air requirement min. 75 m³/h (85 kg/h)
Ambient temperature 5 °C to max. 35 °C

Exhaust gas emissions at 5 Vol% remaining oxygen
CO (carbon monoxide) < 100 mg/m³
NOx (nitrogen oxide) < 100 mg/m³
CH₂O (formaldehyde) < 1 mg/m³
Exhaust gas temperature³⁾ ~ 50 °C
Exhaust gas volume flow ~ 83 m³/h
Exhaust gas mass flow dry ~ 91 kg/h
Exhaust gas back pressure⁵⁾ max. 5 mbar after CS

Sound pressure level CHPP⁶⁾ **47.1 dB(A)** (1 m distance)

CHPP: Dimensions, weights and connections
L x W x H CHPP w/o handles 1.41 x 0.82 x 0.98 m
Weight CHPP incl. oil + water 895 kg
ø x H CS⁵⁾ 0.30 x 1.52 m (w/o flanges)
Weight CS⁵⁾ 30 kg
Colour CHPP Pantone 5517C
Heating connections R 1" Flow (warm)
R 1" Return (cold)
Exhaust gas connection CS⁵⁾ DN100 (Jeremias ew-kl)
Gas connection R 3/4"



¹⁾ According to EN 50465, tolerance 5 %

²⁾ Seasonal space heating efficiency CHP according to DIN EN 50465:2015, Kap. 7.6.2.2

³⁾ Return-temperature 40 °C

⁴⁾ According to EU RL 2004/8/EG with 100 % internal use

⁵⁾ Combination silencer

⁶⁾ According to DIN EN ISO 3744:2011-2

⁷⁾ According to EnEV 2014: f_{PE}-power = 2.8

⁸⁾ System as new values

⁹⁾ Calculated values only

¹⁰⁾ Standard delivery

| | |
|----------------------|------------------------|
| Engine | K24 |
| Type | Straight engine (Otto) |
| Operation | 4-stroke |
| Cylinder | 4 |
| Displacement | 2.4 litres |
| Nominal engine speed | 1500 1/min |

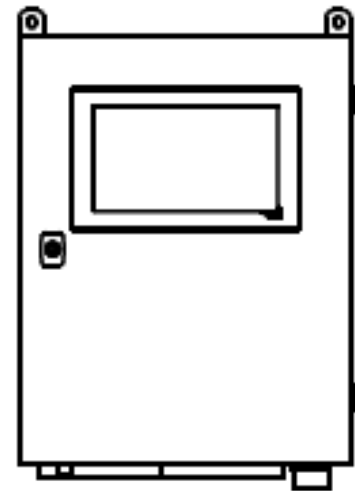
| | |
|---|----------------------|
| Cabinet: Dimension and weight | |
| <i>(Wall mounting, connections at the bottom, standard cable set 6 m)</i> | |
| W x D x H | 0.40 x 0.19 x 0.52 m |
| Weight | 21 kg |
| Colour | Pantone 5517C |

| | |
|-------------------------------|--------------------|
| Asynchronous generator | Emod WKASYG |
| Cooling | water-cooled |
| Power | 22.0 kW |
| Rated voltage | 400 V |
| Rated current | 39.7 A |
| Frequency | 50 Hz |

| | | |
|--|----------------------------------|-----------|
| Electrical data smartblock 22 | | |
| max. effective power PA_{max} | 22.0 kW | |
| max. apparent power SA_{max} | 22.7 kVA | 24.4 kVA |
| $\cos \varphi$ | 0.97 ind. ¹⁰⁾ | 0.90 ind. |
| Nominal current I_N | 32.7 A | 35.3 A |
| Nominal voltage U_N | 400 V AC | |
| Grid feed | three-phase | |
| Island operation available | no | |
| Motor start provided | no | |
| Starting current I_A | 0 A | |
| Short circuit current I''_k | 0.25 kA | |
| Short-circuit resistance of the system l_k | 10 kA | |
| Reactive power compensation | present | |
| Number of compensation steps | 1 | |
| Reactive power per step | 9.3 kvar | 4.8 kvar |
| Choke coil factor | 0 % | |
| Own consumption (Stand-by) | 0.060 kW | |
| Enclosure rating (DIN EN 60529) | IP 20 | |
| Line protection at building site | SLP 50 A „C“- Characteristics | |

Connection to the low voltage grid
 Operational mode according to VDE-AR-N 4105
 "Generation units at the low voltage grid - technical minimum requirements for connection and parallel operation of generation units at the low voltage grid"

| | |
|---|---------------------|
| Settings grid protection (VDE-AR-N 4105) | |
| Voltage drop protection $U<$ | 0.8 U_N (100 ms) |
| Voltage increase protection $U>$ | 1.1 U_N (100 ms) |
| Voltage increase protection $U>>$ | 1.15 U_N (100 ms) |
| Frequency drop protection $f<$ | 47.5 Hz (100 ms) |
| Frequency increase protection $f>$ | 51.5 Hz (100 ms) |



smartblock 22 control BR18
 The freely programmable PLC system is equipped with analogue resistive touch screen display for controlling, regulating, counting and visualization, which are required for operating the CHP. The 10.1" display shows information from the CHP and the current status of the system.

The BR18 can optionally be expanded by a heating control system, requirement peak load boiler (up to 2 boilers), data transfer via LAN and Internet with an error notification via email (only with DSL) and an interface connection to external systems (Ethernet UDP, Mod-Bus RTU/TCP, RK512, 3964R).

Additionally, the CHPP can be connected to virtual power plants using VHP-Ready and net.strom.

Standard reference conditions according to EN 50465: The technical data are based on natural gas H with a heating value of 10,0 kWh/Nm³ (Total air pressure 100 kPa, air temperature 25 °C, relative humidity 30 %, 0m above sea level). The nominal power can be less, depending on the actual height above sea level. The tolerance of the specific fuel consumption is +5 % at nominal power (EN 50465) and the tolerance of the usable thermal output is 7 % at nominal power. We reserve the right to change data and characteristics without prior notice in accordance with our business policy and the ongoing development process. All details refer to systems as new without wear and tear or traces of usage.