

## WEM Climate Panel MV-D

Article no. 02011-3

**Description** The WEM Climate Panel MV-D is 25-mm-thick stabilised clay panel with integrated pipes made of oxygen-proof multi-layer composite material that are suitable for heating and cooling purposes.

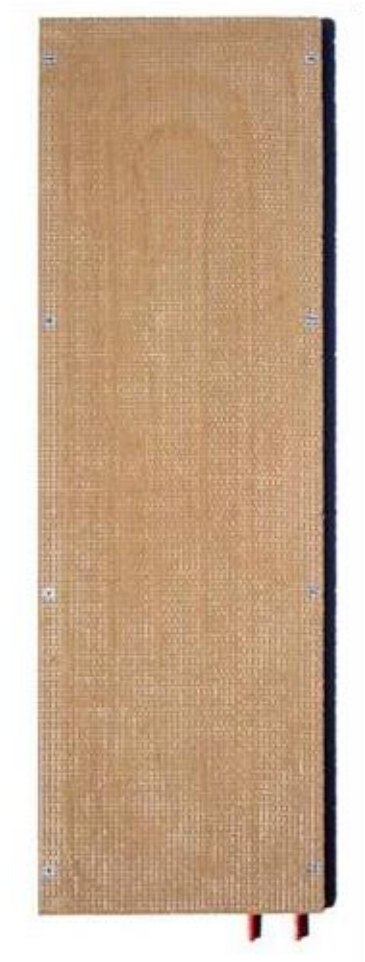
**Scope of application** The WEM Climate Panel MV-D is a dry construction panel, which is used for the following applications:

- in ceiling assembly
- or as wall heating/cooling system if a high moisture load is to be expected in later operation (e. g. due to condensate formation at high cooling loads).

The low-temperature heating system can be used as an exclusive source of heating/cooling or to support the existing heating/cooling system. It is suitable for new construction as well as for renovation and refurbishment of old buildings. As a dry construction component, the WEM Climate Panel MV-D is ideally suited for solid timber houses and timber frame houses.

### Benefits

- High noise protection
- Very short drying times
- Easy and quick installation
- Minimum increase in humidity due to thin plaster coats
- Capillary conductive
- The multi-layer composite pipe with a diameter of 16 mm is completely impermeable to oxygen and vapour.
- It is moisture-resistant due to an admixed dispersion solution but offers almost constant permeability to vapour.



III. 1

## Materials

Panel	Natural construction loam, plant fibres, mixed grained washed sand Polymer dispersion < 1 % (only for Climate Panel MV-D)
Heating pipe	WEM Multi-Layer Composite Pipe, $\varnothing$ 16 x 2 mm (PE-RT/aluminium/PE-RT), tested as per DIN DVGW*
Reinforcement	Glass-fibre fabric

\*DVGW – German Technical and Scientific Association for Gas and Water

## Technical data

Max. temperature/pressure	95 °C/10 bars
Connections	WEM® Press-fit Fittings (press contour U16)
Heating power* * see page 4	85 W/m <sup>2</sup> at $T_O = 12.5$ °C 170 W/m <sup>2</sup> at $T_O = 22.5$ °C
Cooling power* * see page 5	e. g. 52 W/m <sup>2</sup> ; at $T_{indoor} 25$ °C, $T_{supply} 16$ °C and $T_{return} 18$ °C
Bulk density	1 400 kg/m <sup>3</sup>
Compressive resistance $\sigma_d$	> 2.5 N/mm <sup>2</sup>
Thermal conductivity $\lambda$	0.59 W/m·K
Specific thermal capacity $C_p$	1.0 kJ/kg·K
Vapour diffusion resistance $\mu$	5 to 10
Material class	A2 (non-combustible) as per DIN EN 13501-1
Edge shape	Blunt
Automatic control	Room thermostats and motorized actuators in the heating manifold or thermostat valves (WEM Multibox)
Fastening	Screws, $\varnothing$ 4.5 to 6 mm, cramps
To be ensured on site	Protect against moisture, store in dry location, installation temperature $\geq 5$ °C

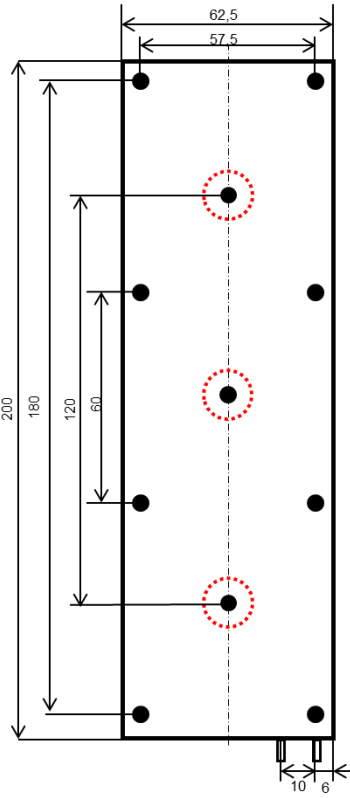
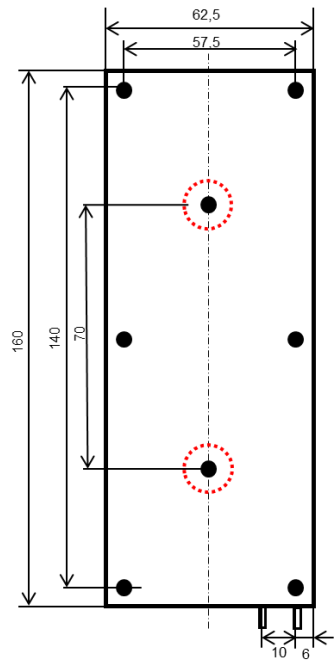
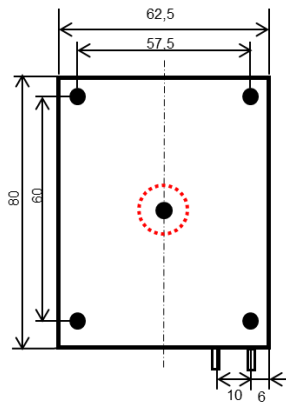

## Noise protection

Solid structure	Reduction: 2.8 dB*
Solid timber	Reduction: 8.5 dB*
Timber frame	Reduction: 10.6 dB*

\*see page 6

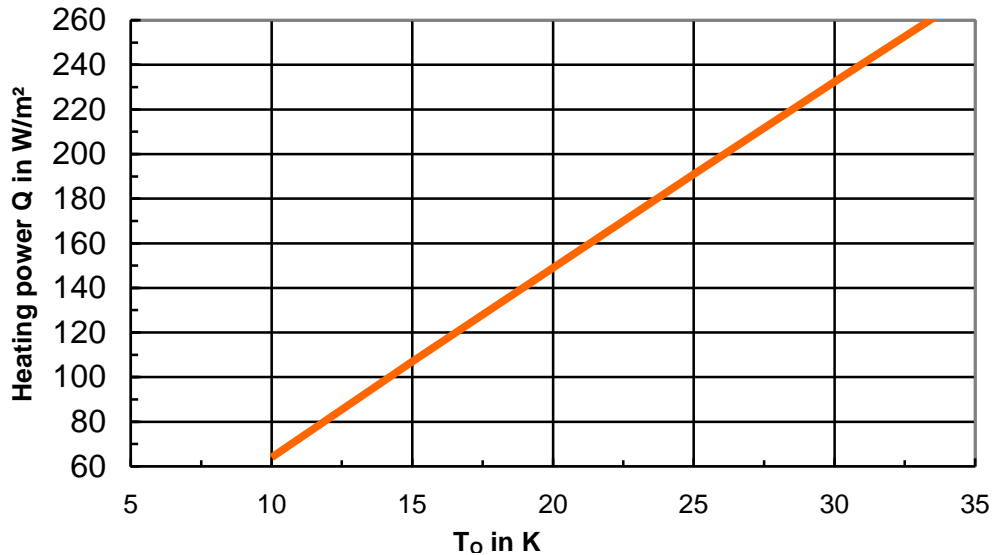
	Climate Panel MV-D 200	Climate Panel MV-D 160	Climate Panel MV-D 80
Dimensions	200 x 62.5 x 2.5 cm	160 x 62.5 x 2.5 cm	80 x 62.5 x 2.5 cm
Heating area	1.25 m <sup>2</sup>	1.0 m <sup>2</sup>	0.5 m <sup>2</sup>
Weight	approx. 43 kg	approx. 35 kg	approx. 18 kg
Water content	approx. 1.3 kg	approx. 1.1 kg	approx. 0.6 kg
Pipe length	12 m	10 m	5 m
Pressure loss	For information concerning the pressure loss, see "Design" on page 4.		

### Dimensions and fastening points:

Climate Panel MV-D 200	Climate Panel MV-D 160	Climate Panel MV-D 80
		
 - Additional fasteners for installation on ceilings and in roof pitches For Climate Panels MV-D , the additionally required disk fasteners are installed at the factory.		

## Heating power

The heating power depends on the supply and return temperatures of the heating medium and the desired indoor temperature. The characteristic represents the heating power at different temperatures.



$$T_O = \frac{T_S + T_R}{2} - T_I$$

$T_O$  = mean overtemperature  
 $T_S$  = supply temperature  
 $T_R$  = return temperature  
 $T_I$  = indoor temperature (20 °C in the example)

The table below gives an overview of typical temperature conditions and the associated heating power

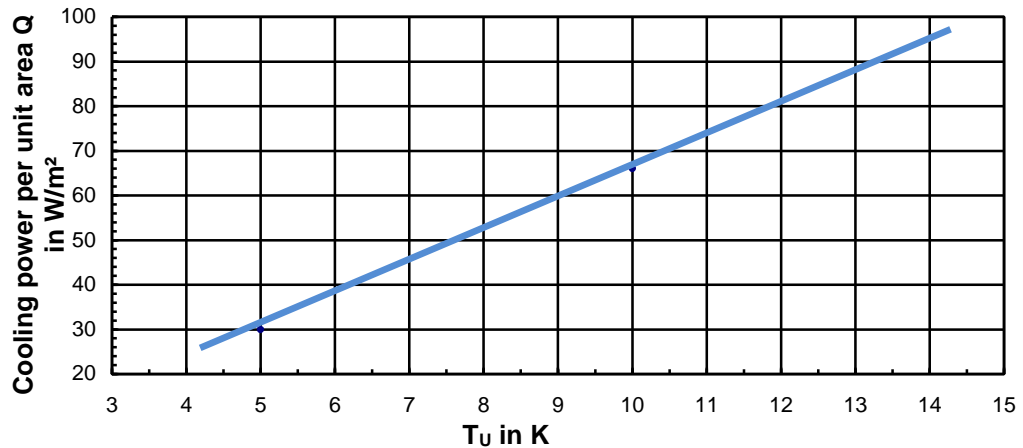
T <sub>Supply</sub> [°C]	T <sub>Return</sub> [°C]	Q [Watt/m <sup>2</sup> ]
35	30	85
40	35	128
45	35	150
45	40	170
50	40	190
50	45	212
55	45	232
55	50	255

**The specified values only apply if WEM Clay Plaster was used and the plaster coat does not exceed a thickness of 8 mm.**

*Characteristic taken from the test report in accordance with DIN EN 442; testing institute: HLK Stuttgart, 02/2004*

## Cooling power

The cooling power depends on the supply and return temperatures of the heating medium and the desired indoor temperature. The characteristic represents the cooling power at different temperatures.



$$T_U = \frac{T_R - T_S}{\ln \left[ \frac{T_I - T_S}{T_I - T_R} \right]}$$

$T_U$  = logarithmic undertemperature  
 $T_S$  = supply temperature  
 $T_R$  = return temperature  
 $T_I$  = indoor temperature

The table below gives an overview of typical temperature conditions and the associated cooling power.

T <sub>Indoor</sub> [°C]	T <sub>Supply</sub> [°C]	T <sub>Return</sub> [°C]	Q [Watt/m <sup>2</sup> ]
23	16	18	37
	16	20	28
	18	20	24
	18	22	-
25	16	18	52
	16	20	42
	18	20	37
	18	22	28
27	16	18	66
	16	20	57
	18	20	52
	18	22	41

**The specified values only apply if WEM Clay Plaster was used and the plaster coat does not exceed a thickness of 8 mm.**

*Characteristic taken from the test report in accordance with DIN 4715-1; testing institute: HLK Stuttgart, 02/2004*

**Noise protection**

A master thesis at the University of Koblenz examined the influence of 25 mm WEM Clay Panels (LP) and Climate Panels on three typical wall structures:

Solid structure: 175 mm lime-sand bricks with a cement plaster coat of 10 mm thickness

Solid timber: 170 mm solid construction timber (Holz 100)

Timber frame: Timber studs 6/12 cm, with 12 cm wood fibres, planked on both sides with diagonal boarding (2.5 cm)

	<b>Solid structure</b>	<b>Solid timber</b>	<b>Timber frame</b>
Without planking	55.0 dB	39.3 dB	35.0 dB
1 x Clay Panel + 8 mm clay finish coat	57.8 dB <i>Reduction: 2.8 dB</i>	47.8 dB <i>Reduction: 8.5 dB</i>	45.6 dB <i>Reduction: 10.6 dB</i>
2 x Clay Panel + 16 mm clay finish coat	58.5 dB <i>Reduction: 3.5 dB</i>	56.9 dB <i>Reduction: 17.2 dB</i>	47.7 dB <i>Reduction: 10.6 dB</i>
80 mm wood fibres + Clay Panel + 8 mm clay finish coat	64.2 dB <i>Reduction: 9.2 dB</i>	60.2 dB <i>Reduction: 20.9 dB</i>	58.9 dB <i>Reduction: 23.9 dB</i>