

MEGA Collector and Accessoires

The MEGA Collector is a large-scale collector specifically developed for solar thermal district heating and industrial process heat applications. The collector header with a 64 mm inner diameter allows for large systems with minimal piping effort.

Thanks to the simple interconnection of pre-assembled collector segments, installation time, heat losses, and therefore overall costs, can be significantly reduced compared to conventional collectors.

The MEGA Collector can be equipped with three different tube types, which differ in their shut-off and stagnation temperatures. The physical shut-off mechanism of the heat pipe (hp) tubes prevents overheating and steam formation when no heat is being extracted.



Advantages:

- Large collector surfaces without additional piping – low cost and high yield
- Pre-assembled collector segments that can be joined into a large collector using segment connectors
- Overheating protection even without heat extraction – no steam formation, smaller expansion vessels, and lower temperature stress
- Double-coated flat absorber for absorption of direct and reflected radiation
- Tubes rotatable by 360° for adjustment if not perfectly south-facing
- Durable glass-to-metal seal to maintain the high vacuum inside the tube
- Nano-coating on each tube for maximum transmission
- Tinox-coated absorber and piping in vacuum – no material aging or performance loss
- High hail resistance (HW 4)
- Dry tube integration into the manifold – allowing tube replacement during operation



MEGA Collector Segment with 78 Tubes

Technical Data:

Output:	8,2 kW
Stagnation temperature:	Depending on tube type, 130 °C bis 170 °C ($G=1000 \text{ W/m}^2$, $T_a=30 \text{ °C}$)
max. operating temperature:	185 °C
Tube integration:	dry
Frame dimensions:	L 2184 x B 5950 x H 212 mm
Gross area, reference area A_{sol} :	12,99 m ²
Collector efficiency:	46 %
η_{a0} :	0,49
a_1	0,63 W/(m ² K)
a_2	0,00 W/(m ² K ²)
IAM	1,06
Manifold pipe:	68 x 2 mm
Number of tubes:	78 pieces
Weight:	368 kg
Fluid volume:	17,0 Liters
Minimum flow rate (operation):	600 l/h
Tilt angle:	10 ° bis 80 °
Minimum distance between two segments:	5 mm
Collector connection:	Threaded, conical seal (1½")
Max. permissible operating pressure:	16 bar
Heat transfer medium:	VT 51 hp or treated water according to VDI 2035
Tube hail impact test:	DIN EN 12975-2:2006
Insulation:	PIR rigid foam, 0,023-0,026 W/(mK)
Solar Keymark:	011-7S2827R

Annual Yield in kWh per m² Gross Area (Keymark):

mean fluid temperature	25 °C	50 °C	75 °C
Athen	966	901	841
Davos	854	793	737
Stockholm	613	558	512
Würzburg	654	596	546

Permissible Wind and Snow Zones for MEGA Segment at 30° Tilt:

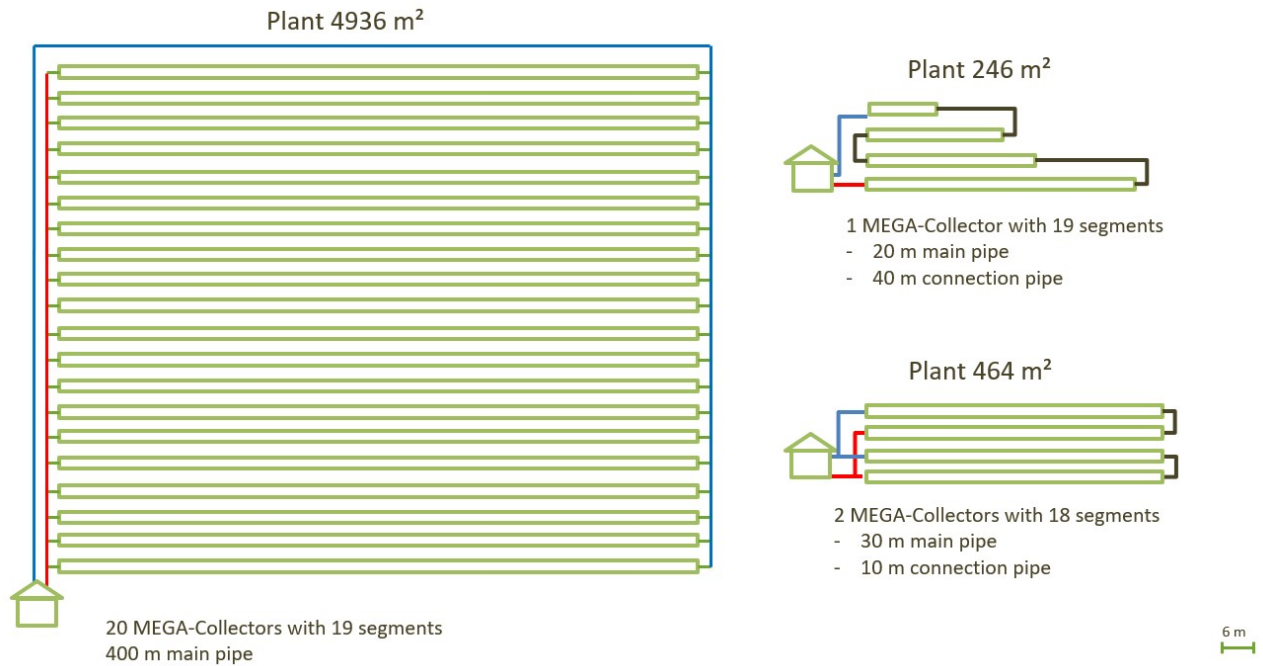
	Height a.s.l.	Height above collector	Snow load zone	Snow load zone
costal	8 m	5 m	3	3
	45 m	6 m	2	2
inland	490 m	15 m	2	2

For higher wind and snow loads, we offer a reinforced collector segment.

Article Numbers:

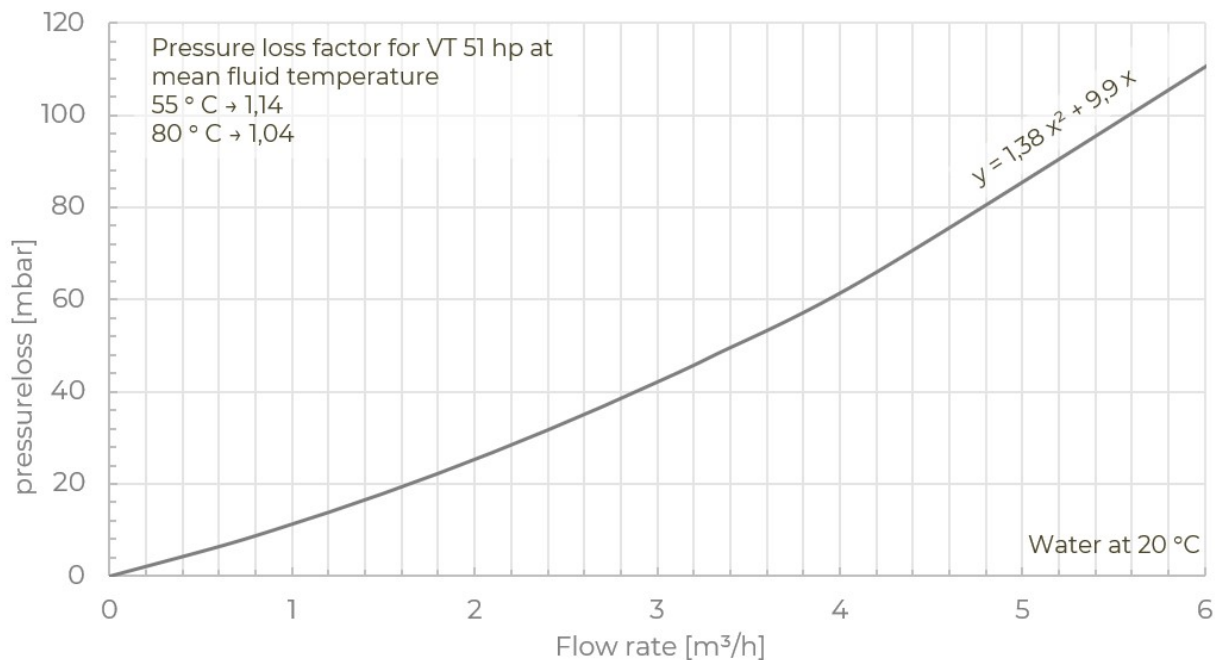
	Article Number
MEGA-Segment with 78 tubes hp100	15084
MEGA-Segment with 78 tubes hp140	15082
MEGA-Segment with 78 tubes hp160	15083

Examples of Field Layout and Piping



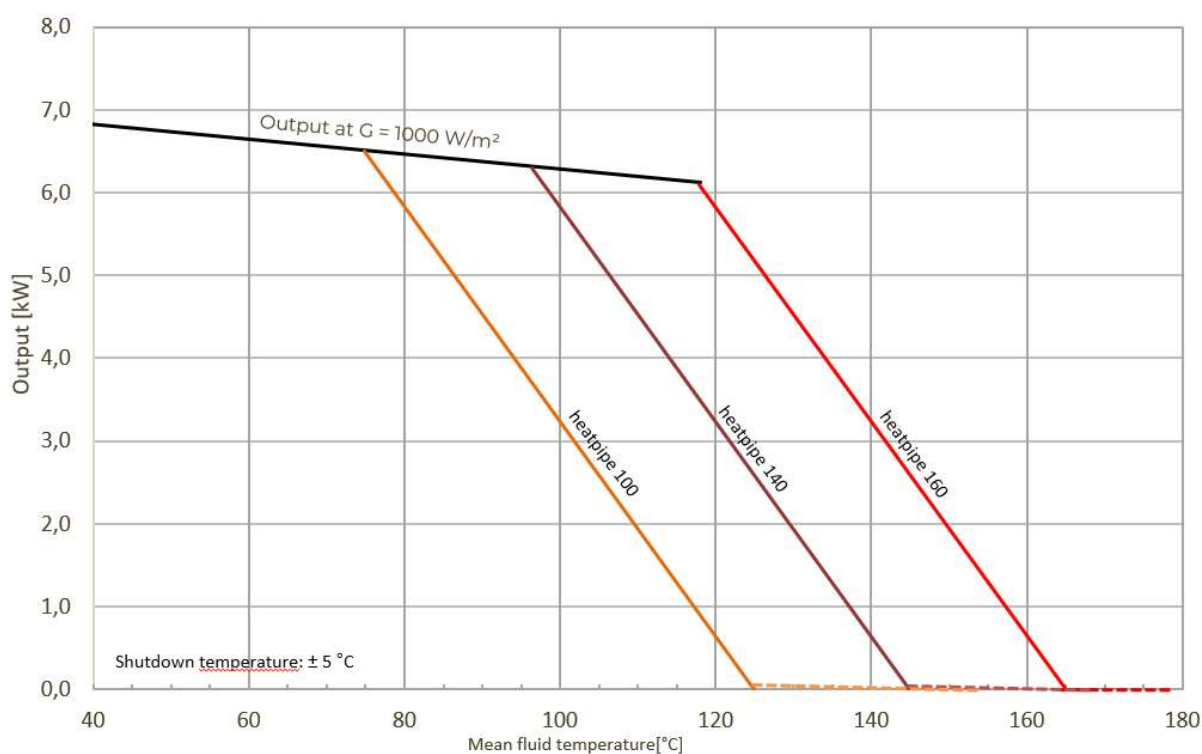
Pressure loss MEGA Collector Segment

Pressure drop of a MEGA-Collector Segment at 20 °C with water



Shutdown Behavior

Overheating of the collector is prevented by a physical power shutdown inside the tube. The shutdown begins at a specific shutdown temperature.



Tube Type	hp 100	hp 140	hp 160
Shutdown Temperature ¹	75 °C	97 °C	118 °C
Stagnation Temperature ($G=1000 \text{ W/m}^2$, $T_a=30^\circ\text{C}$)	130 °C	145 °C	170 °C
Final temperature ²	154 °C	168 °C	178 °C

¹ Above this temperature, the power decreases (at an irradiance of 1000 W/m^2) due to the physical shutdown of the vacuum tube. The shutdown temperature shifts to higher temperatures at lower irradiance levels.

² The possible final temperature is essentially determined by the irradiation level, irradiation duration, and outside temperature. Higher values lead to higher Final temperatures.

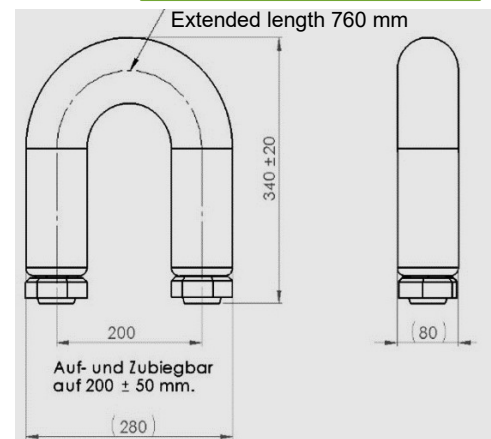
MEGA Collector Segment Connector

Technical Data:

Extended length:	760 mm
Corrugated pipe:	Stainless steel, DN40
Corrugated pipe length:	approx. 600 mm
Connection type:	Conically sealing (1 ½" AG / AG)
Insulation:	19 mm HT iso and peck protection
Inner diameter CT:	40,7 mm
Outer diameter CT:	49,5 mm
Material of corrugated pipe:	1.4404
Weight:	2,5 kg
Fluid volume:	1 Liter
Distance between connections:	200 mm
Maximum extension:	250 mm
Minimum compression:	150 mm

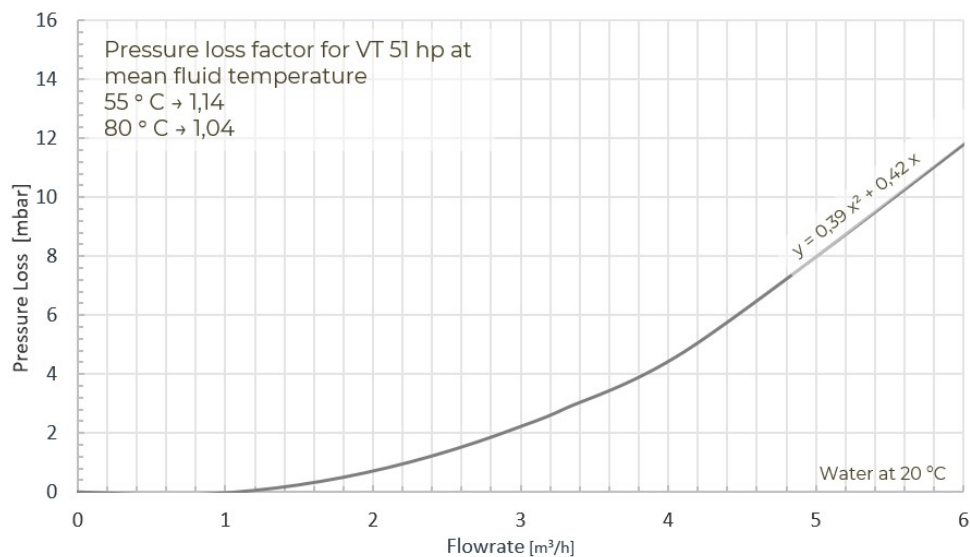
Possible segment spacing:	5 - 50 mm
Max. allowable operating pressure at 20 °C:	12 bar
Max. allowable operating pressure at 170 °C:	8,5 bar
Article Number:	15013

 The MEGA Segment Connector must not be permanently deformed.



Pressure Loss

Pressure drop of a MEGA Collector Segment Connector at 20 °C with water.

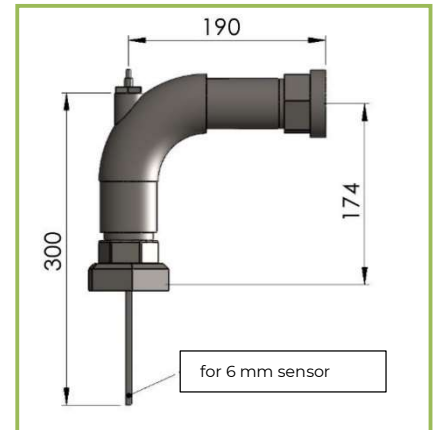


MEGA-Sensor Port 90°

The collector connection fitting with integrated sensor port enables optimal positioning of the collector sensor. Mounted at the segment connection, the long immersion sleeve allows direct measurement of the fluid temperature inside the manifold. The sensor thus measures the correct collector temperature without flushing.

Technical Data:

Nominal diameter:	DN40
Fluid volume:	0,4 Liters
Material:	steel
Connection type:	Conically sealing (1 ½")
Sensor diameter:	6 mm
Immersion sleeve thread:	½" female thread
Immersion sleeve length:	300 mm
Weight:	2 kg
Max. pressure:	12 bar
Article Number:	15239



MEGA Collector Connector

Collector connection made of insulated stainless steel corrugated pipe for connecting the collector to the piping network. The connector compensates for thermal expansion and installation tolerances in field piping. Supplied straight and can be bent once.



Technical Data:

Nominal diameter:	DN40
Fluid volume:	1,2 Liters
Extended length:	760 mm
Corrugated pipe material:	Stainless steel
Corrugated pipe length:	600 mm
Connection type:	Conically sealing (1 ½")
Insulation:	19 mm HT insulation and peck protection
Inner Diameter CT:	40,7 mm
Outer Diameter CT:	49,5 mm
Weight:	2,5 kg
Max. operating pressure at 20 °C / 170 °C:	12 bar/ 8,5 bar
Article Number:	15014

MEGA-Transitions Fitting

Counterpart for connecting the collector connector to the on-site field piping.

Technical Data:

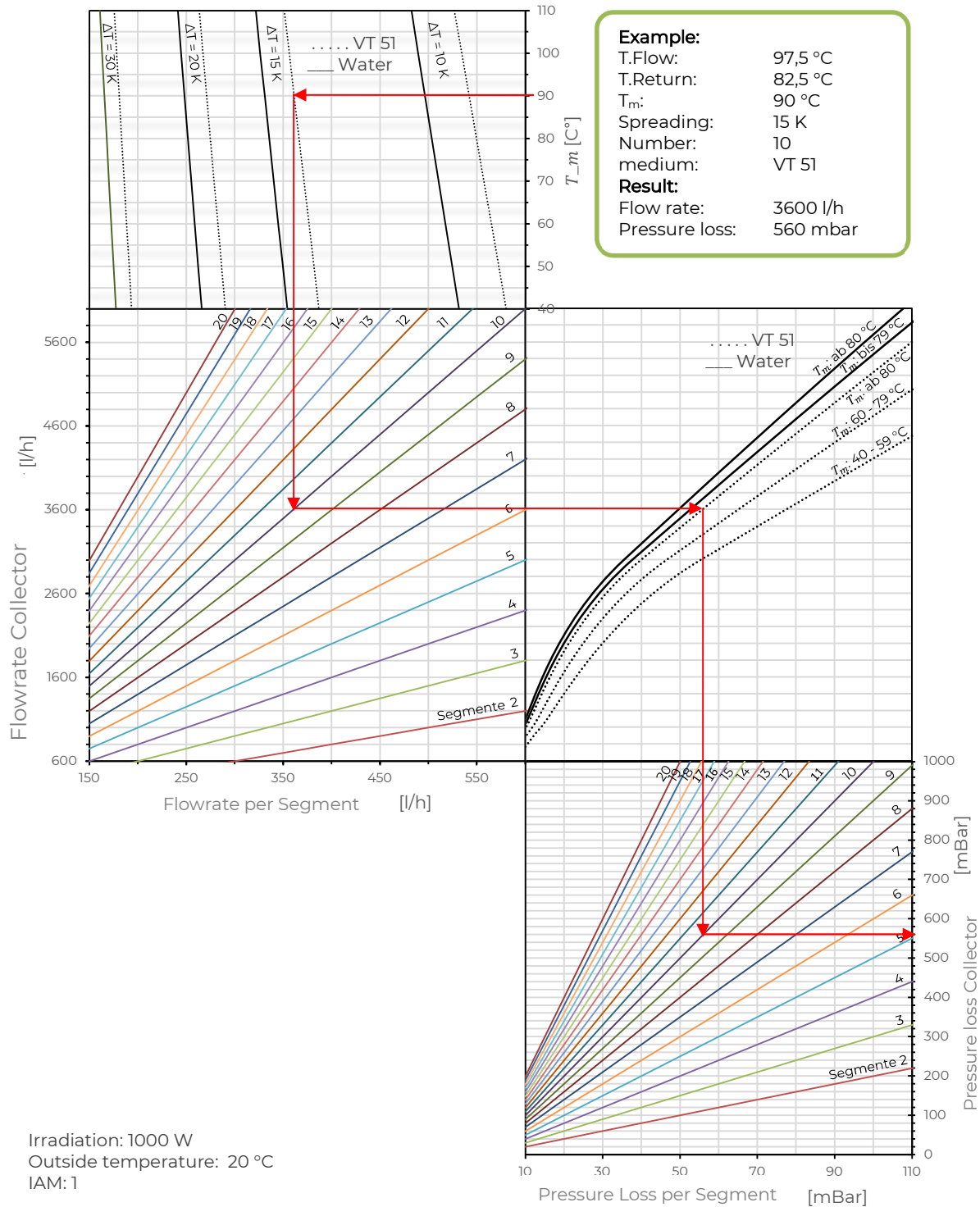
Nominal diameter:	DN40
Material:	Black malleable cast iron
Threaded connection:	1 ½" IG
Sealing:	Conically sealing
Max. permissible pressure:	25 bar
Weight:	0,2 kg



Grafische Ermittlung von Durchfluss und Druckverlust

This diagram can be used to determine the flow rate and pressure drop of MEGA collectors, including collector segment connectors, with 2 to 20 collector segments. A collector refers to several collector segments connected in series via segment connectors. A MEGA collector segment measures 5.95 m x 2.18 m (12.99 m²). The required inputs are the average collector temperature, the heat transfer medium, the spread, and the desired number of segments.

Spreading and heat transfer medium



Technical changes reserved.