



EURO Solar Collector Type C20/C22

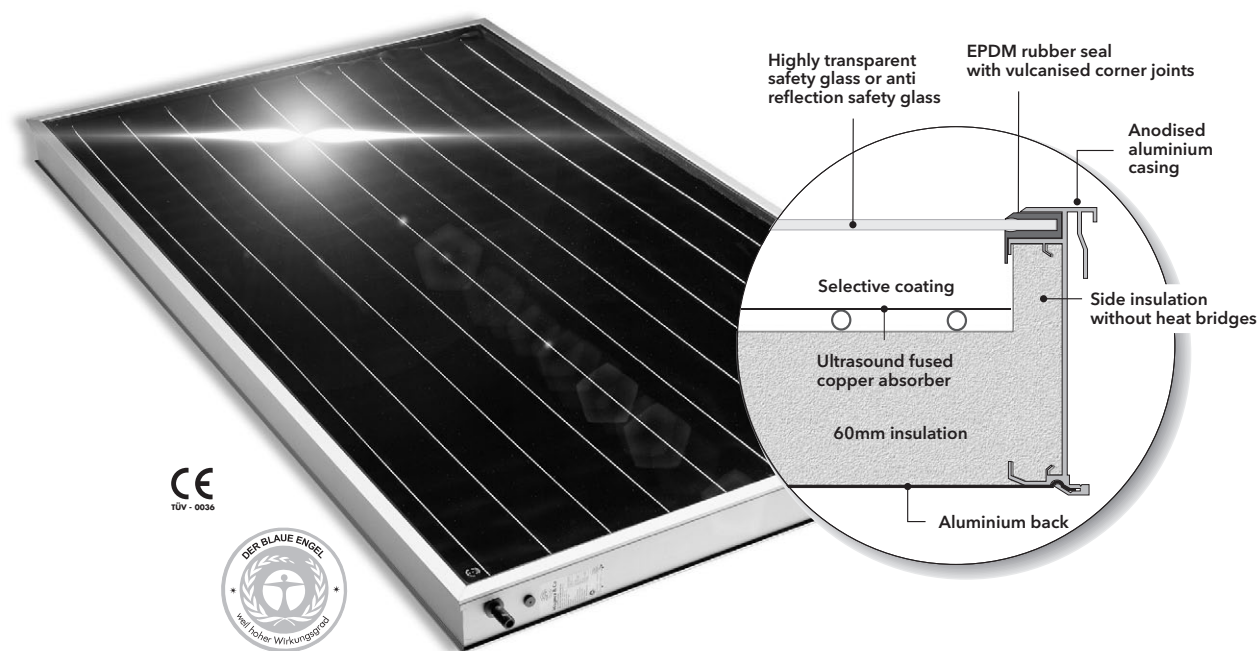


Figure 1 The EURO C20/C22 - powerful, versatile and rapidly installed

Advantages

High Efficiency through Perfect Details

Thanks to its highly selective vacuum coated flat plate absorber, a 60 mm back insulation and the seamless side insulation, the EURO solar collector is characterized by very low heat losses. In addition it is equipped with highly transparent safety glass. The EURO C20 AR variation additionally features sunarc® anti reflection glass increasing the solar yield by an additional 6-10% thanks to intelligent nano-technology based upon the moth-eye effect.

High-Quality Materials

Anodised aluminium profiles, aluminium back, high-transparency safety glass cover, weather resistant EPDM rubber seals with vulcanised corner joints and ultrasound-fused, heat-resistant copper absorber ensure safe operation for decades.

Excellent Price/Performance Ratio

Tested quality according to European norm EN 12975 and the CE label. Repeated awards from the Independent Institute for Consumer's Goods Testing "Stiftung Warentest".

Simple and Fast Installation

Tried and tested installation kits, photo-instructions and weldless connections to the solar circuit.

Variable Mountings and Arrangements

On-roof, roof integrated (in-roof) and free standing, vertically and horizontally.

1. Technical Data

Feature	EURO C20 AR	EURO C20 HTF	EURO C22 AR	EURO C22 HTF
Total area / aperture area	2.61 / 2.39 m ²		2.24 / 2.02 m ²	
Size W x H x D	2151 x 1215 x 110 mm		1930 x 1160 x 110 mm	
Efficiency (DIN 4757- 4)	$h_o = 85.4\%$ $k_1 = 3.37 \text{ W/m}^2\text{K}$ $k_2 = 0.0104 \text{ W/m}^2\text{K}^2$	$h_o = 81.8\%$ $k_1 = 3.47 \text{ W/m}^2\text{K}$ $k_2 = 0.0101 \text{ W/m}^2\text{K}^2$	$h_o = 85.4\%$ $k_1 = 3.37 \text{ W/m}^2\text{K}$ $k_2 = 0.0104 \text{ W/m}^2\text{K}^2$	$h_o = 81.8\%$ $k_1 = 3.47 \text{ W/m}^2\text{K}$ $k_2 = 0.0101 \text{ W/m}^2\text{K}^2$
Incident angle modifier 50°	$k_{dir} = 97\%$ $k_{diff} = 94\%$	$k_{dir} = 94\%$ $k_{diff} = 88\%$	$k_{dir} = 97\%$ $k_{diff} = 94\%$	$k_{dir} = 94\%$ $k_{diff} = 88\%$
Annual collector yield (ITW 5 m ² *)	546 kWh/m ² a	509 kWh/m ² a	546 kWh/m ² a	509 kWh/m ² a
Collector housing	60 mm back insulated and frame insulated aluminium casing; specific heat capacity 4.7 kJ/(m ² K)			
Glass cover	4 mm solar safety glass with sunarc®-antireflex-coating	4 mm solar safety glass	4 mm solar safety glass with sunarc®-antireflex-coating	4 mm solar safety glass
Transmission	$\tau = 96\%$	$\tau = 91\%$	$\tau = 96\%$	$\tau = 91\%$
Absorber	Heat conducting sheet and pipes made out of copper, max. pressure 10 bar			
Absorber coating	Highly selective vacuum coating, $\alpha = 95\%$, $\epsilon = 5\%$			
Absorber capacity	1.3 litre		1.1 litre	
Conductor fluid	DC20 (Propylenglycol with inhibitors), mixing ratio according to requirements			
Working pressure	max. 10 bar			
Idle temperature (according to DIN 4757-3)	232 °C	227 °C	232 °C	227 °C
Sensor tube	6 mm internal diameter			
Connections	½" male			
CE lable	TÜV certificate 0036, EC type test (Module B) in accordance with EU directive 97/23/EC			
Max. allowed pressure/suction forces	3.4 kN/m ² (take wind and snow loads into account! Consider static capacity of roof!)			
Inclination range	10 - 85° for on-roof and free standing setup, 27 - 85° for roof integration			
Weight	48 kg		43 kg	
* Calculated for 4 person household at Würzburg/Germany with 300 l solar cylinder and 5 m ² collector area.				

Table 1 Technical Data EURO C20 / C22.

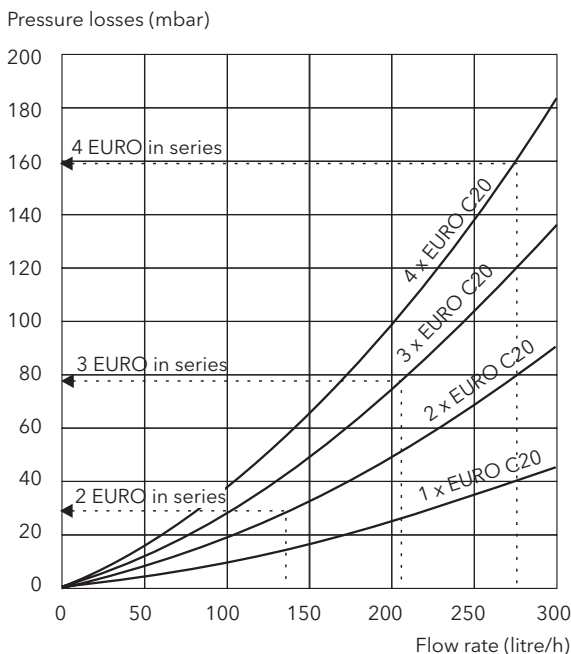


Figure 2 Pressure loss EURO C20 in relation to the volume flow and the number of collectors connected in series
Volume flow $v=30 \text{ l/m}^2\text{h}$; heat transfer medium: 40% glycol, 60% water at 30 °C; examples with $v=30 \text{ l/m}^2\text{h}$; pressure losses do not account for connections and connection pipes.

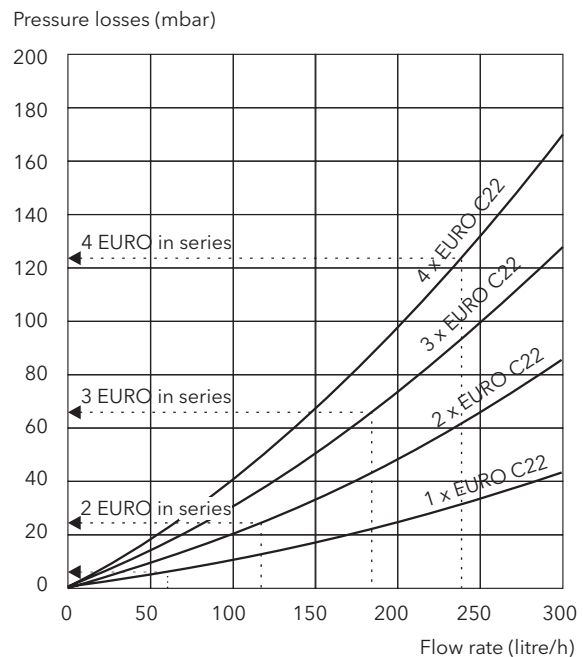


Figure 3 Pressure loss EURO C22 in relation to the volume flow and the number of collectors connected in series.
Volume flow $v=30 \text{ l/m}^2\text{h}$; heat transfer medium: 40% glycol, 60% water at 30 °C; examples with $v=30 \text{ l/m}^2\text{h}$; pressure losses do not account for connections and connection pipes.

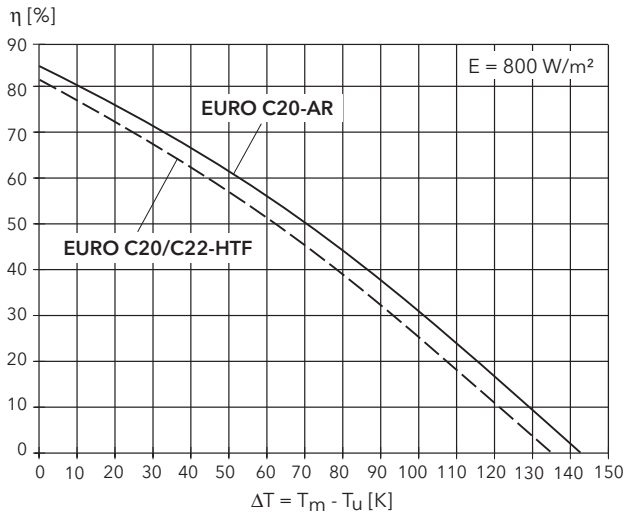


Figure 4 Efficiency curves of EURO C20 / C22 HTF and EURO C20 AR depending on $T_m - T_u$ ($E = 800 \text{ W/m}^2$) as measured at the ISFH Hameln according to DIN EN 12975.

2. Planning

2.1 Wind and Snow Loads

Snow and wind loads are a significant factor for structural planning. European norms were established, albeit without specifically taking solar installations into account.

Wind and snow loads affect the collectors and the installation system. Depending on the conditions and height of the installation site as well as the collector inclination, the mechanical loads on the system can vary considerably. Also see guidelines for the planning of structural frameworks and standards EUROCODE 1, (European guidelines for structural planning). With combined snow and wind loads the maximum strain for the EURO solar collector is $2,250 \text{ N/m}^2$. Note that wind suction spikes may occur on roof edges! Please read the information in the applicable guidelines for the planning of structural frameworks.

It is mandatory to follow best practice rules for static planning, especially related to snow and wind loads. Different codes and regulations apply in different countries and regions. For more information refer to our installation manuals and the upcoming leaflet "Notes on Snow and Wind safe Installation of Solar Collectors".

In case of doubt and/or in absence of exact static calculations (not recommended!) always allow for additional fixtures, weight, anchors, and screws, especially in regions with known weather extremes.

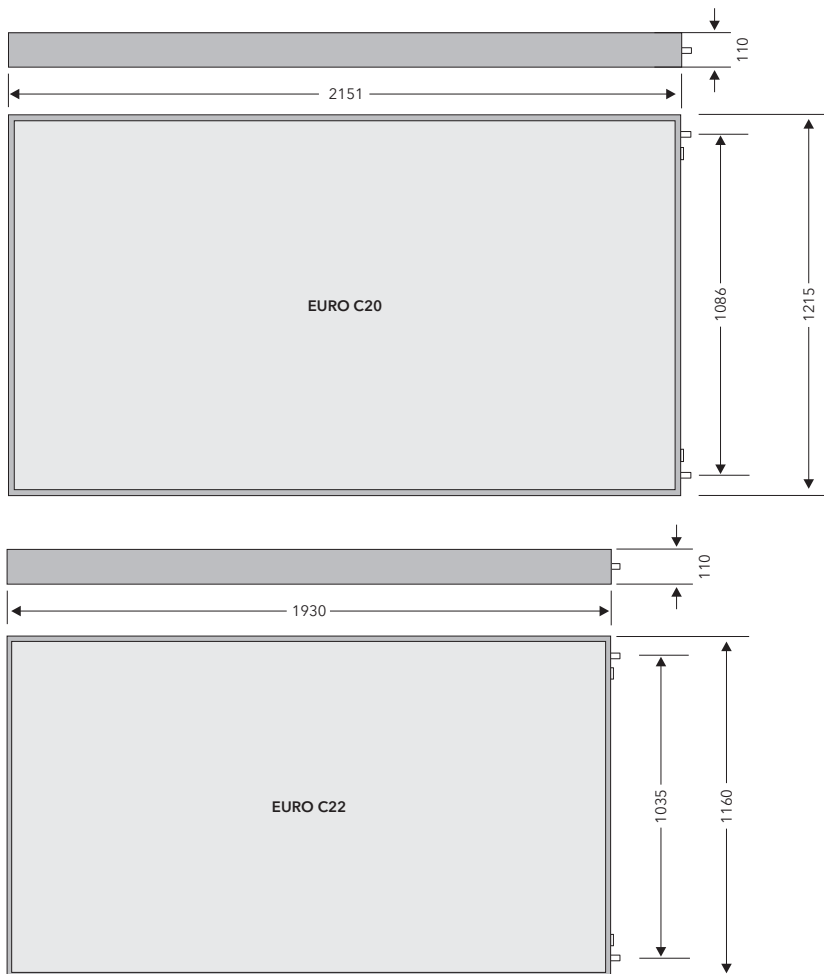


Figure 5 Dimensions EURO C20/EURO C22.

2.2 Arrangements and Installation Types

On-Roof Installation

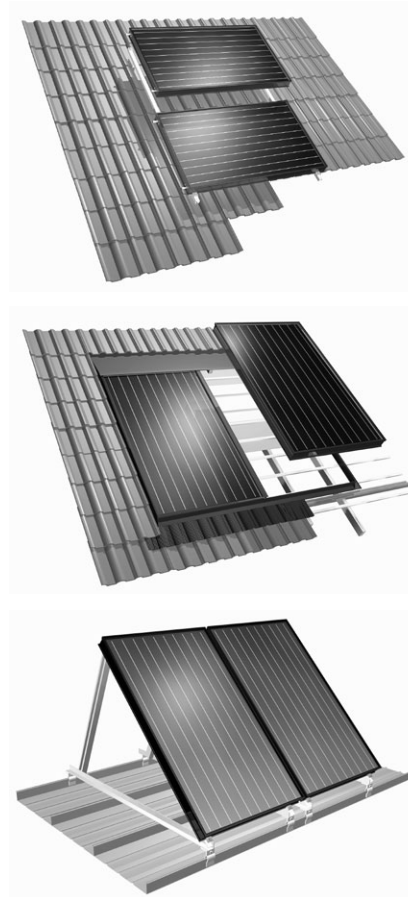
The collectors can be installed above the roof surface with rafter brackets and mounting rails, either horizontally or vertically (horizontal preferred). Even during the installation, the roofing remains almost completely unharmed. We offer roof-anchors and rafter brackets for almost every roofing type. Up to 4 EURO collectors can be connected in series. The connection hoses with pre-assembled insulation also significantly simplify the on-roof pipeworks. Distribution pipes on the roof are not required.

In-Roof Installation

The attractive in-roof installation is possible for roofs with a minimum pitch of 27° and any tile cover. In this case the collectors are installed vertically, with the connections pointing upwards. The aluminium and corrugated lead flashing can be joined without requiring soldering work in the roof.

Free Standing Installation

The free standing setup allows horizontal or vertical installation with adjustable inclination. Concrete slabs or gravel covered aluminium trays can be used as foundation.



2.3 Horizontal Collector Arrangement (On Roof)

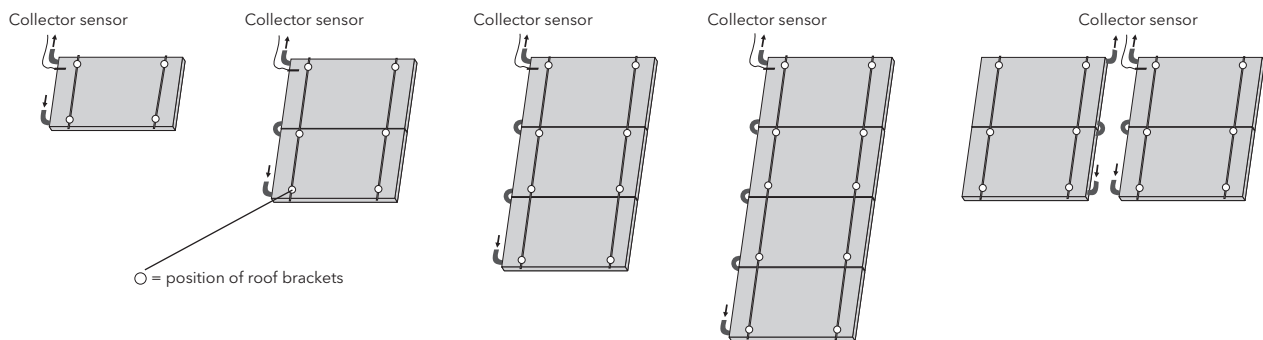


Figure 6 **Horizontal collector arrangement:** Up to 4 EURO in serial connection. The mounting rails run vertically. Roof brackets must be evenly distributed (the distances of brackets are approx. values). Combinations of serial and parallel connection are also possible (see right). A EURO on-roof expansion kit is then required.

2.4 Vertical Collector Arrangement (On Roof and In Roof)

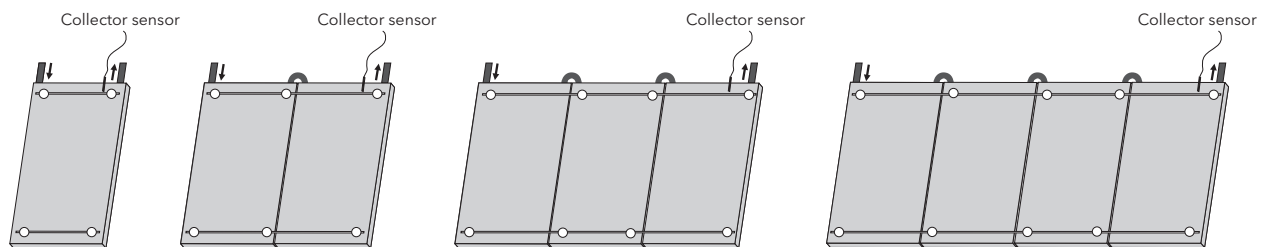


Figure 7 **Vertical collector arrangement:** Up to 4 EURO in serial connection. The mounting rails run vertically. More than 4 EUROS are combined from fields with serial and parallel connections.