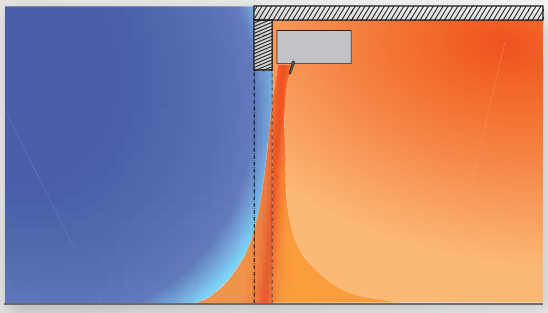
AIR CURTAINS

DIGITAL AND SUPER DIGITAL INVERTER

TOSHIBA
Leading Innovation

Air curtain key features

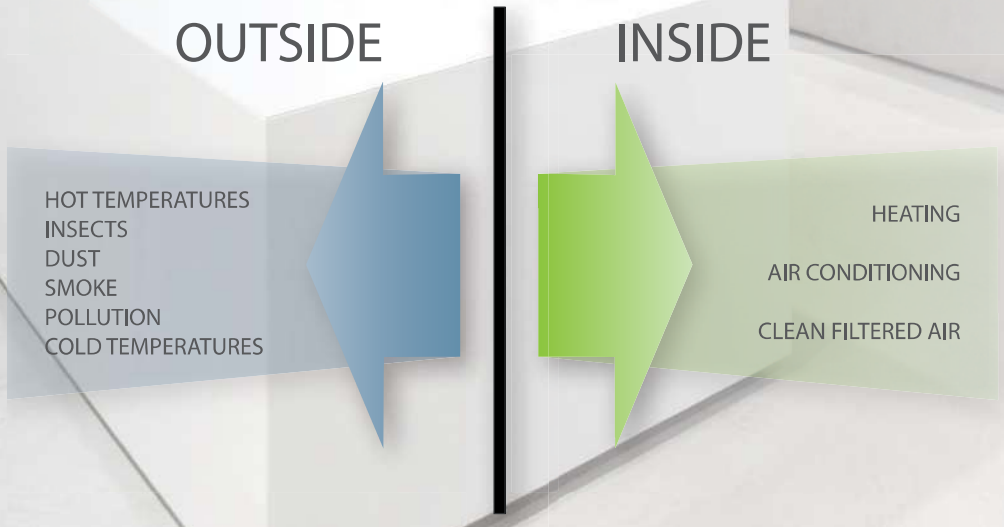
The Air Curtain is used to separate one environment from another where either doors are left open, or when automatic doors frequently open due to high traffic levels.
It creates a "curtain" of moving air that is blown over the opening of a doorway. The invisible "wall" will not allow air to flow through it.



Energy savings
Stops drafts and reduces infiltration of unconditioned outdoor air into heated or air conditioned areas and at the same time stops the conditioned air inside the building from escaping.

Comfort
Improve comfort for customers and employees by reducing the admittance of insects, dust, smoke and odours which would otherwise enter through an open door.

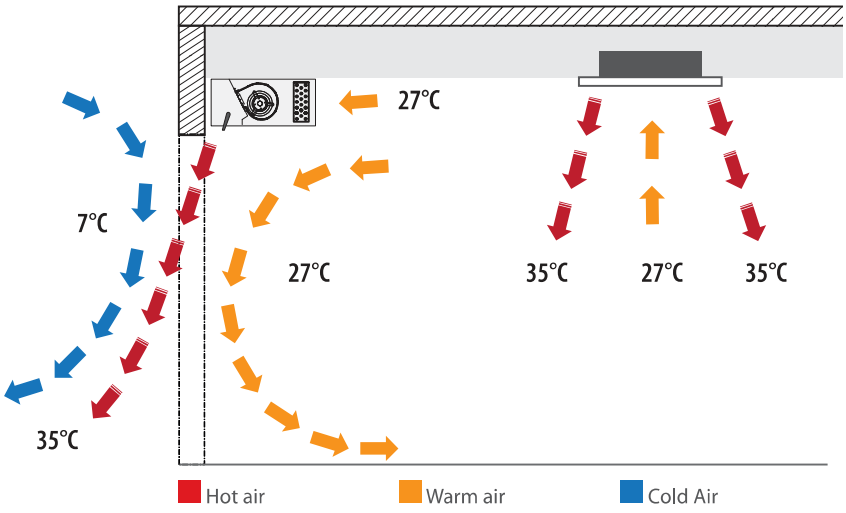
Renewable heat pump energy
Compared to conventionally heated air curtains the Toshiba Digital and Super Digital Inverters offer significant environmental benefits. Renewable heat pumps offer an alternative solution where future legislation may restrict the use of directly heated air curtains.



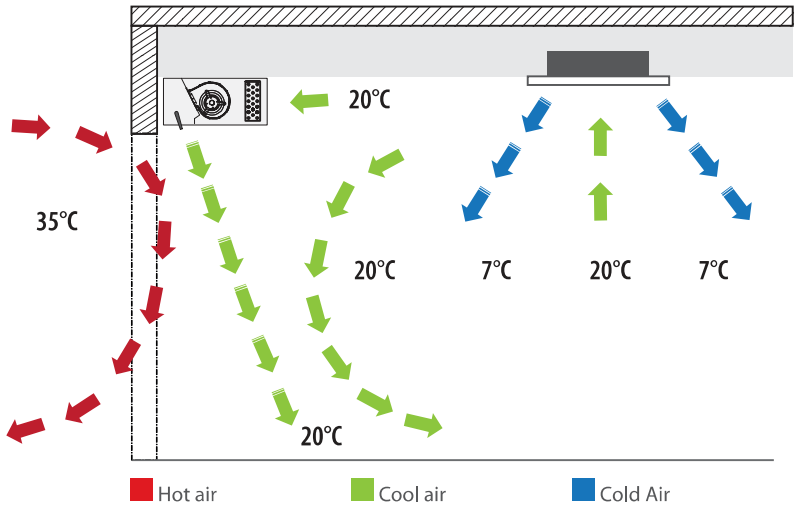
Winter and Summer operation

The outlet grille should be adjusted for summer or winter operation.
For winter operation the outlet grille should be angled outwards (+15° or +10°). In this setting the air is blown in the direction of the door.
For summer operation the grille should be angled inwards (-15° or -10°). In this setting the air is blown in the direction of the door.

Winter operation (Heating mode)

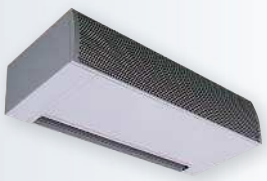


Summer operation (Fan Only mode)

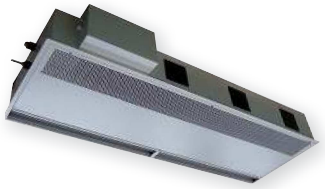


Product range

Toshiba air curtain units are available in three different models. These units are combined with the highly efficient and reliable range of Toshiba light commercial Digital Inverter and Super Digital Inverter outdoor units.



Free-Hanging unit (CH)



Cassette unit (UH)

Built-in unit (BH)

Customised options

In addition to the standard models, customised options (different colours and orientations) are available, please contact us with your requirements.

Bespoked revolving door solutions are possible upon request.

Technical features

These units present a technical solution which will enable quick installation with easy access for maintenance.

Integrated electrical box design

This solution gives the following advantages: Easy access for unit installation and maintenance, no need to install separate DX interface, 'Plug and Play' solution with the PCB fully configured at the factory, the electrical supply for the air curtain is taken from the outdoor unit meaning there is no need for additional electrical supplies.

Flare nut connections

The Toshiba Air Curtains are fitted with flare nut connections for ease of installation.

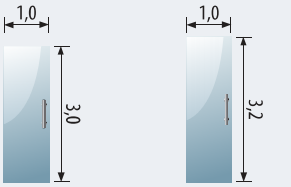
Selectable discharge grille position

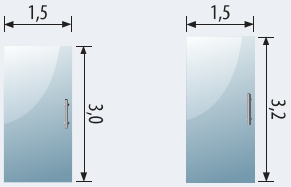
The discharge grille can be adjusted in 5 positions (+15°,+10°, 0°, -10°, -15°) to regulate the air stream.

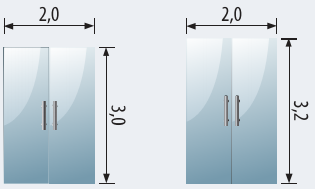
Defrost tray

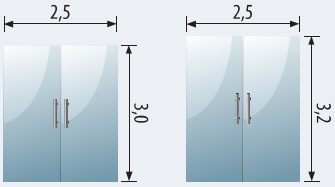
A defrost tray is fitted to all Toshiba air curtains. During defrost cycles the fan-motors continue to operate. Any mositure collected in the defrost tray evaporates when heating resumes.

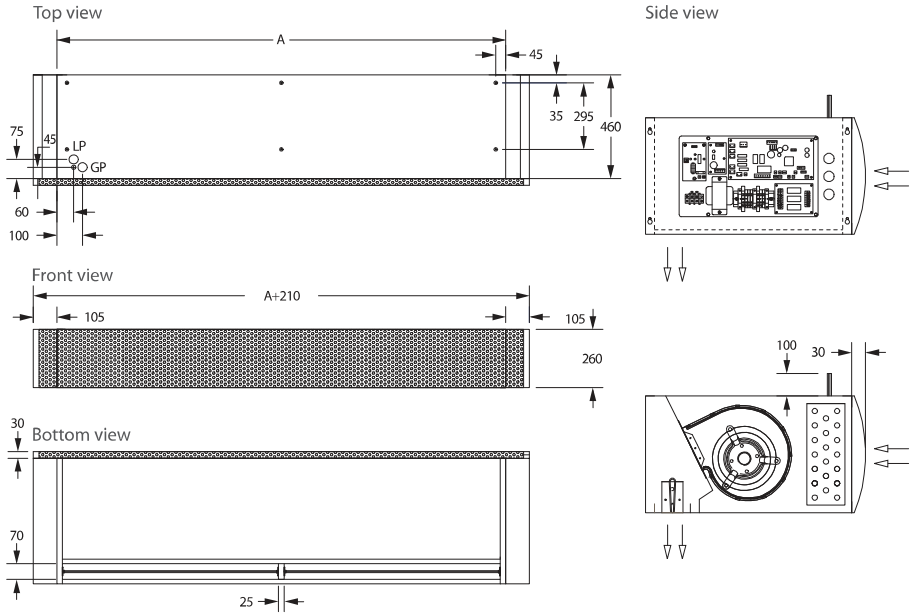
Maximum Door width and height in metres









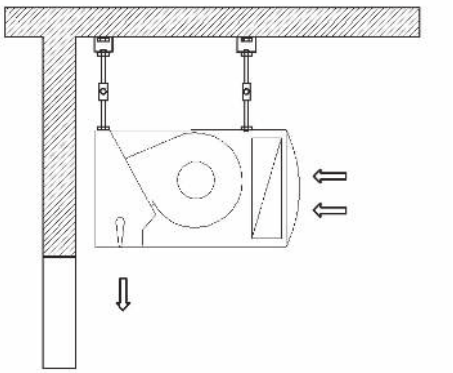


GP: Gas Pipe (Flare nut Ø 15.9mm)
LP: Liquid Pipe (Flare nut Ø 9.5mm)

RAV-CT_CH

FREE-HANGING UNIT

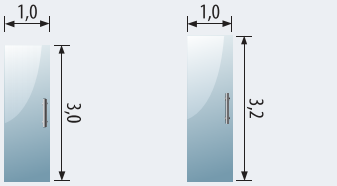
Suitable for installation above the door, where whole unit will be visible

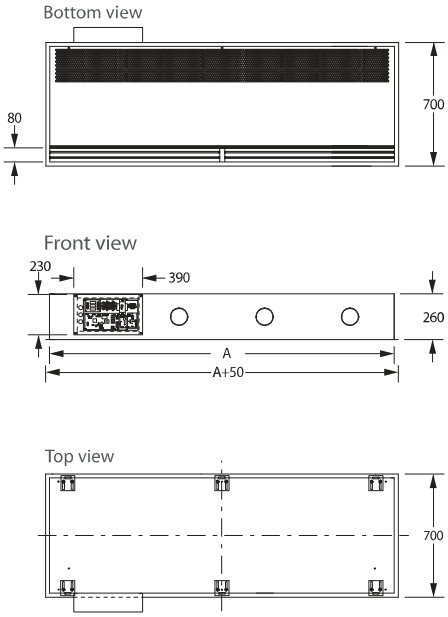


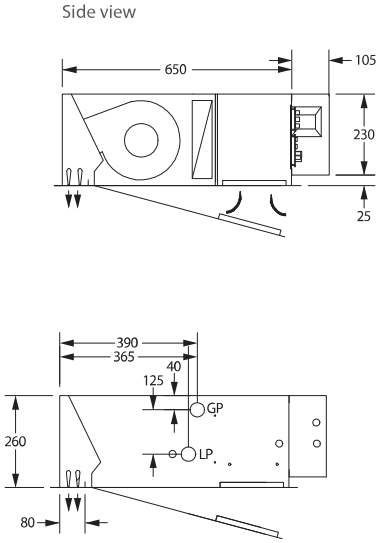
Model	RAV-CT	100CH-M	100CH-L	150CH-M	150CH-L	200CH-M	200CH-L	250CH-M	250CH-L
Capacity code	hp	3	3	4	4	5	5	6	6
Heating output	kW	8	8	11,2	11,2	14	14	16	16
C.O.P. (RAV-SP_AT)	W/W	2,72	3,14	3,11	3,59	2,83	3,27	n/a	n/a
C.O.P. (RAV-SP_AT8)	W/W	n/a	n/a	3,01	3,47	2,66	3,07	2,42	2,79
C.O.P. (RAV-SM_AT)	W/W	2,35	2,72	2,48	2,87	2,39	2,76	2,35	2,71
Air flow	W/W	1520	2100	2280	2800	3040	4200	3800	4900
Power Input	kW	0,56	0,82	0,74	1,11	0,93	1,64	1,11	1,92
Sound pressure	dBA	54	55	55	56	56	57	57	58
Weight	kg	54	57	85	87	115	117	140	142

Dimensions for all sizes (H x W x D) mm : 260 x 2710 x 490

Maximum Door width and height in metres





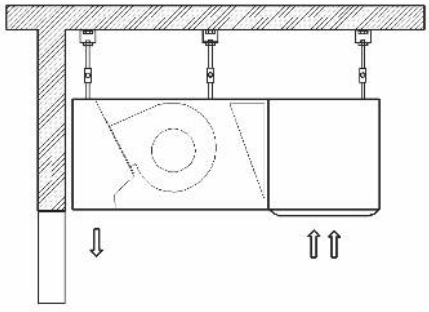


GP: Gas Pipe (Flare nut Ø 15.9mm)
LP: Liquid Pipe (Flare nut Ø 9.5mm)

RAV-CT_UH

CASSETTE UNIT

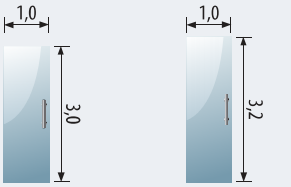
Suitable for installation where the ceiling space is limited above the door, the full panel will be visible.

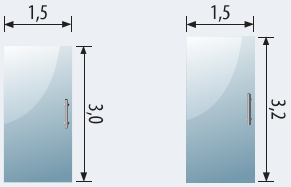


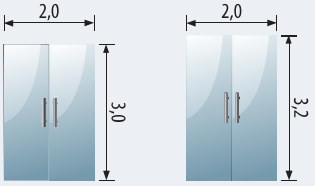
Model	RAV-CT	100UH-M	100UH-L	150UH-M	150UH-L	200UH-M	200UH-L	250UH-M	250UH-L
Capacity code	hp	3	3	4	4	5	5	6	6
Heating output	kW	8	8	11,2	11,2	14	14	16	16
C.O.P. (RAV-SP_AT)	W/W	2,72	3,14	3,11	3,59	2,83	3,27	n/a	n/a
C.O.P. (RAV-SP_AT8)	W/W	n/a	n/a	3,01	3,47	2,66	3,07	2,42	2,79
C.O.P. (RAV-SM_AT)	W/W	2,35	2,72	2,48	2,87	2,39	2,76	2,35	2,71
Air flow	W/W	1520	2100	2280	2800	3040	4200	3800	4900
Power Input	kW	0,56	0,82	0,74	1,11	0,93	1,64	1,11	1,92
Sound pressure	dBA	54	55	55	56	56	57	57	58
Weight	kg	49	52	105	107	111	113	135	137

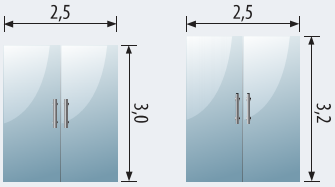
Dimensions for all sizes (H x W x D) mm : 260x1050x755

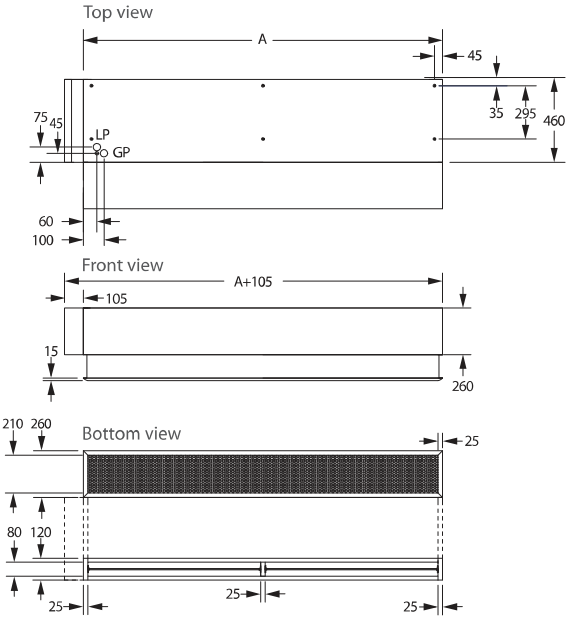
Maximum Door width and height in metres

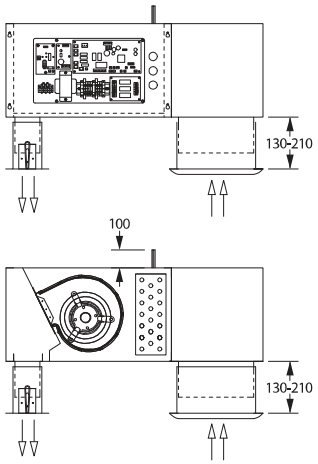










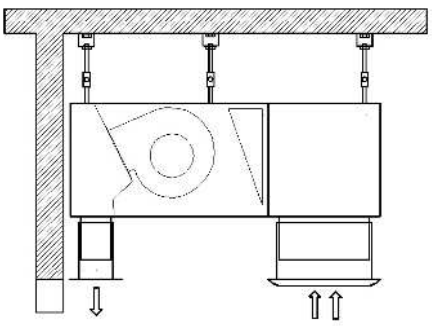


GP: Gas Pipe (Flare nut Ø 15.9mm)
LP: Liquid Pipe (Flare nut Ø 9.5mm)

RAV-CT_BH

BUILT-IN UNIT

Suitable for installation in the ceiling space above the door, only the inlet grille and discharge outlet will be visible.



Model	RAV-CT	100BH-M	100BH-L	150BH-M	150BH-L	200BH-M	200BH-L	250BH-M	250BH-L
Capacity code	hp	3	3	4	4	5	5	6	6
Heating output	kW	8	8	11,2	11,2	14	14	16	16
C.O.P. (RAV-SP_AT)	W/W	2,72	3,14	3,11	3,59	2,83	3,27	n/a	n/a
C.O.P. (RAV-SP_AT8)	W/W	n/a	n/a	3,01	3,47	2,66	3,07	2,42	2,79
C.O.P. (RAV-SM_AT)	W/W	2,35	2,72	2,48	2,87	2,39	2,76	2,35	2,71
Air flow	W/W	1520	2100	2280	2800	3040	4200	3800	4900
Power Input	kW	0,56	0,82	0,74	1,11	0,93	1,64	1,11	1,92
Sound pressure	dBA	54	55	55	56	56	57	57	58
Weight	kg	77	80	113	115	143	145	185	189

Dimensions for all sizes (H x W x D) mm : 405-485x1105x720

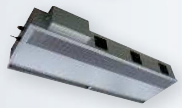
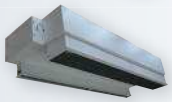
Outdoor units

Toshiba Digital and Super Digital Inverter air conditioners deliver exceptional operating savings and ecological features in an extremely compact unit. With state-of-the-art technologies, flexible controls and improved installation they bring comfort and convenience to all business installations.

- **Vector controlled DC hybrid inverter:** Featuring both PAM and PWM control.
- **Advanced air management system**: High efficiency fan motors, larger fans and new fan grille design.
- **Long pipe runs**: Up to 75 m length and 30 m elevation for increased installation flexibility.
- **Wide operating range**: Down to -20 °C in heating mode (2HP to 6HP).
- **Eco-driving twin-rotary compressors**: The structure and magnetic action of the new Toshiba Eco-driving twin-rotary compressors provide excellent energy performance at full load as well as in partial load conditions.

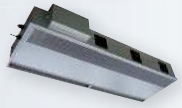
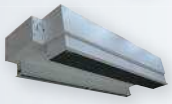
Digital Inverter




		RAV-SM803AT-E	RAV-SM1103AT-E1	RAV-SM1403AT-E1	RAV-SM1603AT-E
	CH	RAV-CT100CH-M	RAV-CT150CH-M	RAV-CT200CH-M	RAV-CT250CH-M
		RAV-CT100CH-L	RAV-CT150CH-L	RAV-CT200CH-L	RAV-CT250CH-L
	UH	RAV-CT100UH-M	RAV-CT150UH-M	RAV-CT200UH-M	RAV-CT250UH-M
		RAV-CT100UH-L	RAV-CT150UH-L	RAV-CT200UH-L	RAV-CT250UH-L
	BH	RAV-CT100BH-M	RAV-CT150BH-M	RAV-CT200BH-M	RAV-CT250BH-M
		RAV-CT100BH-L	RAV-CT150BH-L	RAV-CT200BH-L	RAV-CT250BH-L

Super Digital Inverter




		RAV-SP804AT-E	RAV-SP1104AT-E RAV-SP1104AT8-E	RAV-SP1404AT-E RAV-SP1404AT8-E	RAV-SP1604AT-E RAV-SP1604AT8-E
	CH	RAV-CT100CH-M	RAV-CT150CH-M	RAV-CT200CH-M	RAV-CT250CH-M
		RAV-CT100CH-L	RAV-CT150CH-L	RAV-CT200CH-L	RAV-CT250CH-L
	UH	RAV-CT100UH-M	RAV-CT150UH-M	RAV-CT200UH-M	RAV-CT250UH-M
		RAV-CT100UH-L	RAV-CT150UH-L	RAV-CT200UH-L	RAV-CT250UH-L
	BH	RAV-CT100BH-M	RAV-CT150BH-M	RAV-CT200BH-M	RAV-CT250BH-M
		RAV-CT100BH-L	RAV-CT150BH-L	RAV-CT200BH-L	RAV-CT250BH-L

Controls

Toshiba offers a wide selection of remote controls to suit local needs.
In addition to those shown below the TCB-PCNT30TLE2 TCC-Link interface enables connection of the system to Toshiba BMS controls is available.

RBC-AMT32E

CLASSIC CONTROL

RBC-AMS51E

LITE VISION
CONTROLLER

TCB-AX32E2

INFRA-RED
CONTROLLER KIT

RBC-AS21E2

SIMPLIFIED CONTROL

TCB-EXS21TLE

SCHEDULE TIMER

RBC-AMS41E

CLASSIC CONTROL with
WEEKLY TIMER

Accessories

Ceiling Mounting Kit

The optional ceiling mounting kit absorbs noise and vibration.
There is a choice of 2 kits based on unit width. Use model 3871 for 1.0m to 2.0m units, and model 4034 for 2.5m units.

Reduced annual energy consumption

Using a heat pump system connected to the air curtain is an effective method to keep the indoor temperature under control and guarantee great savings on annual electricity costs.
The highly efficient Super Digital inverter heat pump is a very powerful unit which complies with the new European requirements on energy consumptions.

Electrical consumption differences

Heat pump with Air curtain — up to 75% of electricity cost savings

Electrical Air curtain

Case studies

Here following two examples of the same type of installation in two european cities, where the outdoor temperature conditions and electricity costs are different.
The case studies show the reduced time to recover the installation cost difference of an air curtain in conjunction with a Toshiba heat pump, making this choice a good investment versus traditional units.

	Air curtain + Heat pump	Electrical Air curtain
Units	RAV-CT150CH-M RAV-SP1104AT-E	Zephyr 1.5 M
Installation Cost	€ 2.000	€ 1.000
Units cost	€ 4.673	€ 1.784
Total Installation and Units	€ 6.673	€ 2.784
Premium cost	€ 3.889	-

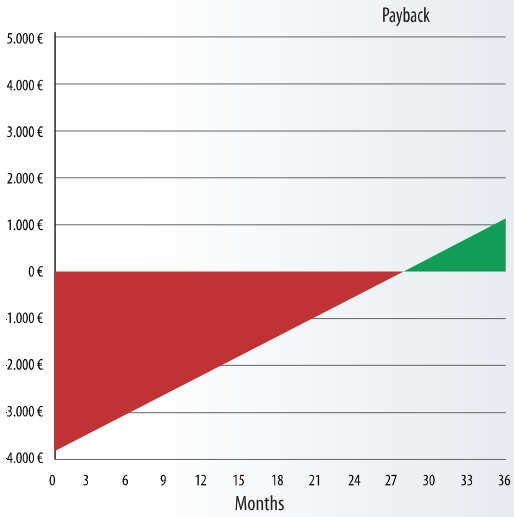
Shop located in Paris, France

Shop open 7 days per week / 12 hours per day (8.00 to 20.00)

	Air curtain + Heat pump	Electrical Air curtain
Annual Energy consumption	11.651 kWh	33.793 kWh
Annual Cost Electricity	€ 889	€ 2.578
Annual savings	- € 1.689	-
Payback in years	2,3	

Annual Heating Duration = 3303 hours

- Door open when shop is open (Door width 1.5m, door height 2.9m).
- Payback calculated hourly using Outdoor temperature data for Paris.
- Heating full demand when shop is open, and hourly Outdoor temp. < 18°C.
- LC DX Air Curtain seasonal energy consumption based on hourly Outdoor temp.
- Electric Air Curtain provides 100% heating output of LC DX Air Curtain.
- Electric Air Curtain Heater efficiency 95%.
- France Commercial 2011 rate used for Electricity cost (€0.0763 / kWh).
- Installation and unit cost have been estimated.



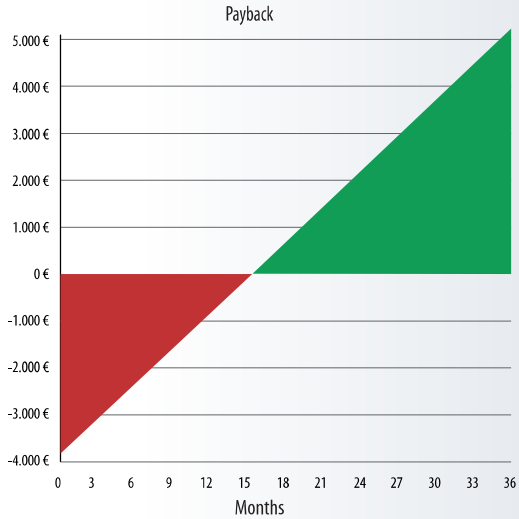
Shop located in Munich, Germany

Shop open 7 days per week / 12 hours per day (8.00 to 20.00)

	Air curtain + Heat pump	Electrical Air curtain
Annual Energy consumption	12.734 kWh	35.280 kWh
Annual Cost Electricity	€ 1.706	€ 4.728
Annual savings	- € 3.022	-
Payback in years	1,3	

Annual Heating Duration = 3501 hours

- Door open when shop is open (Door width 1.5m, door height 2.9m).
- Payback calculated hourly using Outdoor temperature data for Munich.
- Heating full demand when shop is open, and hourly Outdoor temp. < 18°C.
- LC DX Air Curtain seasonal energy consumption based on hourly Outdoor temp.
- Electric Air Curtain provides 100% heating output of LC DX Air Curtain.
- Electric Air Curtain Heater efficiency 95%.
- Germany Commercial 2011 rate used for Electricity cost (€ 0.1340 / kWh).
- Installation and unit cost have been estimated.



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TOSHIBA

TOSHIBA AIRCONDITIONING

Advancing the eco-evolution

Address