

Operational mode Mains parallel operation
Energy efficiency¹⁾ **A++**
Seasonal heating efficiency²⁾ **197.5 %**

Fuel **LPG**

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⁾	54.9 kW	35.3 kW
with calorific value use (RT 40 °C)	54.1 kW	35.2 kW
without calorific value use (RT 60 °C)	50.3 kW	32.8 kW
Fuel consumption ¹⁾		
with calorific value use (RT 40 °C)	74.2 kW	44.6 kW
without calorific value use (RT 60 °C)	73.9 kW	44.6 kW
CHPP coefficient ³⁾	0.41	0.31

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

Efficiency	- EN 50465 -	- actual value -
Total efficiency	102.6 %	97.4 %
Electric efficiency	29.7 %	28.2 %
Thermal efficiency	72.9 %	69.2 %
Primary energy savings ⁴⁾	37.1 %	33.8 %
Primary energy factor f _{PE,WV} ⁷⁾	0.37	0.45
Total annual use efficiency ⁴⁾	102.6 %	97.4 %

Gas-connection pressure **20-50 mbar**
Gas-flow pressure **≥ 16 mbar**
Flow rate with LPG (DIN 51622) **3.0 Nm³/h (26.29 kWh/m³)**
Flow temperature **max. 90 °C**
Return temperature **max. 70 °C**
Max. System pressure **5 bar (heating side)**

Combustion air requirement **min. 75 m³/h (85 kg/h)**
Ambient temperature **5 °C to max. 35 °C**

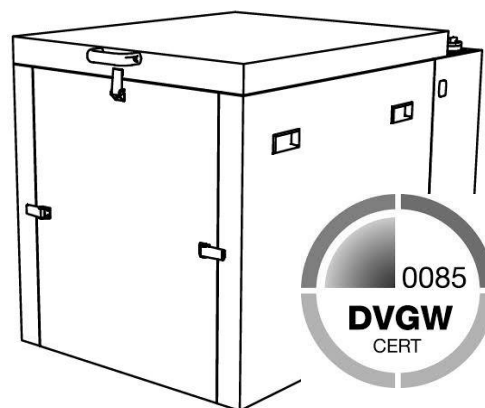
Exhaust gas emissions at 5 Vol% remaining oxygen
CO (carbon monoxide) < 100 mg/m³
NOx (nitrogen oxide) < 100 mg/m³
CH₂O (formaldehyde) < 1 mg/m³

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**

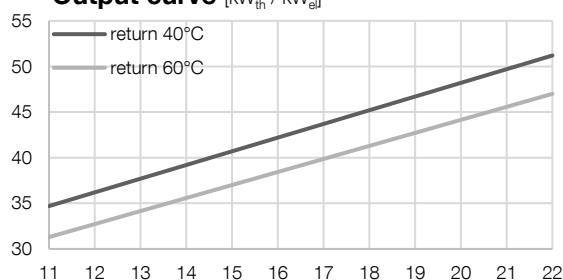
Sound pressure level CHPP⁶⁾ **47.1 dB(A) (1 m distance)**

CHPP: Dimensions, weights and connections

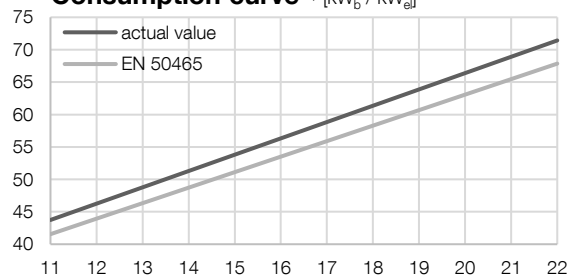
L x W x H CHPP w/o handles	1.41 x 0.82 x 0.98 m
Weight CHPP incl. oil + water	895 kg
ø x H CS ⁵⁾	0.30 x 1.52 m (w/o flanges)
Weight CS ⁵⁾	30 kg
Colour CHPP	Pantone 5517C
Heating connections	R 1" Flow (warm) R 1" Return (cold)
Exhaust gas connection CS ⁵⁾	DN100 (Jeremias ew-kl)
Gas connection	R 1/2"



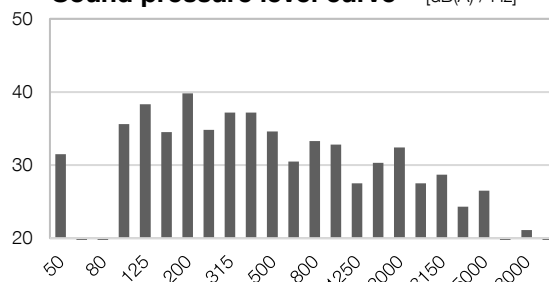
Output curve [kW_{th} / kW_{el}]



Consumption curve³⁾ [kW_b / kW_{el}]



Sound pressure level curve⁶⁾ [dB(A) / Hz]



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

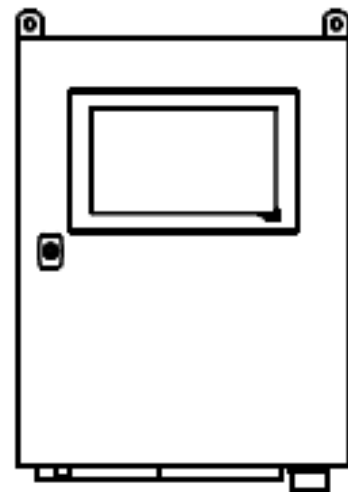
Cabinet: Dimension and weight	
<i>(Wall mounting, connections at the bottom, standard cable set 6 m)</i>	
W x D x H	0.40 x 0.19 x 0.52 m
Weight	21 kg
Colour	Pantone 5517C

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.