

# DTI/DTS **εCOOL**

Top energy efficiency and service-friendliness

Effective cost-savings  
with the newest generation of cooling units

Edition 12.1



# εCOOL

SHARING  
COMPETENCE 

**Pfannenberg**  
ELECTRO-TECHNOLOGY FOR INDUSTRY



## The **ECOOL** Family from Pfannenberg

Everywhere you see the new **ECOOL** logo it stands for a Pfannenberg product that distinguishes itself by:

- energy-efficiency
- environment
- easy-handling

### **ECOOL** – the standard of the future

With its new product range Pfannenberg is responding to the users' increasing demands and to the growing climate awareness. The aim in developing the **ECOOL** series is the largest possible cost efficiency with the best possible performance.

### Optimum in energy-efficiency

The **ECOOL** series has made an enormous leap in development compared with the tried and tested DTI/DTS units, in particular in energy efficiency.

Especially developed components combined with intelligent electronics of the newest generation reduce the energy consumption by up to 43%; in stand-by mode by a further 10%.

**- 43%**  
**- 10%**

### **ECOOL** DTI/DTS und DTT

The time-tested, high-quality industrial standard of the DTI/DTS completely covers the needs for side-mounting and door-mounting, as well as for the partially sunk-in mounting (DTI) of every cabinet size.

Additionally Pfannenberg's DTT series provides, thanks to its innovative, patented condensate management a safety standard for roof-mounted cooling units that has never been attained before.

The **ECOOL** series is a role model for a new generation of cooling units.



### Efficiency

**ECOOL** means cutting-edge technology which provides the users with enormous cost benefits over the entire running term. Records for the energy efficiency and the service factors MTTR and MTBF guarantee a high Return On Investment.

**ECOOL**

The distinctly increased EER (Energy Efficiency Ratio) of the **ECOOL** series is globally market-leading!

$$\mathcal{E} = \frac{\dot{Q}_K}{P_{el}}$$

The **Energy Efficiency Ratio (EER)** is defined as the quotient of the actual cooling capacity of the cooling unit and its nominal power consumption. The cooling capacity factor  $\mathcal{E}$  corresponds therefore to the efficiency ratio. The higher the value, the less energy consumption is needed in order to provide the cooling performance.

Up to **10%** less energy consumption in stand-by mode

Up to **43%** less energy consumption

Up to **48%** less CO<sub>2</sub> emissions

Up to **80%** shorter service / repair times

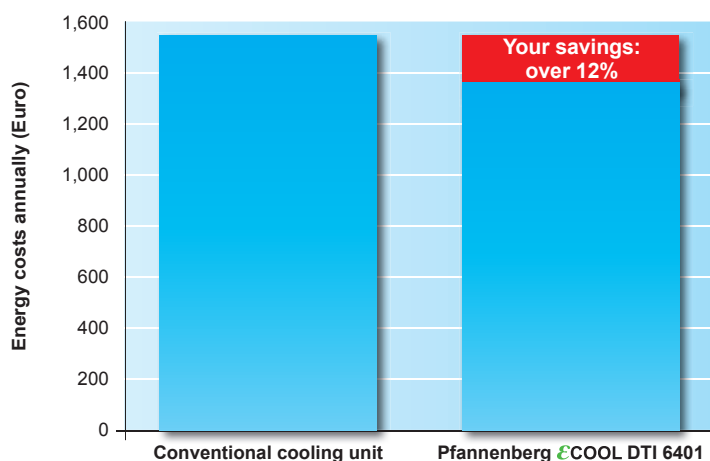
... in comparison to conventional cooling units

# Effective Cost Savings with Pfannenberg ECOOL Cooling Units



Take a small business with 5 cooling units, which works in two shifts as an example. In comparison to the ECOOL DTI 6401 with a 2000 W cooling capacity and a comparable unit available on the market.

## Energy savings comparison: Savings of over 12%



The ECOOL DTI 6401 saves 12% in energy costs in comparison to conventional cooling units.

### Basic parameter for energy comparison

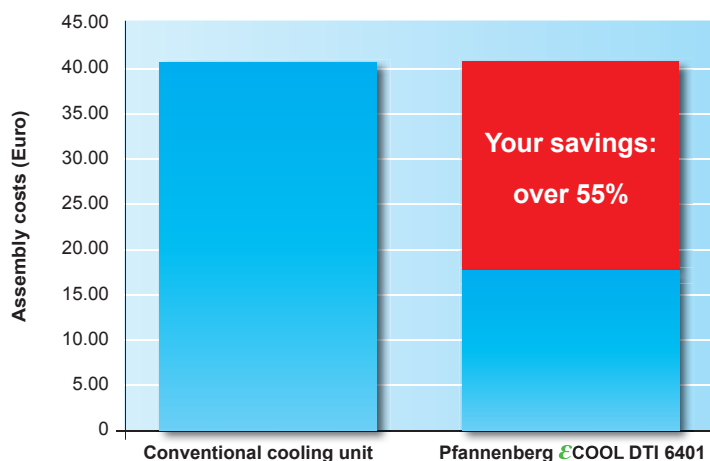
Uptime at full performance	70%
Uptime at partial performance	30%
Total uptime per day	16 hes
Total uptime per year	240 days
Electricity price in Germany*	0.1233 €/kWh*
Number of units	5 pieces
Cooling capacity	2000 W

\*Ø electricity price 2012 according to BDEW

### Energy costs

Conventional cooling units	1554.64 € annually
ECOOL DTI 6401	1359.61 € annually
<b>Your savings</b>	<b>195.02 € annually</b>

## Assembly cost comparison: Savings of over 55%



Another large potential for savings is the reduction of service and assembly time (MTTR).

### Assembly and service times (MTTR) [min]

	Conventional cooling units	ECOOL cooling units
Assembly	25	3
External fan change	6	6
Internal fan change	6	6
Fuse replacement	8	1
Filter change	2	1
Control board change	15	10
<b>Total</b>	<b>62</b>	<b>27</b>

Calculated hourly wage of technician 40 €  
Number of units 5

### Assembly costs

Conventional cooling units	206.67 €
ECOOL DTI 6401	90.00 €
<b>Your savings</b>	<b>116.67 €</b>

The ECOOL product family unites total savings potential in one unit.

## New advantages of the **ECOOL** Cooling Unit Series

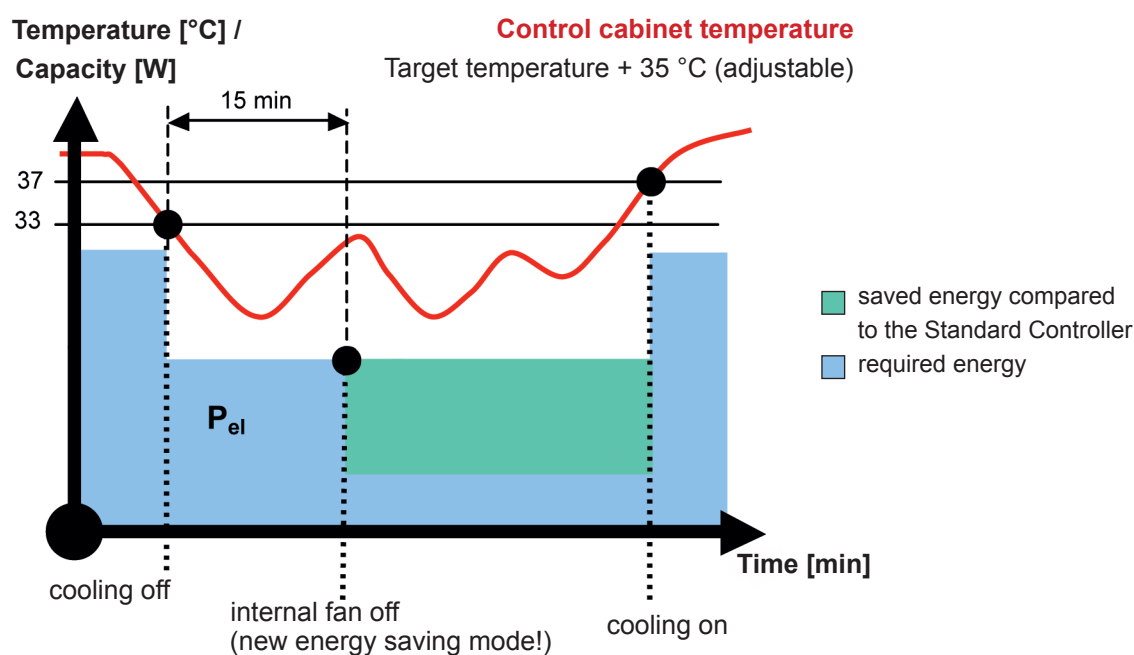
### New Filter Adapter

- Optionally available adapter for multiple use and all filter inserts
- Optional filter inserts (aluminum, fleece or fluted filter inserts) depending on the environmental conditions / application
- Patented fluted filter mats extend the service intervals by 300%
- Tool-less installation and tool-less filter replacement
- Filter replacement in less than one minute
- Filter adapter available in several colors

Filter Adapter

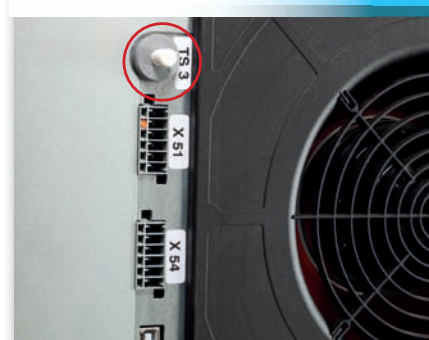


### New Energy Saving Mode with additional temperature probe



- Pfannenberg „MultiController“ (MC) has now been upgraded with the NEW energy savings mode (ESM) as a standard feature
- Internal fan switches off when no temperature increase is registered, condensate evaporator will be deactivated too
- Cooling mode starts automatically upon exceeding the required cabinet temperature
- Additional temperature probe for precise measurement of the internal cabinet temperature and to ensure correct operation of the energy savings mode
- No intermediate start-up of the internal fan necessary for temperature monitoring of the cabinet
- Fan's length of life is significantly longer

Multi Controller





# Easy Handling: perfect service-friendliness decreases routine costs

## Thought-out solutions for installation and service

From the cut-out compatibility to the flexible software solutions:

Pfannenberg' **E<sup>COOL</sup>** series takes excellent accessibility and simple maintenance into consideration.

- Large condenser fin spacing allow for longer maintenance periods, even without an additional Nano coating
- One mounting cut-out for 5 different performances, 1000 W – 4000 W
- Monting possible by 1 man in a few minutes
- Simple accessibility to all the relevant components
- Plug & Play: fast component replacement
- Integration in established net-work possible
- Versatile voltage supply of 380 – 460 V via built-in transformer
- Integrated condensate evaporation system



### Time-saving

Efficient assembly; the tool-less, quick and patented mounting method reduces process costs considerably. Don't just take our word for it! See our video demonstration on the web. Follow the „single-handed installation“ at [www.pfannenberg.com](http://www.pfannenberg.com) to see how you can save time and money.



### Easy mounting

Pfannenberg offers cooling units with the largest possible cut-out compatibility in order to be able to provide a unit replacement with the least possible installation work. Intelligent mounting systems minimize work during unit installation and replacement.



### Pfannenberg Sizing Software (PSS)

Pfannenberg's Sizing Software determines your cooling requirements, calculates the necessary cooling capacity and recommends the appropriate equipment components. Thus, you receive a tailor-made solution which gives you the security of a perfect dimensioning and prevents costly overdimensioning. Download the PSS free of charge or calculate directly online on [www.pfannenberg.com/en/support/pss-sizing-software.html](http://www.pfannenberg.com/en/support/pss-sizing-software.html).

Available as an APP:

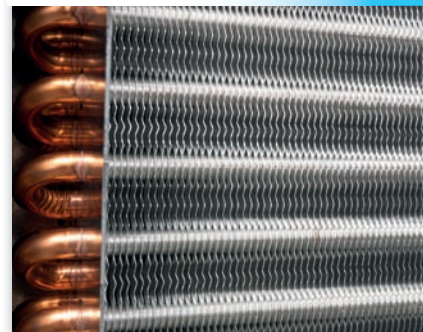


PSS-APP and



Online PSS

### Large fin spacing



### Simple installation



### Condensate evaporation system



### PSS



# ECOOL Cooling units 4000 W

## DTI/DTS 6801



**DTI: for partially recessed mounting of the cooling unit in the door or side**

**DTS: for outer mounting of the cooling unit on the door or side**

- top EER (energy efficiency ratio)
- energy efficient: reduced CO<sub>2</sub> emissions = environment-friendly
- condenser with large fin spacing for highly effective protection in strongly contaminated ambient air
- large distance between intake and exhaust vents, safe circulation within the electrical enclosure due to long passage of air, therefore hot spots are eliminated
- exceptional serviceability
- new USB port (MC version) for easy retrieval of parameter settings/history (Pfannenberg ECOOL-PLANT software necessary)
- optional filter (easy to retrofit)
- energy-saving mode by default integrated into the Multi Controller

Data		DTI 6801		DTS 6801		Unit
Article number	Standard Controller	13896812055		13886812055		
	Multi Controller	13896822055		13886822055		
Rated voltage <sup>1</sup> ± 10%		AC 50 Hz / 60 Hz				V
		400 / 460 3~				
Cooling performance according to EN 14511	L35/L35	4000				W
	L35/L50	3050				
Power consumption	L35/L35	1918 / 2369				A
Current consumption	L35/L35	4.2 / 3.6				
Starting current	L35/L35	28.3				
Energy efficiency ratio $\varepsilon_{ko} = \frac{Q_o}{P} \rightarrow$ COP		2.09				
Unimpeded airflow (free flow)	intern	1450				m³/h
	extern	1450				
Pre fuse T		16				A
Type of connection		spring-type terminal included with plug				
Noise level according to EN ISO 3741		< 70				dB (A)
Weight (without packaging)		91		95		kg
Ambient temperature range		+ 15 ... + 55 / + 59 ... + 131				°C / °F
Control range (adjustable)	SC	+ 25 ... + 45 / + 77 ... + 113; factory setting + 35 / + 95				
	MC	+ 25 ... + 50 / + 77 ... + 122; factory setting + 35 / + 95				
Refrigerant	R134a	2100				g
Duty cycle		100%				
Condensate management		integrated condensate evaporation system with safety overflow				
Protection system according to EN 60529	IP54	towards the electrical enclosure if used as intended by the manufacturer				
	IP34	towards the surroundings if used as intended by the manufacturer				
Design	housing	galvanised sheet steel				
	cover	electrostatically powder coated (200 °C)				
Colour	cover	RAL 7035, different colours available on request				
	filter adapter (optional)	RAL 7035, different colours available on request				
Approvals		UL, cUL pending				
Accessories		Piece	Article number			
Filter adapter		1	18300000151			
Aluminium filter		1	18300000149			
Vlies filter		5	18300000147			
Fluted filter		5	18300000148			

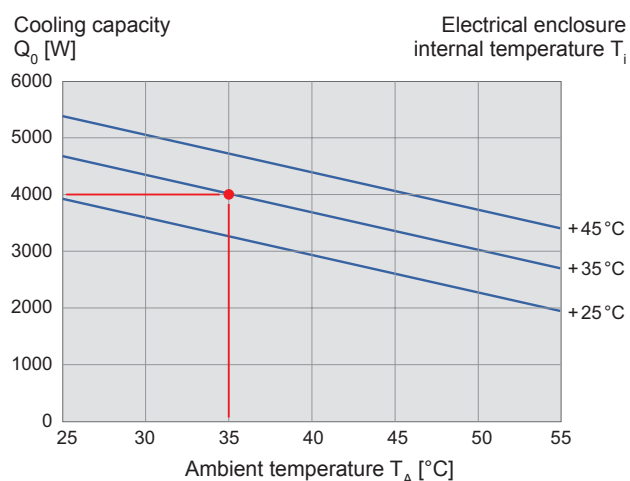
<sup>1</sup> suitable for various supply voltages (see technical data sheet).

For additional information to ensure the accurate setting of the motor protection switch, please see technical data sheet.

This information is included with the delivery of the unit or can be found at [www.pfannenberg.com](http://www.pfannenberg.com).

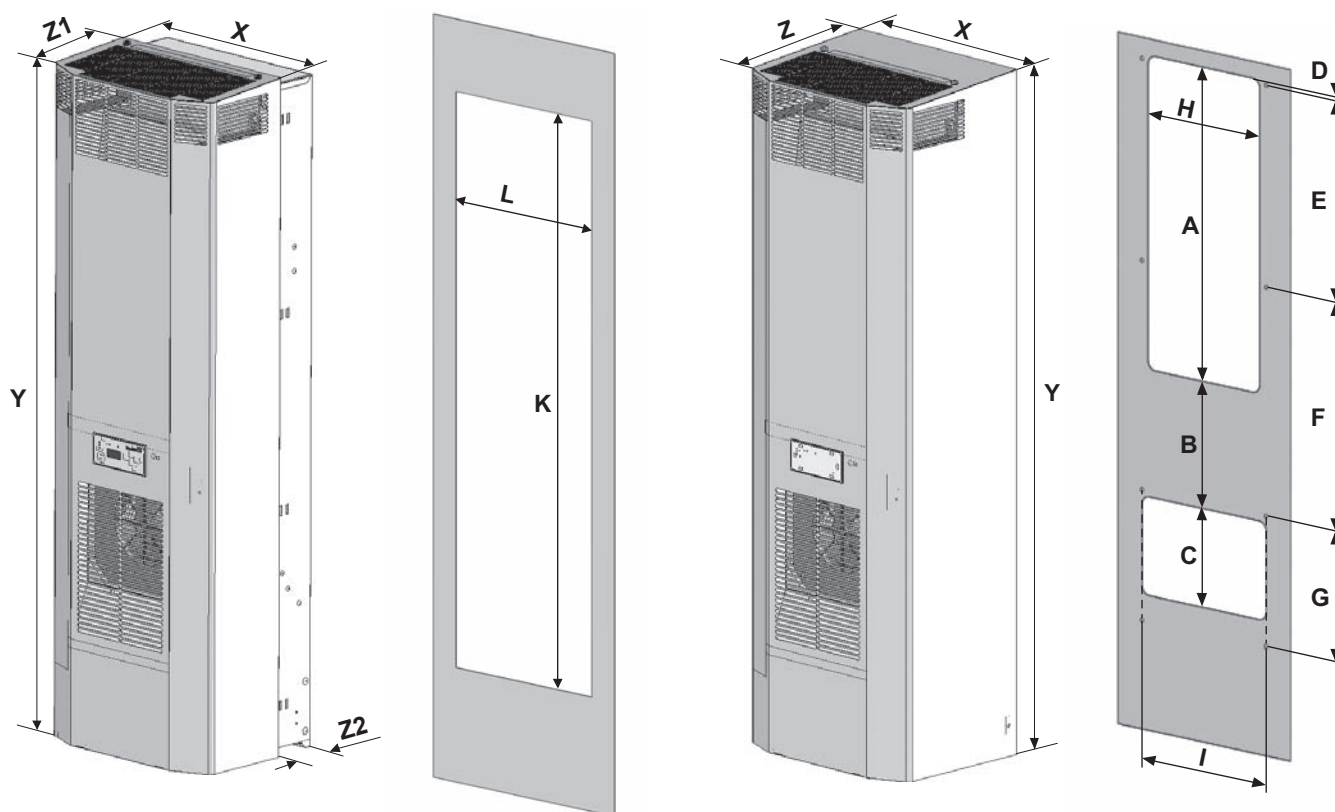
## Cooling capacity performance curves

### DTI/DTS 6801



## Dimensions

DTI	X	Y	Z1	Z2	K					L			
mm	485	1539	252	120	1510					450			
DTI variants partially recessed by 120 mm after installation													
DTS	X	Y	Z	A	B	C	D	E	F	G	H	I	
mm	485	1549	372	700	282	220	17.5	450	510	290	315	350	
Mounting holes Ø 8 mm and cut-out radii R20													
DTI 6801							DTS 6801						



# ECOOL Cooling units 2500/2000 W

## DTI/DTS 6501

## DTI/DTS 6401



**DTI: for partially recessed mounting of the cooling unit in the door or side**

**DTS: for outer mounting of the cooling unit on the door or side**

- top EER (energy efficiency ratio)
- energy efficient: reduced CO<sub>2</sub> emissions = environment-friendly
- condenser with large fin spacing for highly effective protection in strongly contaminated ambient air
- large distance between intake and exhaust vents, safe circulation within the electrical enclosure due to long passage of air, therefore hot spots are eliminated
- exceptional serviceability
- new USB port (MC version) for easy retrieval of parameter settings/history (Pfannenberg ECOOL-PLANT software necessary)
- optional filter (easy to retrofit)
- energy-saving mode by default integrated into the Multi Controller

Data		DTI 6501	DTS 6501	DTI 6401		DTS 6401		Unit
Article number	Standard Controller	13896512055	13886512055	13896412055	13896411055	13886412055	13886411055	
	Multi Controller	13896522055	13886522055	13896422055	13896421055	13886422055	13886421055	
Rated voltage <sup>1</sup> ± 10%		AC 50 Hz / 60 Hz						V
		400/460 3~	400/460 3~	400/460 3~	230	400/460 3~	230	
Cooling performance according to EN 14511	L35/L35	2500		2000				W
	L35/L50	1800		1440				
Power consumption	L35/L35	1048 / 1247		753 / 908	1047 / 1273	753 / 908	1047 / 1273	A
Current consumption	L35/L35	2.49 / 2.18		1.82 / 1.65	5.02 / 5.60	1.82 / 1.65	5.02 / 5.60	
Starting current	L35/L35	16.0		12.0	21.4	12.0	21.4	
Energy efficiency ratio $\epsilon_{ko} = \frac{Q_o}{P} \rightarrow$ COP		2.39		2.66	1.91	2.66	1.91	
Unimpeded airflow (free flow)	intern	935						m³/h
	extern	1260						
Pre fuse T		16						A
Type of connection		spring-type terminal included with plug						
Noise level according to EN ISO 3741		< 65						dB (A)
Weight (without packaging)		67	71	67		71		kg
Ambient temperature range		+ 15 ... + 55 / + 59 ... + 131						°C / °F
Control range (adjustable)	SC	+ 25 ... + 45 / + 77 ... + 113; factory setting + 35 / + 95						
	MC	+ 25 ... + 50 / + 77 ... + 122; factory setting + 35 / + 95						
Refrigerant	R134a	1000						g
Duty cycle		100%						
Condensate management		integrated condensate evaporation system with safety overflow						
Protection system according to EN 60529	IP54	towards the electrical enclosure if used as intended by the manufacturer						
	IP34	towards the surroundings if used as intended by the manufacturer						
Design	housing	galvanised sheet steel						
	cover	electrostatically powder coated (200 °C)						
Colour	cover	RAL 7035, different colours available on request						
	filter adapter (optional)	RAL 7035, different colours available on request						
Approvals		UL, cUL pending						
Accessories		Piece	Article number					
Filter adapter		1	18300000151					
Aluminium filter		1	18300000149					
Vlies filter		5	18300000147					
Fluted filter		5	18300000148					

<sup>1</sup> suitable for various supply voltages (see technical data sheet).

For additional information to ensure the accurate setting of the motor protection switch, please see technical data sheet.

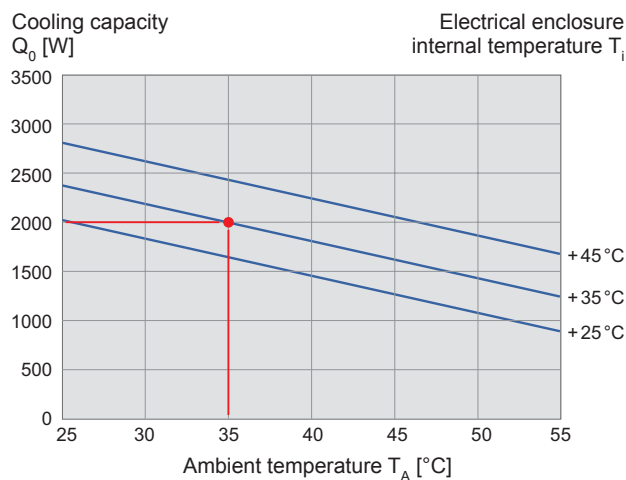
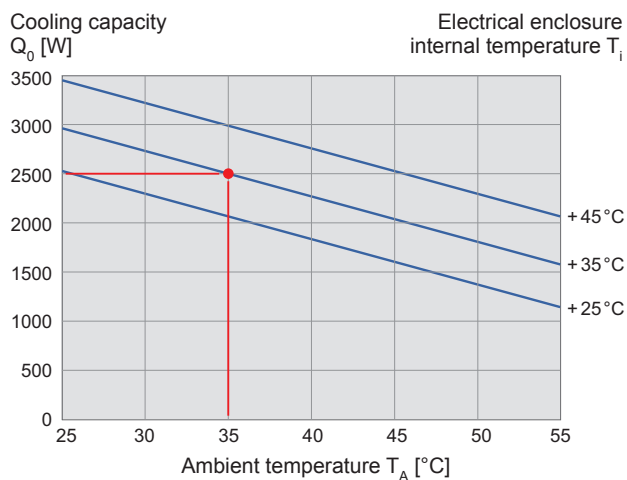
This information is included with the delivery of the unit or can be found at [www.pfannenberg.com](http://www.pfannenberg.com).



## Cooling capacity performance curves

DTI/DTS 6501

DTI/DTS 6401



## Dimensions

DTI	X	Y	Z1	Z2	K		L	
mm	485	1536	158	120	1510		450	

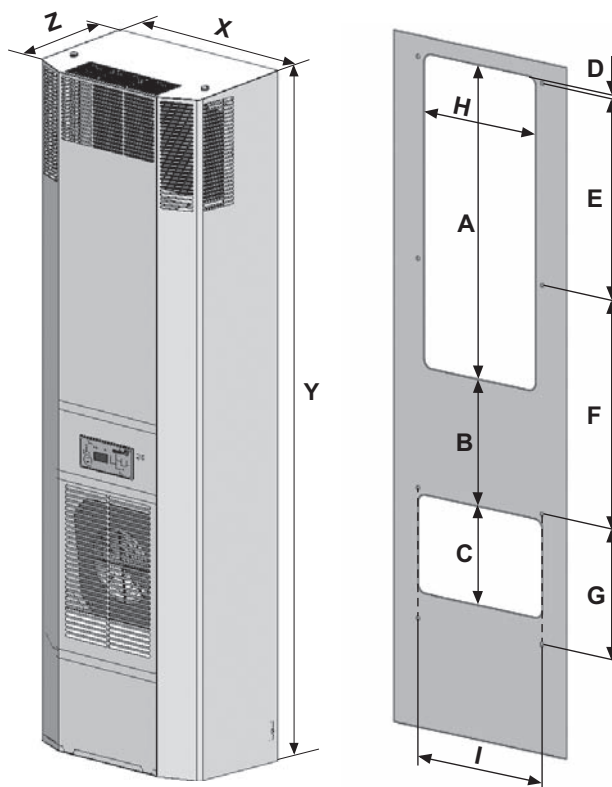
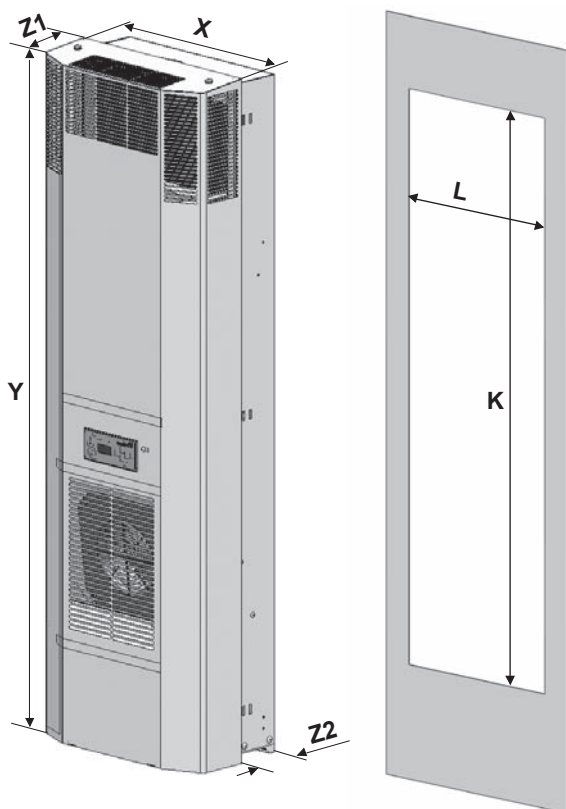
DTI variants partially recessed by 120 mm after installation

DTS	X	Y	Z	A	B	C	D	E	F	G	H	I
mm	485	1543	278	700	282	220	17.5	450	510	290	315	350

Mounting holes  $\varnothing$  8 mm and cut-out radii R20

DTI 6501/DTI 6401

DTS 6501/DTS 6401



# ECOOL Cooling units 1500/1000 W

## DTI/DTS 6301

## DTI/DTS 6201



**DTI: for partially recessed mounting of the cooling unit in the door or side**

**DTS: for outer mounting of the cooling unit on the door or side**

- top EER (energy efficiency ratio)
- energy efficient: reduced CO<sub>2</sub> emissions = environment-friendly
- condenser with large fin spacing for highly effective protection in strongly contaminated ambient air
- large distance between intake and exhaust vents, safe circulation within the electrical enclosure due to long passage of air, therefore hot spots are eliminated
- exceptional serviceability
- new USB port (MC version) for easy retrieval of parameter settings/history (Pfannenberg ECOOL-PLANT software necessary)
- optional filter (easy to retrofit)
- energy-saving mode by default integrated into the Multi Controller

Data		DTI 6301		DTS 6301		DTI 6201		DTS 6201		Unit
Article number	Standard Controller	13896319055	13896311055	13886319055	13886311055	13896219055	13896211055	13886219055	13886211055	
	Multi Controller	13896329055	13896321055	13886329055	13886321055	13896229055	13896221055	13886229055	13886221055	
Rated voltage <sup>1</sup> ± 10%		AC 50 Hz / 60 Hz								V
		400 2~ <sup>2</sup>	230	400 2~	230	400 2~	230	400 2~	230	
Cooling performance according to EN 14511	L35/L35	1500				1000				W
	L35/L50	1200				780				
Power consumption	L35/L35	786 / 863	727 / 868	786 / 863	727 / 868	490 / 570	454 / 567	490 / 570	454 / 567	A
Current consumption	L35/L35	3.24 / 2.63	4.26 / 4.23	3.24 / 2.63	4.26 / 4.23	1.78 / 1.62	2.35 / 2.61	1.78 / 1.62	2.35 / 2.61	
Starting current	L35/L35	19.7				9.1				
Energy efficiency ratio $\epsilon_{ke} = \frac{Q_o}{P} \rightarrow COP$		1.91	2.06	1.91	2.06	2.04	2.20	2.04	2.20	
Unimpeded airflow (free flow)	intern	935								m³/h
	extern	938								
Pre fuse T		6	16	6	16	4	16	4	16	A
Type of connection		spring-type terminal included with plug								
Noise level according to EN ISO 3741		< 62								dB (A)
Weight (without packaging)		55	50	56	51	55	50	56	51	kg
Ambient temperature range		+ 15 ... + 55 / + 59 ... + 131								°C / °F
Control range (adjustable)	SC	+ 25 ... + 45 / + 77 ... + 113; factory setting + 35 / + 95								
	MC	+ 25 ... + 50 / + 77 ... + 122; factory setting + 35 / + 95								
Refrigerant	R134a	500								g
Duty cycle		100%								
Condensate management		integrated condensate evaporation system with safety overflow								
Protection system according to EN 60529	IP54	towards the electrical enclosure if used as intended by the manufacturer								
	IP34	towards the surroundings if used as intended by the manufacturer								
Design	housing	galvanised sheet steel								
	cover	electrostatically powder coated (200 °C)								
Colour	cover	RAL 7035, different colours available on request								
	filter adapter (optional)	RAL 7035, different colours available on request								
Approvals		UL, cUL pending								
Accessories		Piece	Article number							
Filter adapter		1	18300000151							
Aluminium filter		1	18300000149							
Vlies filter		5	18300000147							
Fluted filter		5	18300000148							

<sup>1</sup> 115 V on request, <sup>2</sup> suitable for various supply voltages (see technical data sheet)

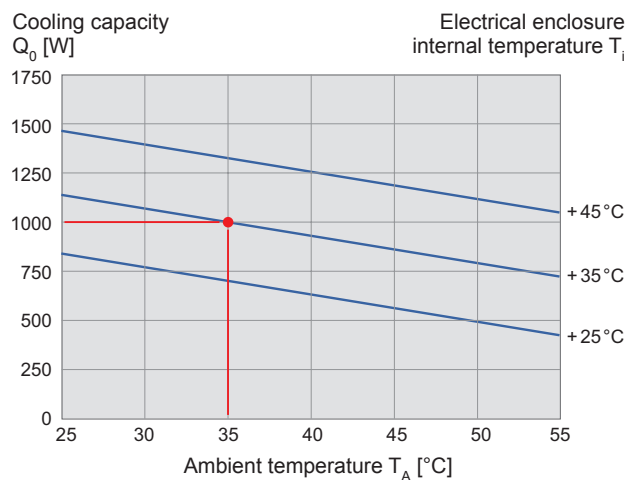
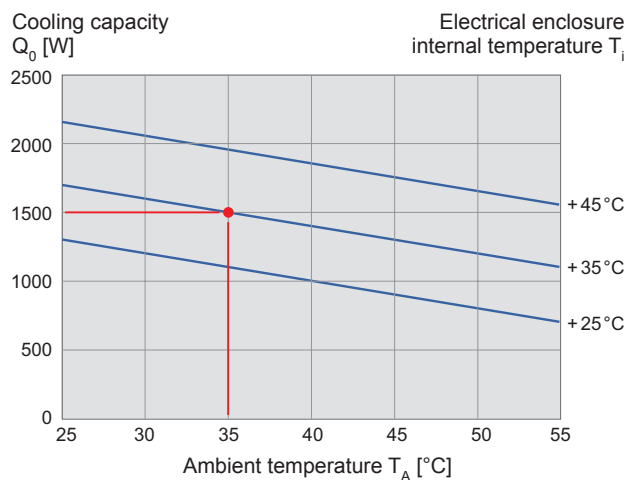
For additional information to ensure the accurate setting of the motor protection switch, please see technical data sheet.

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## Cooling capacity performance curves

DTI/DTS 6301

DTI/DTS 6201



## Dimensions

DTI	X	Y	Z1	Z2	K		L	
mm	485	1536	158	60	1510		450	

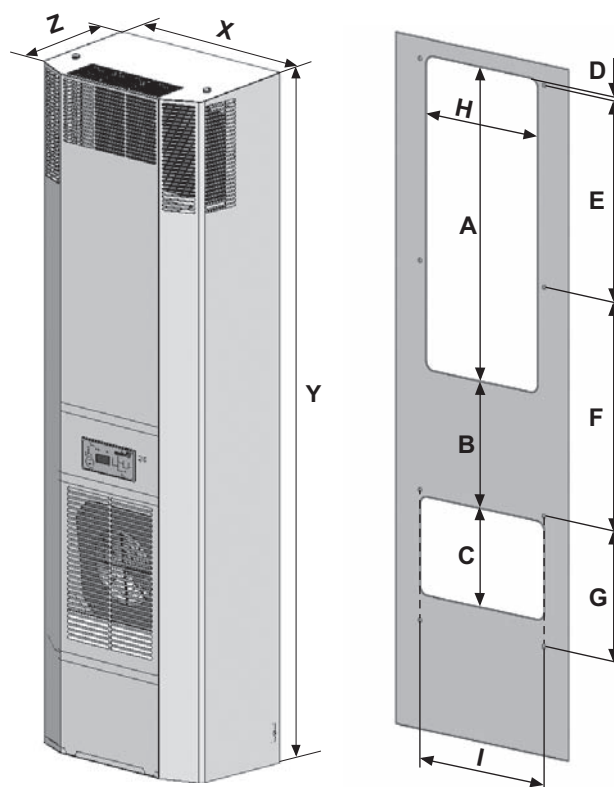
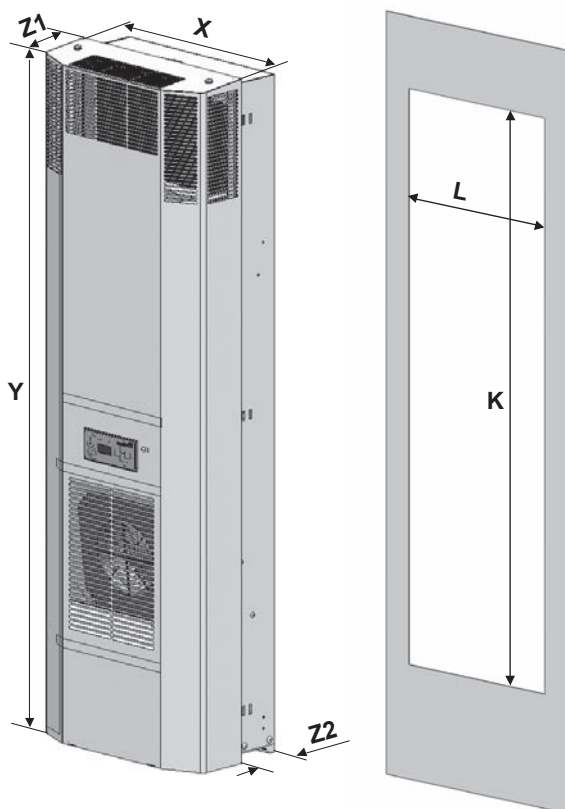
DTI variants partially recessed by 60 mm after installation

DTS	X	Y	Z	A	B	C	D	E	F	G	H	I
mm	485	1539	218	700	282	220	17.5	450	510	290	315	350

Mounting holes  $\varnothing$  8 mm and cut-out radii R20

DTI 6301/DTI 6201

DTS 6301/DTS 6201



# Environment: Responsibility for the environment and resources

In light of the growing climate and environment problems, Pfannenberg is dedicated more than ever to the safety of man, machine and the environment. That is why environment-friendly production process and careful use of available resources define our actions. Decreasing your thermal management costs through first-class energy efficiency and exemplary Life Cycle Advantage is our foremost goal with the **ECOOL** series.

**Contact us today to discuss the requirements of your specific project.**



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ELECTRO-TECHNOLOGY FOR INDUSTRY



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