The new DTI/DTS ECOOL Series

Top energy efficiency and service-friendliness

Effective cost-savings with the newest generation of cooling units

ECOOL

SHARING COMPETENCE

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

New ℰCOOL Family from Pfannenberg

A new generation of Pfannenberg products: Anywhere you see the new ℰCOOL Logo, it stands for a Pfannenberg product, which focusses on the
- environment
- energy-efficiency
- easy-handling

ℰCOOL – the standard of the future

The increasing user requirements, as well as a growing awareness of the environment have caused Pfannenberg to develop a new product line. The ℰCOOL series was conceptualized with one goal in mind: Largest possible cost-efficiency with the highest performance.

Optimum in energy-efficiency

The ℰCOOL series has an enormous development advantage over the time-tested DTI/DTS units. Specially developed components, combined with the newest generation of intelligent electronics reduce energy consumption by up to 43%.

- 43%

ℰCOOL DTI/DTS and 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 defines a safety standard for top-mount cooling units, which has never been attained before due to its innovative and patented condensate management.

The ℰCOOL series will now raise these cooling units to a completely new level and they will be the role-model in their class.

ℰCOOL

ℰfficiency

First and foremost, ℰCOOL means: Cutting edge technology, which will provide users with an enormous cost advantage for the duration of the life cycle. All-time highs in the areas of energy-efficiency and service factors, such as MTTR and MTBF, guarantee a high Return On Investment.

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

$$\varepsilon = \frac{\dot{Q}_K}{P_{el}}$$

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 ε 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 43% less energy consumption

Up to 48% less CO_2 emissions

Up to 80% shorter service / repair times

... in comparison to conventional cooling units

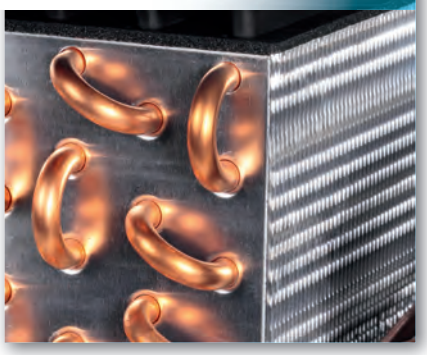
Easy Handling: perfect service-friendliness decreases routine costs

Thought-out solutions for installation and service

From the cut-out compatibility to the flexible software solutions: Pfannenberg's **ECOOL** 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
- 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
- Integrated condensate evaporation system

Large fin spacing



Perfect accessibility

Time-saving

Smart and efficient installation; the patented method of rapid fixing - without tools. Don't just take our word for it! See our video demonstration on the web. Follow the „single-handed installation" at **www.pfannenberg.com** to see how you can save time and money.

Simple installation

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.

Safety

Pfannenberg's ECOOL series defines a safety standard, which has never been attained before due to its innovative and patented condensate management.

Condensate evaporation system

Optional Multi-controller

The energy-saving mode will automatically control the internal fan based on heat dissipation inside the cabinet. This is possible by using an additional sensor. In the multi-master mode, up to 10 devices can be flexibly controlled from one controller. And to compliment the Multi-controller, Pfannenberg offers a Remote Control Manager (RCM) software, which enables remote communication between a laptop and the controller for programming, troubleshooting, performance readings, fault history and much more.

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_2 emissions = environment-friendly
- condenser with 3 mm fin spacing, highly effective protection against 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 for easy retrieval of parameter settings/history (Pfannenberg RCM program software necessary)
- optional filter (easy to retrofit)

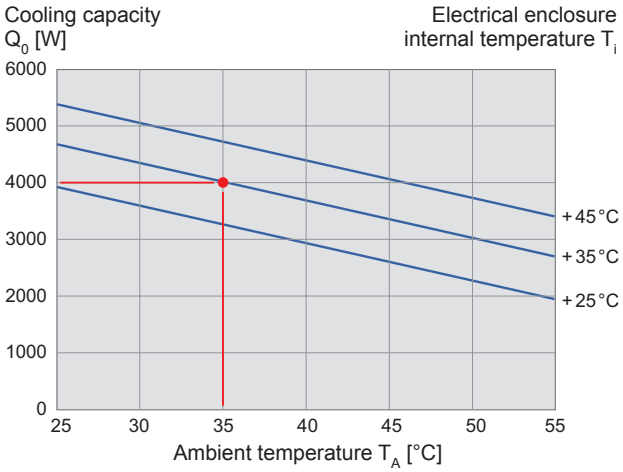
Data		DTI 6801	DTS 6801	Unit
Article number	Standard Controller	13896812055	13886812055	
	Multi Controller	13896822055	13886822055	
		AC 50 Hz / 60 Hz		
Rated voltage ± 10%		400 / 460 3~		V
Cooling performance according to EN 14511	L35/L35	4000		W
	L35/L50	3050		
Power consumption	L35/L35	1918 / 2369		
Current consumption	L35/L35	4.2 / 3.6		A
Starting current	L35/L35	28.3		
Energy efficiency ratio $\varepsilon_{ke} = \frac{Q_0}{P}$ → COP		2.09		
Unimpeded airflow (free flow)	internal	1450		m^3/h
	external	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)		86	86	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	glavanised sheet steel		
	cover / front cover	galvanised/electrostatically powder coated (200 °C)		
Colour	cover	RAL 7035		
	front cover	RAL 7040, different colours available on request		
Approvals		UL, cUL pending		

Accessories	Piece	Article number
Aluminium filter	1	18300000149
Filter adapter	1	18300000150
Filter mat	5	18300000147
Fluted filter	5	18300000148

For additional information to ensure the accurate setting of the motor protection switch, please see technical specific data sheet.
This information is included with the delivery of the unit or can be found at www.pfannenberg.com.

Cooling capacity performance curves

DTI/DTS 6801

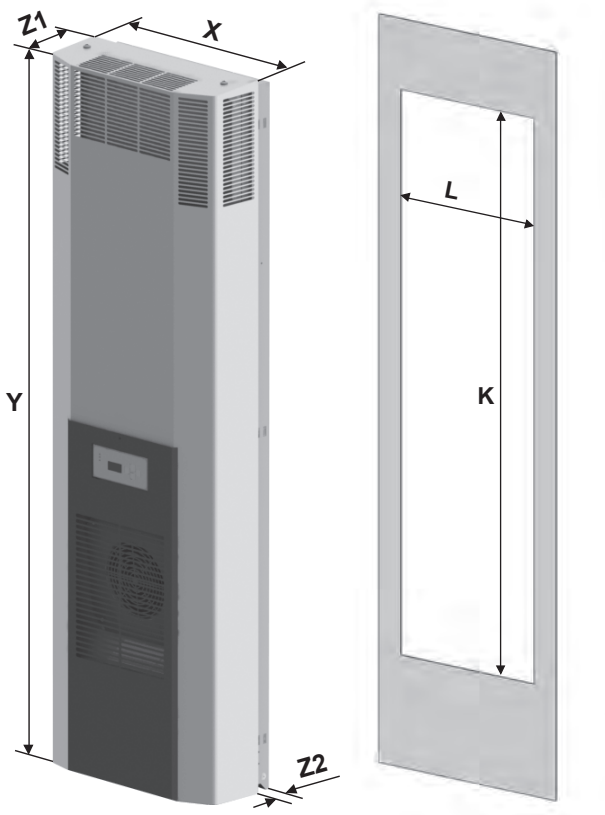


Dimensions

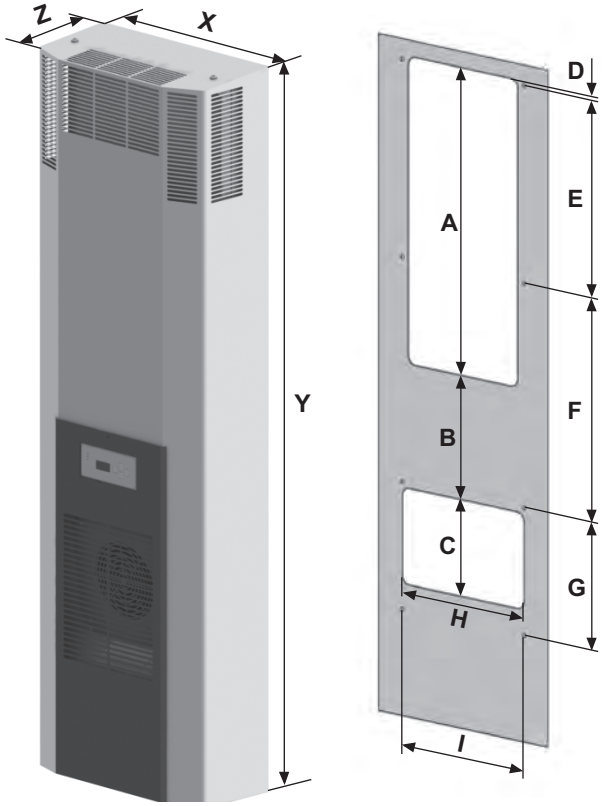
DTI	X	Y	Z1	Z2	K	L
mm	485	1539	252	120	1510	450
DTI variants partially recessed by 120 mm after installation						

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_2 emissions = environment-friendly
- condenser with 3 mm fin spacing, highly effective protection against 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 for easy retrieval of parameter settings/history (Pfannenberg RCM program software necessary)
- optional filter (easy to retrofit)

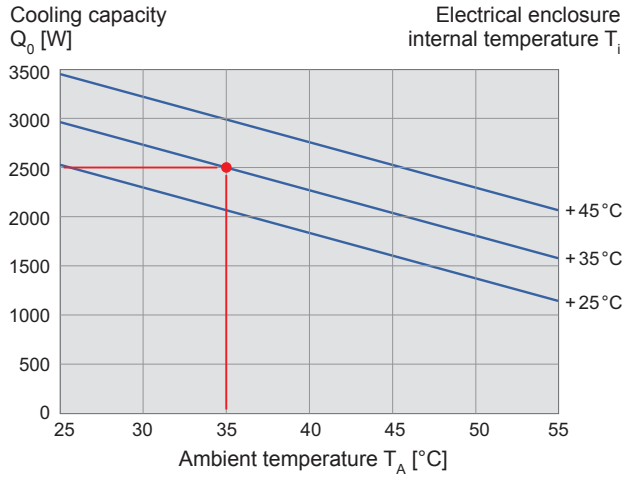
Data		DTI 6501	DTS 6501	DTI 6401		DTS 6401		Unit
Article number	Standard Controller	13896512055	13886512055	13896412055	13896411055	13886412055	13886411055	
	Multi Controller	13896522055	13886522055	13896422055	13896421055	13886422055	13886421055	
		AC 50 Hz / 60 Hz						
Rated voltage ± 10%		400/460 3~	400/460 3~	400/460 3~	230	400/460 3~	230	V
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	
Current consumption	L35/L35	2.49 / 2.18		1.82 / 1.65	5.02 / 5.60	1.82 / 1.65	5.02 / 5.60	A
Starting current	L35/L35	16.0		12.0	21,4	12.0	21.4	
Energy efficiency ratio $\varepsilon_{ke} = \frac{Q_0}{P}$ → COP		2.39		2.66	1.91	2.66	1.91	
Unimpeded airflow (free flow)	internal	935						m^3/h
	external	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	glavanised sheet steel						
	cover / front cover	galvanised/electrostatically powder coated (200 °C)						
Colour	cover	RAL 7035						
	front cover	RAL 7040, different colours available on request						
Approvals		UL, cUL pending						

Accessories	Piece	Article number
Aluminium filter	1	18300000149
Filter adapter	1	18300000150
Filter mat	5	18300000147
Fluted filter	5	18300000148

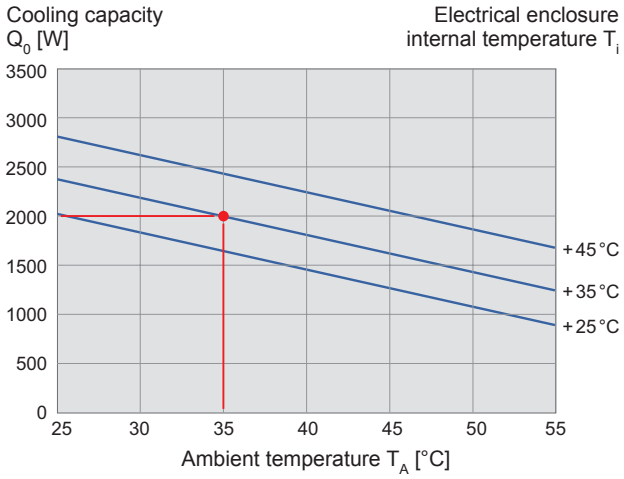
For additional information to ensure the accurate setting of the motor protection switch, please see technical specific data sheet.
This information is included with the delivery of the unit or can be found at www.pfannenberg.com.

Cooling capacity performance curves

DTI/DTS 6501



DTI/DTS 6401



Dimensions

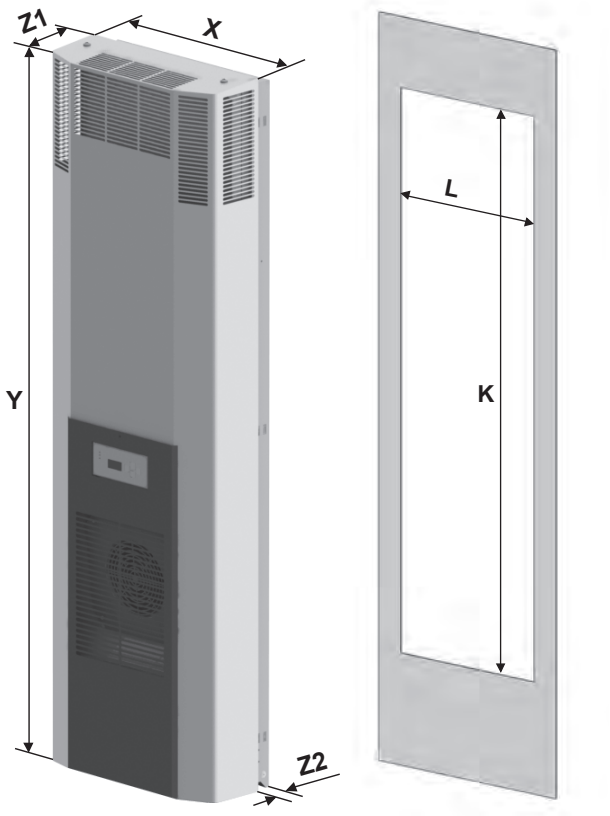
DTI	X	Y	Z1	Z2	K	L
mm	485	1536	158	120	1510	450

DTI variants partially recessed by 120 mm after installation

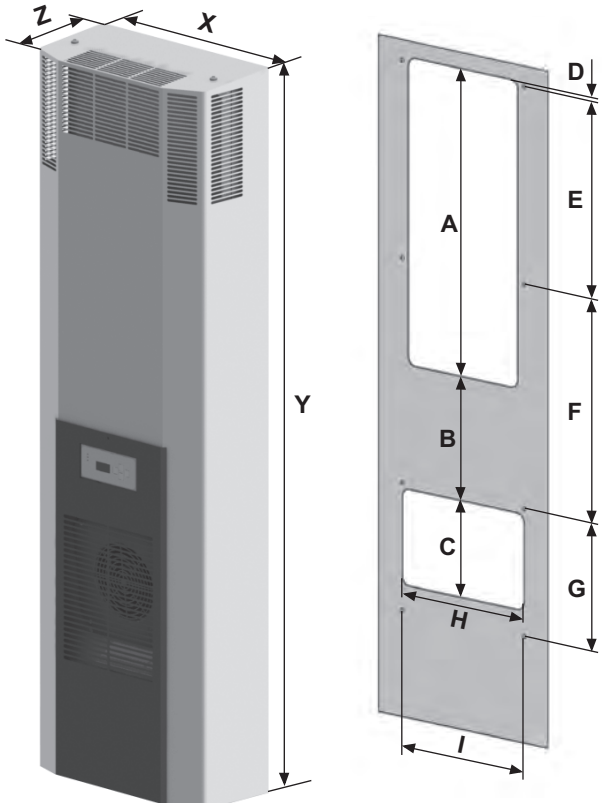
DTS	X	Y	Z	A	B	C	D	E	F	G	H	I
mm	485	1543	278	700	282	220	17.5	450	510	290	315	350

Mounting holes Ø 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_2 emissions = environment-friendly
- condenser with 3 mm fin spacing, highly effective protection against 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 for easy retrieval of parameter settings/history (Pfannenberg RCM program software necessary)
- optional filter (easy to retrofit)

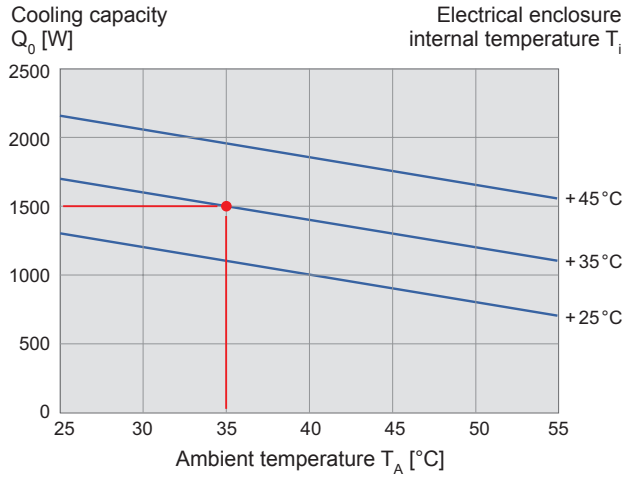
Data		DTI 6301		DTS 6301		DTI 6201		DTS 6201		Unit
Article number	Standard Controller	13896319055	13896311055	13886319055	1388631105	13896219055	13896211055	13886219055	13866211055	
	Multi Controller	13896329055	13896321055	13886329055	13886321055	13896229055	13896221055	13886229055	13886221055	
		AC 50 Hz / 60 Hz								
Rated voltage [1] ± 10%		400 2~	230	400 2~	230	400 2~	230	400 2~	230	V
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	
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	A
Starting current	L35/L35	19.7				9.1				
Energy efficiency ratio $\varepsilon_{ke} = \frac{Q_0}{P}$ → COP		1.91	2.06	1.91	2.06	2.04	2.20	2.04	2.20	
Unimpeded airflow (free flow)	internal	935								m^3/h
	external	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 electrical enclosure if used as intended by the manufacturer								
Design	housing	glavanised sheet steel								
	cover / front cover	galvanised/electrostatically powder coated (200 °C)								
Colour	cover	RAL 7035								
	front cover	RAL 7040, different colours available on request								
Approvals		UL, cUL pending								

Accessories	Piece	Article number
Aluminium filter	1	18300000149
Filter adapter	1	18300000150
Filter mat	5	18300000147
Fluted filter	5	18300000148

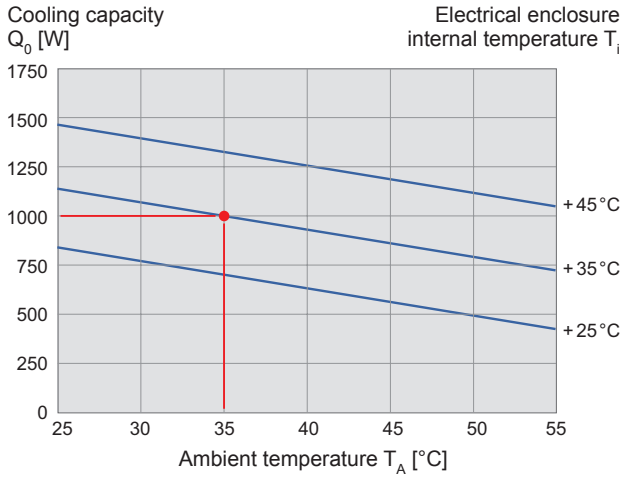
[1] 115 V on request
For additional information to ensure the accurate setting of the motor protection switch, please see technical specific data sheet.
This information is included with the delivery of the unit or can be found at www.pfannenberg.com.

Cooling capacity performance curves

DTI/DTS 6301



DTI/DTS 6201



Dimensions

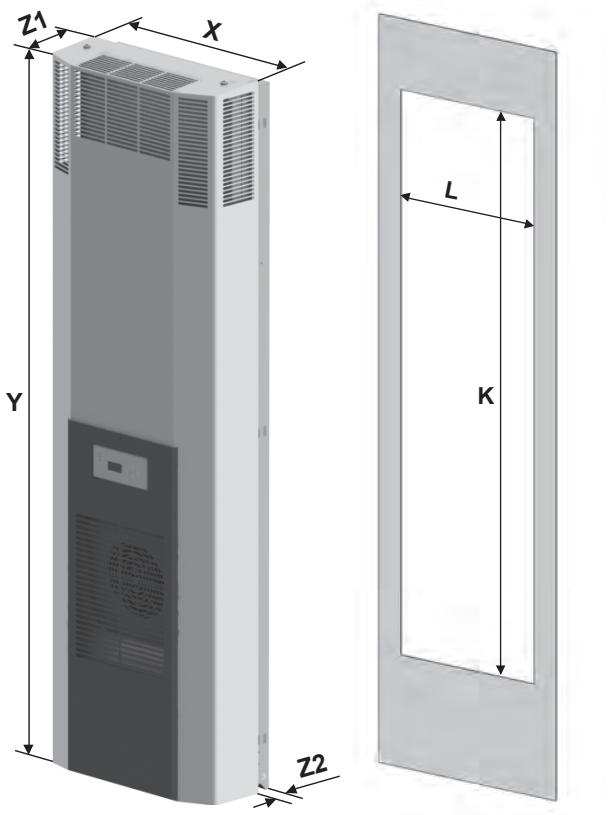
DTI	X	Y	Z1	Z2	K	L
mm	485	1536	158	60	1510	450

DTI variants partially recessed by 60 mm after installation

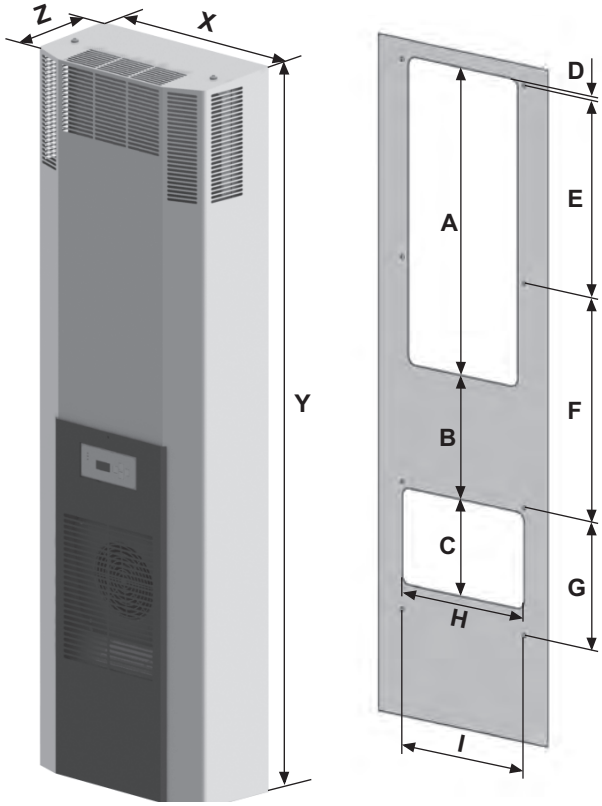
DTS	X	Y	Z	A	B	C	D	E	F	G	H	I
mm	485	1539	218	700	282	220	17.5	450	510	290	315	350

Mounting holes Ø 8 mm and cut-out radii R20

DTI 6301/DTI 6201



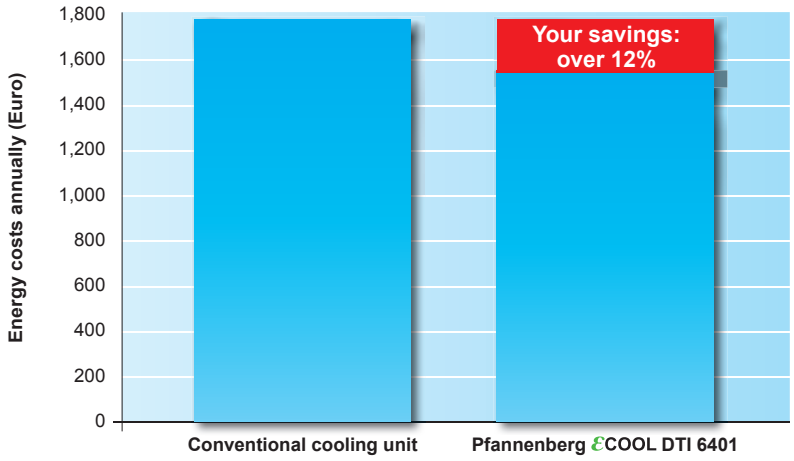
DTS 6301/DTS 6201



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.

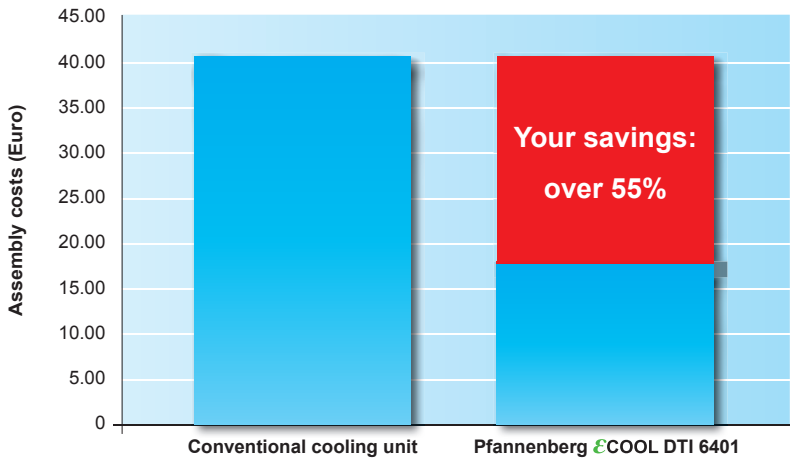
Basic parameter for energy comparison:

Uptime at full performance	70%
Uptime at partial performance	30%
Total uptime per day	16 hrs
Total uptime per year	240 days
Electricity price in Germany*	0.1412 €/kWh*
Number of units	5
Cooling capacity	2000 W

*Ø electricity price 2009 according to BDEW

Energy costs	
Conventional cooling units	EUR 1780.35 annually
ECOOL DTI 6401	EUR 1557.00 annually
Your savings	**EUR 223.35 € annually**

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 DTI 6401*
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
Total	**62**	**27**

Calculated hourly wage of technician: EUR 40

Assembly costs	
Conventional cooling units	EUR 41.33
ECOOL DTI 6401	EUR 18.00
Your savings	**EUR 23.33**

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

Additional highlights included in our main catalogues

Signaling Technology

- Flashing lights – extremely durable
- Sounder – aluminum die-cast casing
- LED lights – durable and energy efficient
- Signal towers – variability in IP 65
- Traffic lights – clear signalling
- Ex-ATEX signals – can be used in Zones 0-22
- Separate brochure:
  Sounder DS 5-DN, sound level can be regulated externally
- Obstruction light for flight safety
- SIL/PL-conform signaling technology

Thermal Management & Machine Cooling

- Cooling units – fast installation
- Filterfans – highest energy efficiency
- Air/water heat exchangers – maintenance free
- Thermostats, hygrostats, heaters – safe standby mode
- Chillers – economic, indoor or outdoor installation

We can show you how to save! Just contact us!

PSS Thermal Management - Calculation software

- for free on CD (article number 075000142)
- or per download at http://pss.pfannenberg.com

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.

NATURALLY EFFICIENT.

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

SHARING COMPETENCE

Pfannenberg
ELECTRO-TECHNOLOGY FOR INDUSTRY

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