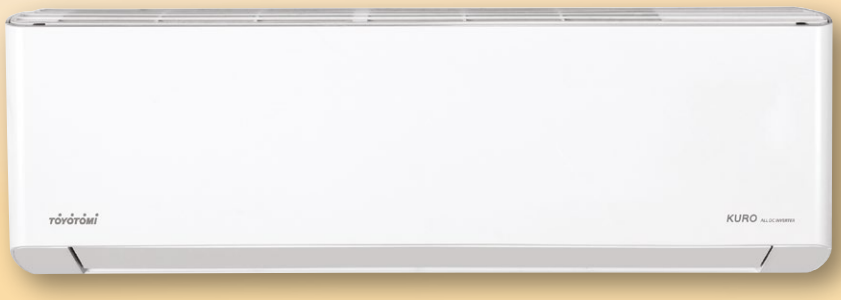
TOYOTOMI
Japan



cooling & heating

Technical Commercial Guide
VRF System Serie TTY-EV

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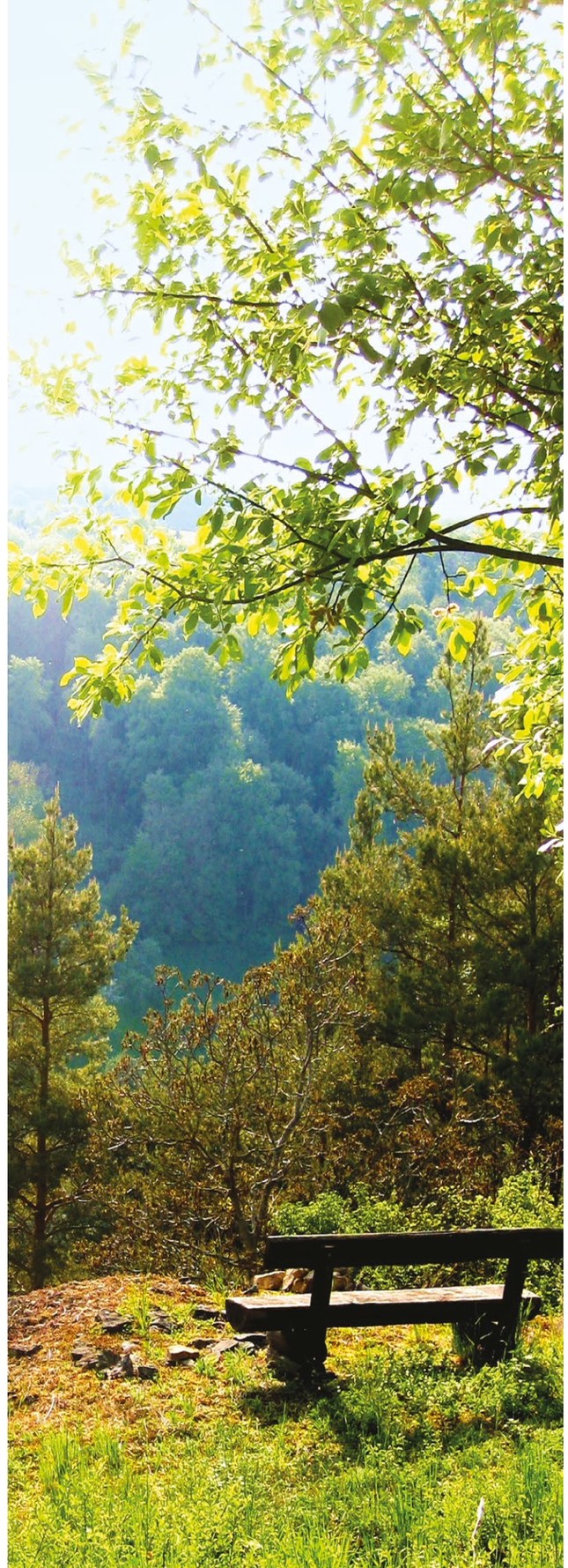


External Units TTY-EV MINI and SLIM

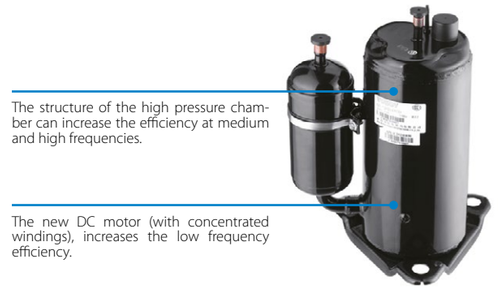
Main features

"All DC inverter" technology to improve compression efficiency

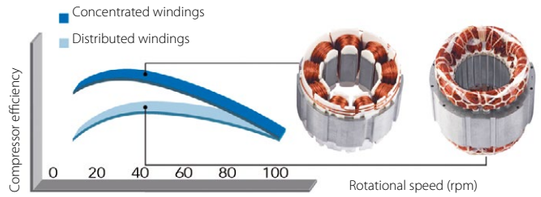
The use of Inverter compressors only guarantees optimum system efficiency under both full and partial load conditions. The use of a high efficiency permanent magnet synchronous motor guarantees a better performance compared to the traditional DC inverter compressor.

"All DC inverter" compressors

Using only DC inverter compressors, the system is able to absorb the gas directly in order to reduce the overheating loss and improve efficiency.

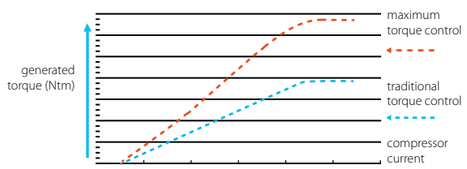


The high efficiency permanent magnet synchronous motor is used to increase efficiency compared to the traditional DC inverter compressor.



Advanced torque control technology with minimum current

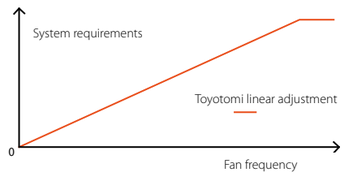
It is able to reduce the energy loss caused by the windings of the device in order to achieve better efficiency.



Low frequency torque control

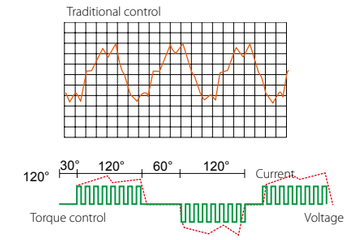
It is able to directly control the motor torque so that the fan motor can run at low speed.

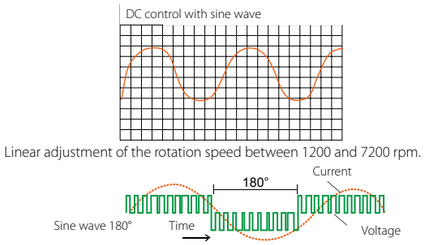
Users will have greater comfort and at the same time all system requirements are met.



DC inverter with 180° sine wave technology

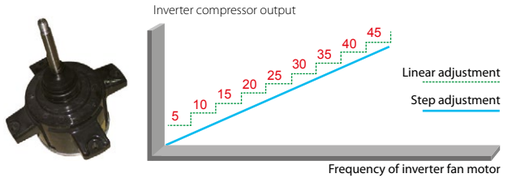
It is able to meet the needs of various places for different temperatures and is able to save a lot of electricity while at the same time ensuring maximum comfort for users.

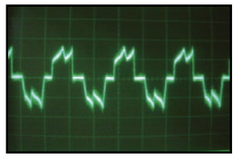


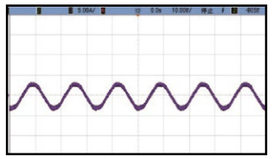


SENSORLESS DC inverter fan motor

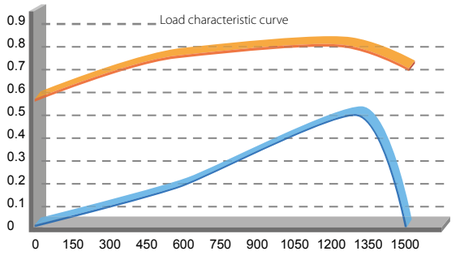
The fan motor speed can be adjusted from 5 to 65 Hz.
Compared to traditional inverter motors, this type of solution is more efficient in terms of energy saving.
.SENSORLESS control technology ensures quieter operation, less vibration and more uniform operation.




Before

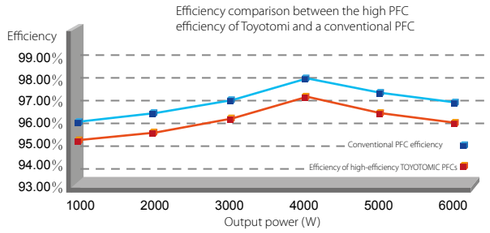

After

The external unit is equipped with high efficiency brushless DC inverter motors which are 30% more efficient than traditional motors.
At the same time, the evaporation capacity is optimised by the emulation software of the refrigeration system, thus achieving a large improvement in the amount of heat transfer from the evaporator.



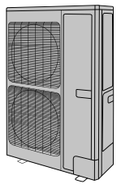
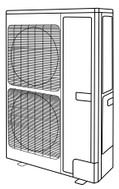
High efficiency digital PFC control

The high-efficiency digital PFC control technology used by Toyotomi makes it possible to improve efficiency by around 1% compared to conventional PFC.
With a system rated at 5 kW, you can save 50 W per hour and 1.2 kW of electricity per day.



Wider operation range

The unit uses DC Inverter motors with more accurate control of the high pressure, thus effectively solving the problem of controlling high pressures in cooling conditions at low ambient temperatures.
The range of operation in cooling mode is also wider.

	
Previous model	Toyotomi TTY-EV Mini and Slim
Cooling:10~48℃ Heating:-20~27℃	Cooling:-5~52℃ Heating:-20~27℃

Low noise

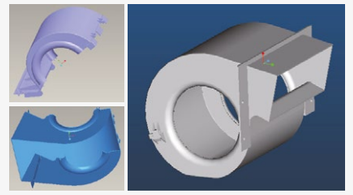
Low noise level of the external unit

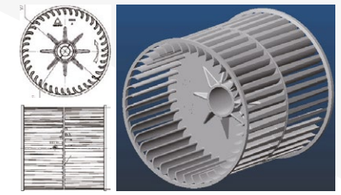
- The use of advanced subcooling control technology allows to reduce the liquid flow noise of the internal unit when operating in cooling mode.
- - The noise level of the external unit can be reduced by up to 45 dB due to the optimised design of the fan and compressor system and the different silent modes of the external unit.

Reduced noise up to 45 dB

Low sound level of the internal unit

- High efficiency fans with patented blades and low-noise cover nuts have been adopted. A low noise expansion valve has also been adopted, bringing the noise of the whole group starting from 22dB (A).
- Having improved the air inlet angle in the centrifugal fan blade, with an ideal ratio between the internal and external diameter of the impeller, an increase in the volume of the air and a decrease in noise was obtained.





"Rapid" temperature control technology

The rapid temperature control technology for cooling and heating is adopted so as to reach the desired internal temperature more quickly.

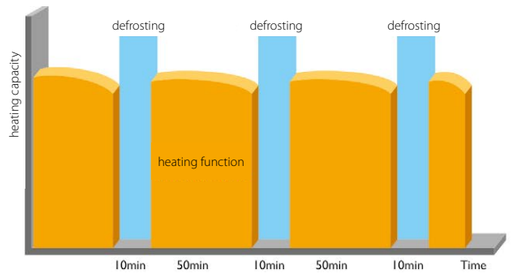
Rapid cooling

Rapid heating

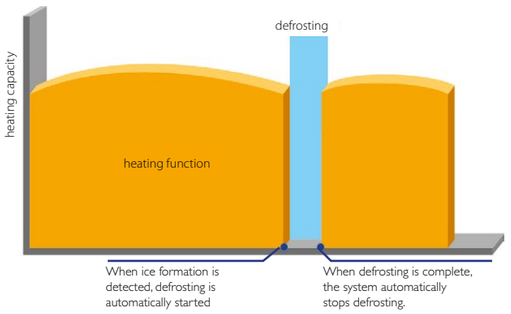
Comfortable heating

The unit is equipped with an innovative defrosting system when operating in heating mode.
The best defrost method is therefore chosen based on the external temperature and the operating condition to achieve an innovative defrost, thus improving the effectiveness and efficiency of the heating. The traditional defrost mode instead adopts a defrost system at regular intervals which reduces both comfort and energy efficiency.

Traditional defrost mode

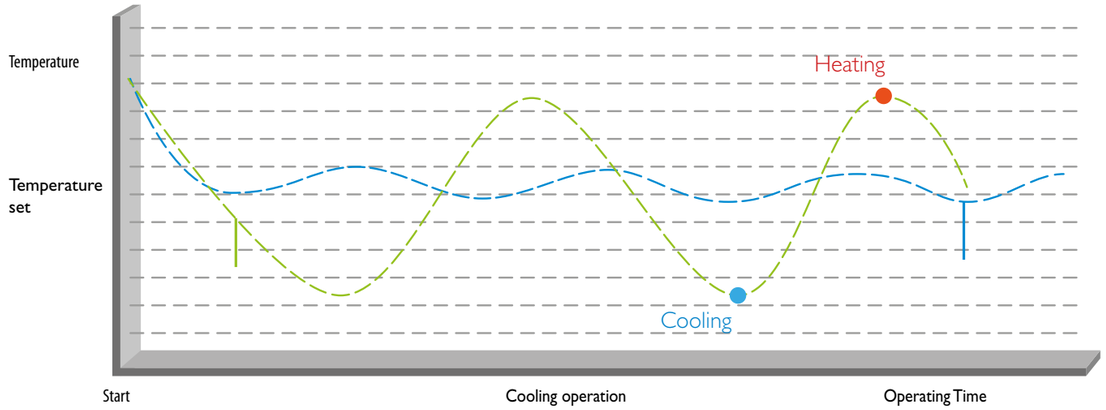


Toyotomi Innovative de-icing mode



Oil return technology in heating mode

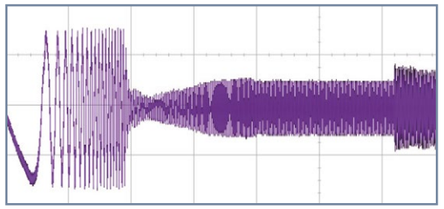
The unit is able to return oil to the compressor in a non-switching mode when operating in heating mode and when the outside temperature is between 0 and 20°C.
As a result of this technology, the internal room temperature is more stable, increasing comfort in heating mode.



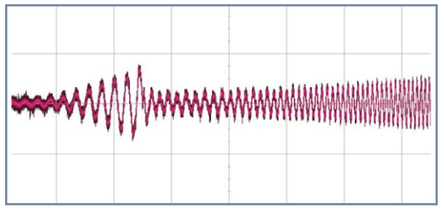
Reliable operation

Compressor Closed Loop Start Technology

The system adopts the innovative technology of closed-loop start control. Due to this technology, the starting current is low and starting is more reliable.



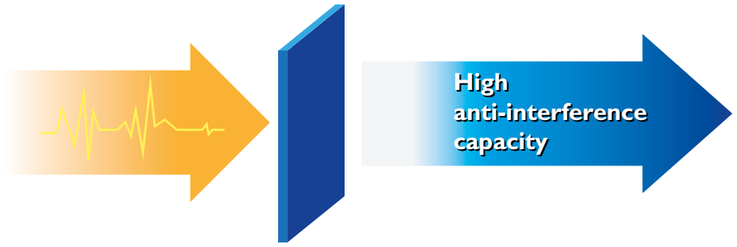
Conventional start-up mode



Toyotomi closed-loop start mode

High anti-interference capability

The system uses the latest CAN bus communication technology, with non-polarised communication and high anti-interference capability.
The communication cable can be purchased directly, thus reducing the difficulties during the installation phase.



Advanced high frequency transformer with more stable voltage

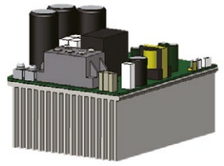
- The system adopts an advanced switching power supply with lower power consumption and greater energy efficiency.
- The wide voltage regulation range ensures a stable voltage when fluctuations in the mains voltage occur.
- Compared to the traditional transformer, the high-frequency transformer is smaller and lighter.

Linear power supply
(linear inverter + voltage regulation chip)

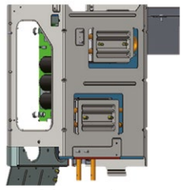
Switching power supply
(high frequency inverter
+ switching chip)

Refrigerant cooling technology

- The cooling usually takes place through finned heat sinks.
- Due to the large size and the passive dispersion the effect of heat radiation is not satisfactory.
- With refrigerant cooling technology, the effect of radiant heat is satisfactory.
- The module temperature dropped from 80 to 65 ° C with an increase in life and stability of the module.



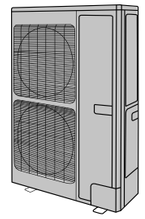
Common radiator



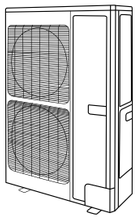
Refrigerant cooling

Extended pipe length for a more versatile connection

With subcooling control technology achieved with the addition of a subcooler, the Toyotomi mini system's internal and external unit can operate reliably with a longer connection pipe.



Previous model



Toyotomi TTY-EV mini

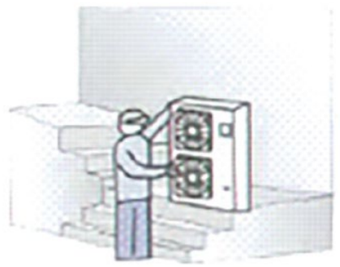
	Previous model	Toyotomi TTY-EV mini
Total length of the Pipes	150 m	300 m
Equivalent length of Piping	70 m	150 m

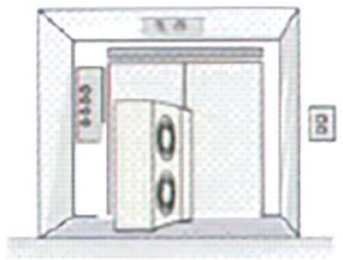
Easy installation with low construction costs

The Toyotomi TTY-EV mini external unit is small in size and weight, no need for a forklift or crane for handling and installation.

Handling by stairs or lift

The Toyotomi TTY-EV mini external unit is small in size to save space and facilitate handling that can be done by stairs or lift.





MINI External Unit Specifications

Model		Units	TTY-EVN80W	TTY-EVN100W	TTY-EVN120W	TTY-EVN140W	TTY-EVN160W
Capacity range		HP	2	3	4	5	6
Capacity	Cooling	kW	8.0	10.0	12.10	14.0	16.0
	Heating	kW	9.0	11.0	14.0	16.50	18.0
Range min-max capacity outdoor unit		%	10~100				
EER		kW	3.90	3.70	3.99	3.90	3.37
COP		kW	4.74	4.40	4.28	4.18	3.87
Power Supply		Volts/Phase/Hz	230 / 1 / 50				
Power absorbed	Cooling	kW	2.05	2.70	3.03	3.59	4.75
	Heating	kW	1.90	2.50	3.27	3.95	4.65
Current absorbed	Cooling	A	-	-	15.0	19.2	23.1
	Heating	A	-	-	15.8	19.3	23.0
Fan		tipo	Helical				
Fan motor		tipo	Inverter				
Air flow		m3/h	3,900	4,000	6,000	6,300	6,600
Sound pressure		dB(A)	56	56	57	58	58
Refrigerant	Type	tipo	R410A				
	Preload	kg	1.8	1.8	3.3	3.3	3.3
Compressor		tipo	Inverter Scroll				
Piping size	Tube Gas side	mm (inch)	15,88 (5/8")	15,88 (5/8")	15,88 (5/8")	15,88 (5/8")	15,88 (5/8")
	Tube Liquid side	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Cartella				
Product Dimension	Width	mm	980	980	900	900	900
	Depth	mm	360	360	340	340	340
	Hight	mm	790	790	1,345	1,345	1,345
Packing Dimension	Width	mm	-	-	998	998	998
	Depth	mm	-	-	458	458	458
	Hight	mm	-	-	1,515	1,515	1,515
Weight (nett)		Kg	80	80	110	110	110
Weight (gross)		Kg	90	90	120	120	120
MIN/MAX Internal Units Connectable		N°	2 / 4	2 / 5	2 / 7	2 / 8	2 / 9
Maximum Tubage Length		m	-	-	150	150	150
Maximum elevation (External Unit above)		m	-	-	50	50	50
Maximum elevation (between Internal Units)		m	-	-	15	15	15
Operating limits	Cooling	℃	-5~48				
	Heating	℃	-20~27				

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with an Internal Unit at 100% power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

VRF Slim External Unit Specifications

Model		Units	TTY-EVM224W	TTY-EVM280W	TTY-EVM335W
Capacity range		HP			
Capacity	Cooling	kW	22.40	28.0	33.50
	Heating	kW	24.0	30.0	35.0
Range min-max capacity outdoor unit		%	10~100		
EER		kW	3.66	3.60	3.50
COP		kW	4.90	4.90	4.90
Power Supply		Volts/Phase/Hz	380 / 3 / 50		
Power absorbed	Cooling	kW	6.12	7.78	9.57
	Heating	kW	4.90	6.12	7.14
Current absorbed	Cooling	A	10.9	13.90	17.10
	Heating	A	8.80	10.90	12.80
Fan		tipo	Helical		
Fan motor		tipo	Inverter		
Air flow		m3/h	8,000	11,000	11,000
Sound pressure		dB(A)	-	-	-
?		dB(A)	74	74	70
Refrigerant	Type	tipo	R410A		
	Preload	kg	5.5	7.1	8.0
Compressor		tipo	Inverter Scroll		
Piping size	Tube Gas side	mm (inch)	19,05 (3/4")	22,2 (7/8")	25,4 (1")
	Tube Liquid side	mm (inch)	9,52 (3/8")	9,52 (3/8")	12,7(1/2")
Connection method			Solder		
Product Dimension	Width	mm	940	940	940
	Depth	mm	320	460	460
	Hight	mm	1430	1615	1615
Packing Dimension	Width	mm	1038	1038	1038
	Depth	mm	438	578	578
	Hight	mm	1580	1765	1765
Weight (nett)		Kg	133	166	177
Weight (gross)		Kg	144	183	194
MIN/MAX Internal Units Connectable		N°	13	17	20
Maximum Tubage Length		m	150	150	150
Maximum elevation (External Unit above)		m	-	-	-
Maximum elevation (between Internal Units)		m	-	-	-
Operating limits	Cooling	℃	-5~52		
	Heating	℃	-20~27		

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with an Internal Unit at 100% power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

External Units TTY-EV MODULAR

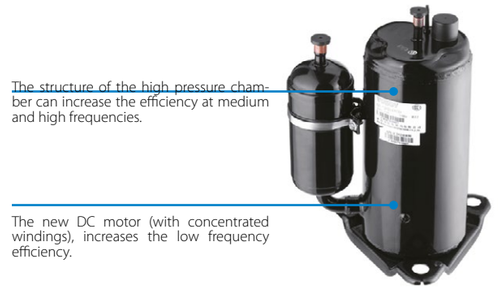
Main features

"All DC inverter" technology to improve compression efficiency

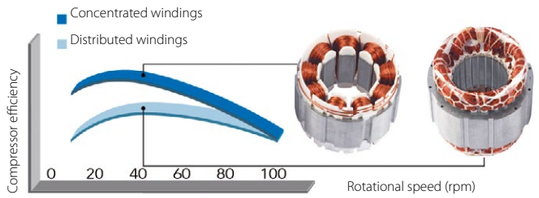
The use of Inverter compressors only guarantees optimum system efficiency under both full and partial load conditions. The use of a high efficiency permanent magnet synchronous motor guarantees a better performance compared to the traditional DC inverter compressor.

"All DC inverter" compressors

Using only DC inverter compressors, the system is able to absorb the gas directly in order to reduce the overheating loss and improve efficiency.

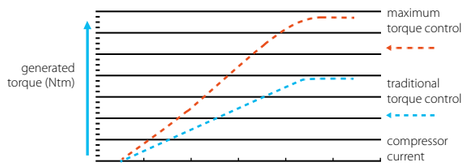


The high efficiency permanent magnet synchronous motor is used to increase efficiency compared to the traditional DC inverter compressor.



Advanced torque control technology with minimum current

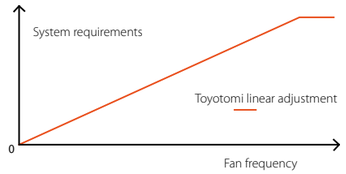
It is able to reduce the energy loss caused by the windings of the device in order to achieve better efficiency.



Low frequency torque control

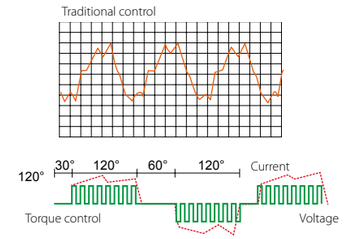
It is able to directly control the motor torque so that the fan motor can run at low speed.

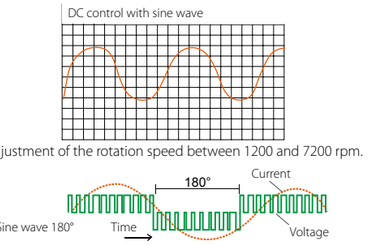
Users will have greater comfort and at the same time all system requirements are met.



DC inverter with 180° sine wave technology

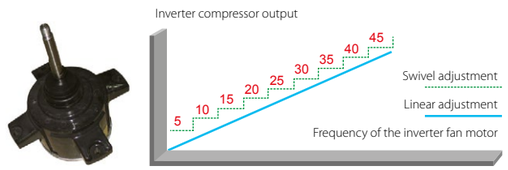
It is able to meet the needs of various places for different temperatures and is able to save a lot of electricity while at the same time ensuring maximum comfort for users.

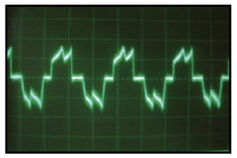




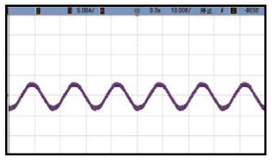
SENSORLESS DC inverter fan motor

The fan motor speed can be adjusted from 5 to 65 Hz.
Compared to traditional inverter motors, this type of solution is more efficient in terms of energy saving.
.SENSORLESS control technology ensures quieter operation, less vibration and more uniform operation.





Before



After

88 HP maximum power - The greatest combination possibility

The maximum power of the single external unit reaches **22 HP** ; the maximum power of the combined external units reaches **88 HP,** the highest value in the sector

The maximum combined power reaches 88 HP

8/10 HP | 12/14/16 HP | 18/20/22 HP | 88 HP

You save in terms of system and piping costs

16HPx4+14HPx1+10HPx1=88HP

22HPx4=88HP

Easier installation

Due to the new compact design, the external unit can be transported to the roof of buildings using a lift, without the need for a crane.
This simplifies delivery and installation.

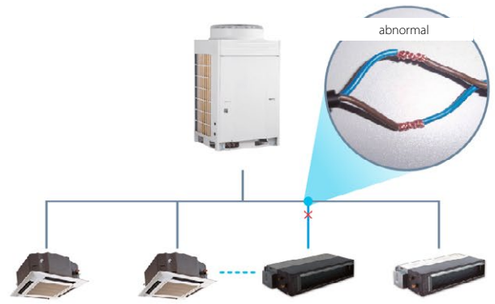
Non-polarised CAN technology to improve communication efficiency

Toyotomi is the first in its sector to adopt non-polarised CAN communication technology.

The CAN communication system offers greater system response speed, a more convenient installation development allows for more reliable communication data.

Performance index	Company A Multi-VRF Network	GMV5 DC Inverter CAN Network
Reliability	Software check	Hardware check, more reliable
	One unit's communication error may lead to a breakdown of the whole network	If one unit has erro
Communication Efficiency	Low utilizatoin	High utilizatoin
	Communication speed is about 10Kbps	Communication speed is 20Kbps
Compatability	One main network, difficult to ad new equipment	Multiple main networks, easy to add new equipment
Communication distance	1000 m	1500 m

Non-polarised CAN communication technology is applied to support installation with flexible wiring, greatly reducing construction difficulties.



Wide operating range and operating conditions

The range of operating voltages of the TTY-EV system has been improved and expanded to reach 320-460 V.
This system is able to operate correctly even in places with unstable voltage.

The external operating temperature range has also been improved and extended to -5 ° C ~ 52 ° C in cooling and -20 ° C ~ 24 ° C in heating.

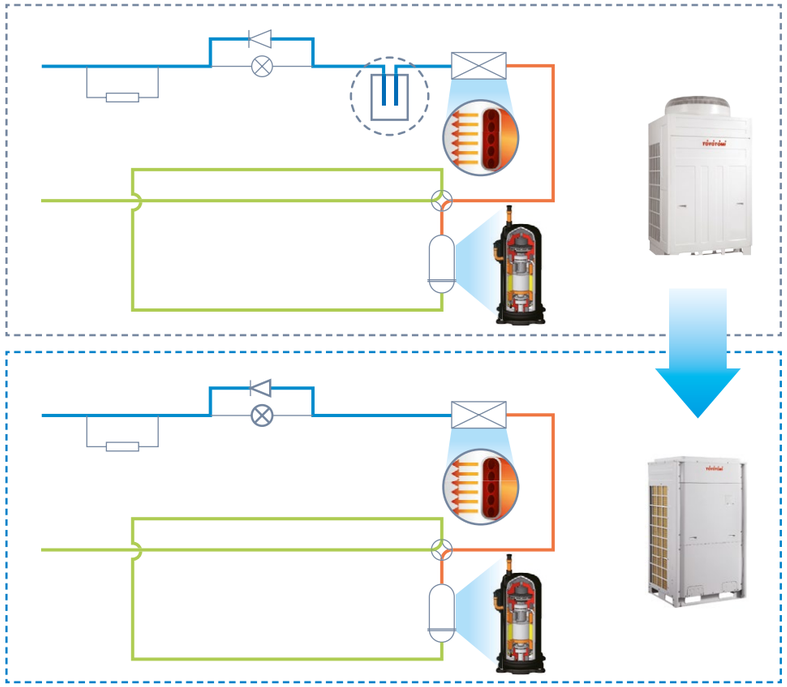
Broader coverage

A TTY-EV modular system is able to create a combination of 4 external unit modules to which up to 80 internal units are connected. Particularly useful in commercial buildings and hotels.

Maximum number of connectable internal units: **80**

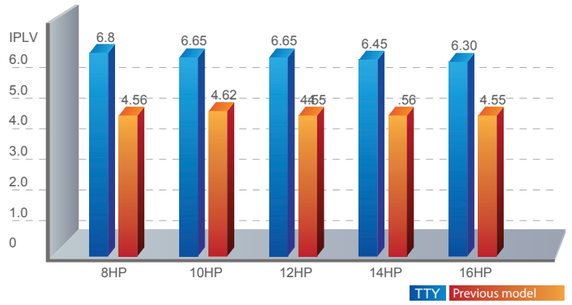
Refrigerant storage and distribution

The refrigerant circuit of the modular TTY-EV units has been designed without the liquid receiver and the excess refrigerant is stored in the pipeline, minimising the refrigerant charge volume and improving the precision of the refrigerant control in the circuit.



High efficiency and greater energy savings

Due to the advanced "All DC Inverter" technology, the optimised system design and the intelligent control technology, the TTY-EV system has an IPLV (Integrated Part Load Value) value of 6.8.

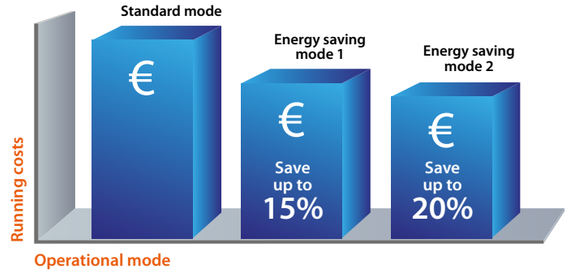


New generation control technology with energy savings of up to 20%

The TTY-EV system has two energy-saving modes:

Mode 1:
In automatic energy saving mode, the system automatically adapts the parameters based on the operating status, thus reducing the cost of electricity. Up to 15% energy can be saved.

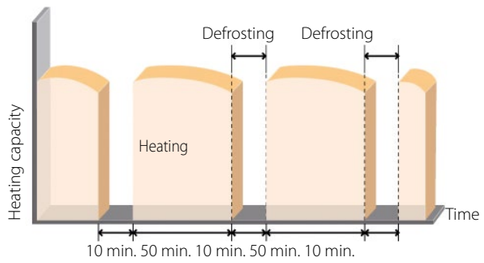
Mode 2:
In forced energy saving mode, the system will necessarily limit the output power.
Up to 20% energy can be saved.



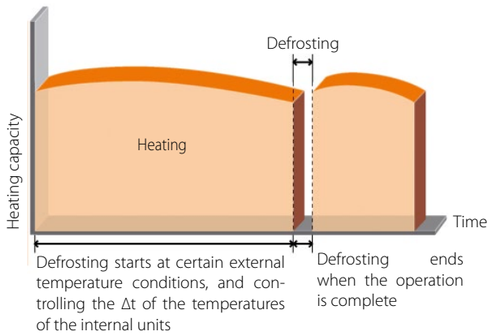
Comfortable heating

The system is equipped with optimised defrosting. This mode chooses the best defrosting method based on the outside temperature and the operating condition to achieve a rapid defrost, thus improving heating efficiency and effectiveness. The traditional defrost mode instead adopts a defrost system at regular intervals which reduces both comfort and energy efficiency.

Traditional defrost mode



Optimised Toyotomi defrosting mode



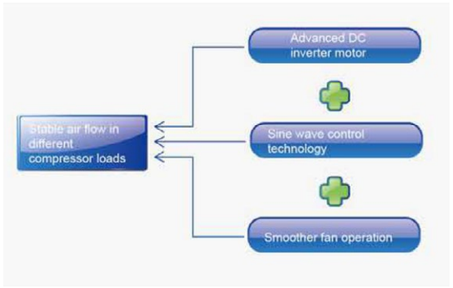
Technology for precise and intelligent power distribution to ensure maximum efficiency.

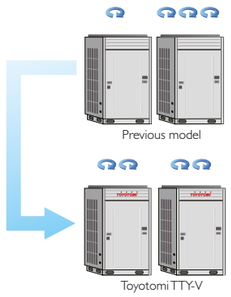
- When, in a system with multiple external modules connected together, the total load of the internal units requires more than 75% of the capacity of a module already in operation, the control system automatically starts one or more modules connected to the first one.
- When the total load of the internal units requires less than 40% of the capacity of a module in operation, a unit is automatically turned off.
- Therefore, each unit shares 40-75% of the total load.
- Tests show that an air conditioning system consumes the minimum amount of energy when it operates within 40-75% of its maximum capacity.

	Company A	Toyotomi TTY-V
Inverter compressor output	10HP (full load) + 2HP (low load)	6HP (partial load) + 6HP (partial load)
Performance compared	Unbit costs more energy and may be soon damaged	Unit costs less energy and can always be kept in good condition

Optimum yield for maximum efficiency

The best heating or cooling performance can be achieved with maximum energy savings.
The compressor and fan, both DC inverters, also operate in this way to ensure high efficiency.





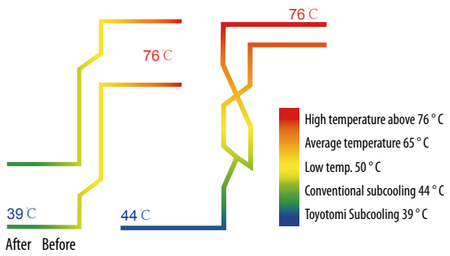
An unbalanced operating mode reduces the effectiveness of the fan and lowers the cooling performance

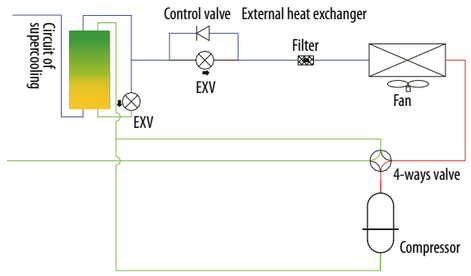
The distribution of the fan is more balanced to increase efficiency

Subcooling control technology to ensure optimal cooling and heating

The heat exchange circuit manages to control the first subcooling process of the heat exchanger. The subcooling level can reach 11 ° C

The subcooling circuit can realize 9 ° C of secondary subcooling to guarantee a good cooling and heating performance





Temperature controlled by wire control for improved efficiency and energy saving

By setting the lower temperature limit in cooling or dehumidifying mode and setting the upper temperature limit in heating, 3D heating or heat delivery mode, the system can operate in a minimum temperature range, saving energy.

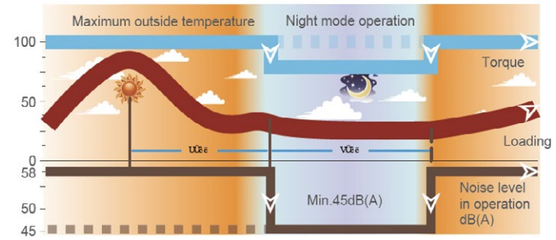
OPERATING MODES

The TTY-EV system has a wide operating range.
Normal operation is guaranteed both during cold winter periods and during the hottest summers, with minimum noise and maximum comfort for users.

Silent mode of the external unit and noise control

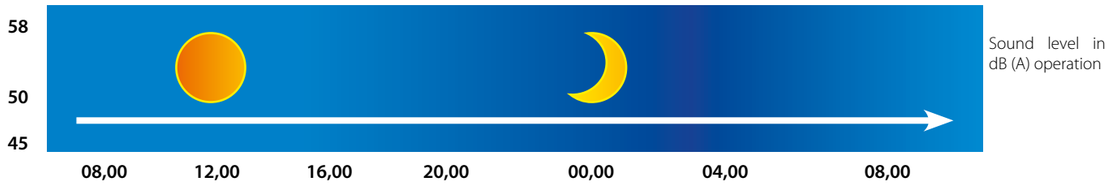
Night mode

The system is able to record the maximum outside temperature.
At night the system is automatically set to silent mode.
9 types of silent mode can be set according to specific needs.



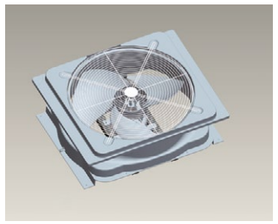
Silent mode

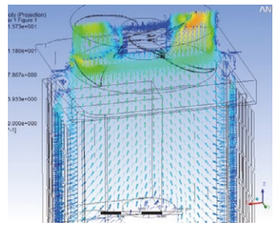
The system can be set in this mode to ensure low noise throughout the entire period of operation. The sound level is only 45 dB (A)



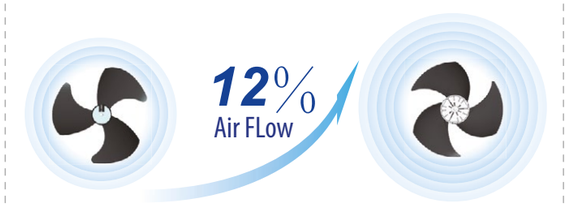
Silent mode

1. Optimised housing design.
After numerous tests a new structure was developed for housing the fan in order to reduce its vibrations during operation.
The noise is reduced by 3 dB (A).



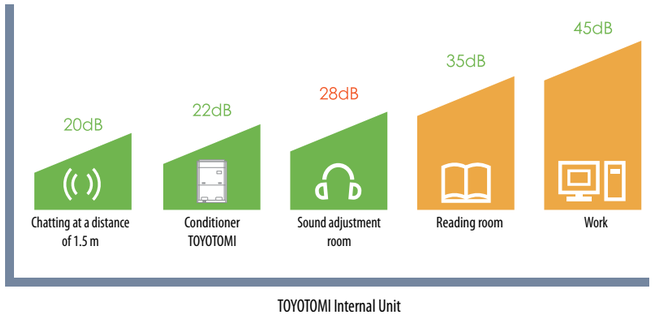


2. Aerodynamic 3D axial fan.
Compared to the conventional fan, it is able to increase the volume of air by 12%, improving efficiency and reducing noise.



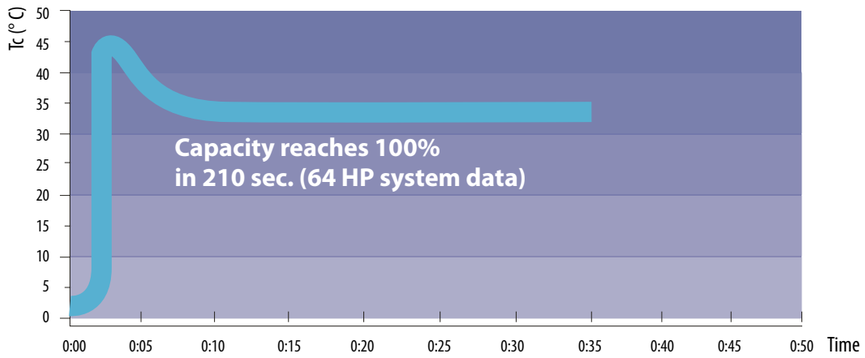
Silent internal unit

The internal units of the TTY-VE system use DC inverter motors to achieve a linear adjustment.
Depending on the outside temperature or the needs of people, users can set this mode using the wired control.
The sound level is only 22 dB (A).



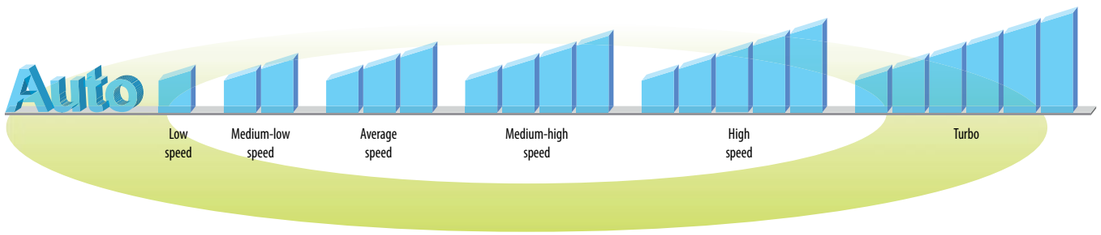
Quick start in heating mode

The DC Inverter compressor is initially started to avoid excessive electricity consumption.
The DC Inverter compressor is able to operate at high frequency once it has started, in order to produce more heat.



7 internal fan speed levels

The speed of the internal fan can be set to 7 different levels via the wired control.
They are: automatic, low speed, medium-low, medium, medium-high, high and turbo.
When the wired or infrared command is set to ON, just press the "FAN" button to set the speed of the internal fan in circular mode as follows:

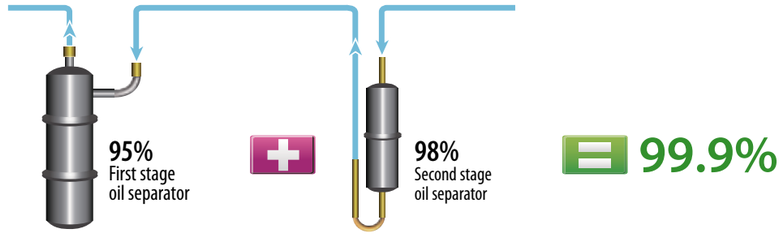


Excellent performance guaranteed by advanced technology

After 10 years of research and development, Toyotomi's TTY-EV system has been further improved, reaching a high level in electrical and mechanical components, as well as in control and communication technology.

Two-stage oil separation control technology (patented)

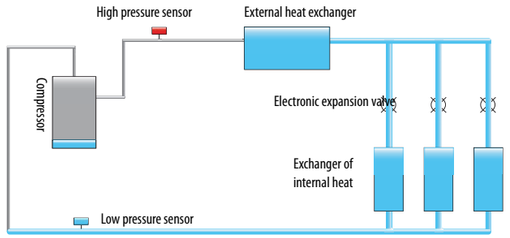
The first stage of the oil separator uses an expansion filter with a 95% separation efficiency.
The second stage separates the remaining 2% of the refrigerant oil with a separation efficiency of 98%.
The overall oil separation efficiency reaches 99.9%.



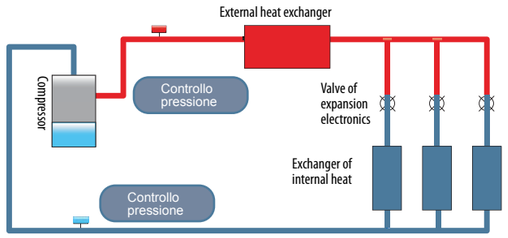
Oil return control technology

New Oil return control

The new Toyotomi technology for the control of the oil return in the compressors effectively controls the oil return in the system and the condition of its storage in each compressor and in this way considerably improves the useful life of the compressor itself.



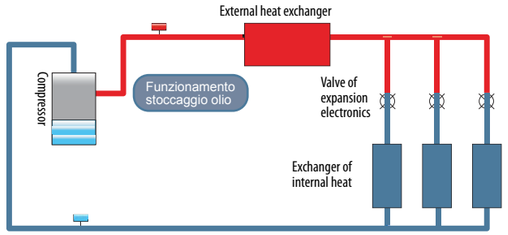
Oil storage status of the oil return



Oil return operation

Control of compressor oil storage

The system applies a special technology for the storage of the compressor oil, which is able to control the minimum oil level for compressor operation.

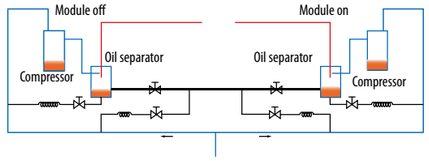


Oil storage operation

Oil balance control technology

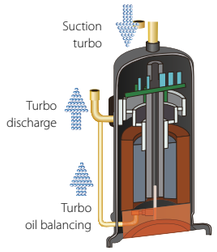
Oil balance between the various modules

Based on the actual operating status of each external unit and the compressor, the system is able to regulate the operation of the compressor and to balance the oil in each unit.



Oil balance between the various compressors

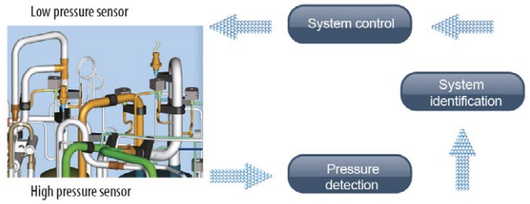
The refrigerant reaches the compressor from the suction pipe and then flows through the system.
It is possible to check the level and minimum volume of oil required for each compressor in order to balance it between each compressor.



Intelligent detection

Pressure sensor check

The pressure sensors are able to accurately detect the high and low pressure in the system and to regulate the performance of the fan and the compressor so as to guarantee the operation of the system in the most efficient pressure conditions from the point of view of energy consumption.

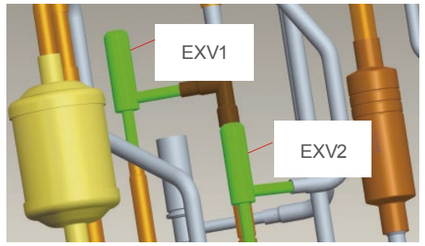


Temperature sensor control

Various temperature sensors are provided to detect the ambient temperature, the internal temperature and the evaporation temperature of the refrigerant.
These sensors make it possible to measure the operating condition of the system.

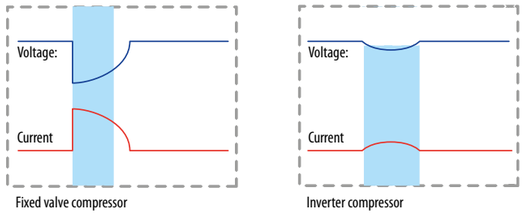
Multiple control of electronic expansion valves

External electronic expansion valves not only have a regulating effect, but also control refrigerant flow.
The system adopts multiple control of the electronic expansion valves with 960 possible positions regulated by two electronic expansion valves in order to accurately regulate the flow of refrigerant and ensure reliable operation of the system.



Less impact on the electricity grid

The inverter compressor start frequency increases gradually from 0 Hz to the set operating frequency.
The starting current of the compressor rotor is lowered reducing the load torque and therefore the impact on the electric network during start-up is reduced and at the same time the electromagnetic impact on the compressor decreases.



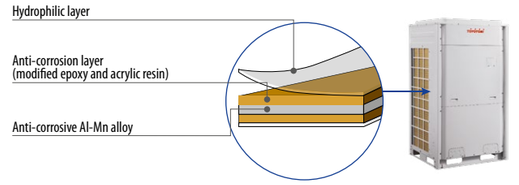
Rotating module operation for maximum service life

Operation with module rotation every 8 hours

The operating priority sequence of the external unit modules will be changed without restarting when the system is operating for a total of 8 hours, thus optimising system life.

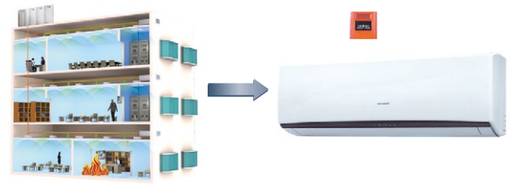
Golden Fin corrosion protection

The main material of the Golden Fin is an anti-rust alloy of aluminium-manganese (Al-Mn), coated with the Golden Protection Layer (anti-corrosion layer composed of: epoxy resin and modified acrylic, without silicone) whose anti-corrosion performance salt spray test is 200-300% higher than normal Blue Fin.



Automatic shutdown control in emergency

The external unit can be connected to a fire alarm signal.
In an emergency, the unit can be switched off automatically to avoid the risk of further damage.

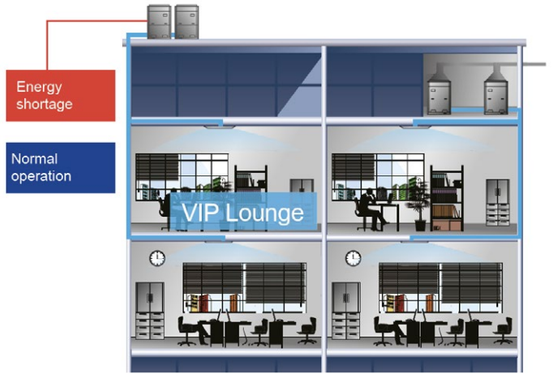


Low energy consumption mode of operation

It is possible to limit the maximum power consumption based on the power consumption of the system and the needs of the user.
The power consumption limitation can be set to 100%, 90% or 80% of the complete system capacity.

Identification of electricity shortages

The external unit is able to receive a power signal indicating the lack of electricity.
In some places, such as in hotels in the event of a power failure or lack of power, the external unit sends the power failure signal to the internal units. In this case, the conditioning service will be provided only in some selected environments.



Excellent emergency operation to guarantee partial operation

Emergency function

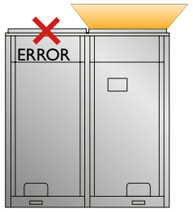
The TTY-EV system is able to connect up to 4 external unit modules together.
When an error occurs in one of the modules, the others take over the emergency operation to continue the service.

Compressor emergency operation

All the compressors in each module are DC inverters and when one compressor has an error or malfunction, the others take over the emergency operation.

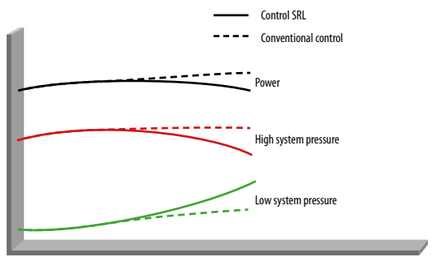
Emergency operation of the fan

For dual fan external units, one of the two fans can continue to operate if the other has an error or anomaly.



SRL (Self reaction load) adaptive load control

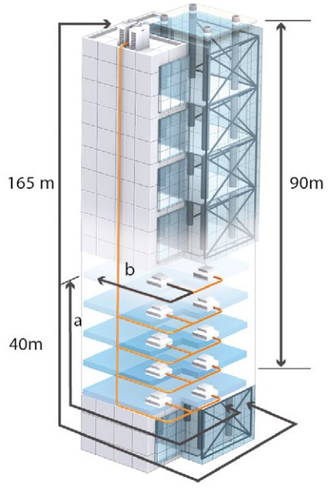
The SRL can intelligently detect the parameters and automatically adapt to the required (cold heat) load, reducing the power of the unit by improving energy efficiency.



Simple installation

External unit with high static pressure

The external units have 4 static pressure levels that can be set up to 82 Pa. This is particularly useful when it is necessary to position the external unit indoors.



1000 m of pipes for maximum installation flexibility

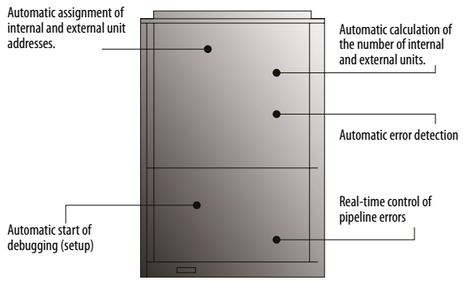
- The TTY-EV system can be installed in different types of buildings.
- One of its advantages is the simple piping design that facilitates installation and reduces costs.
- The maximum total length of the pipes is 1000 m (with limitation).
- The effective length of the pipes between the external unit and the furthest internal unit is 165 m.
- The maximum height difference between the internal and external units is 90 m (if the external unit is above) and 50 m (if the outdoor unit is below).

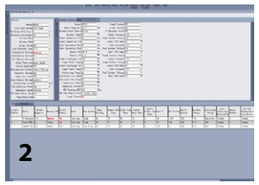
Note:
a: distance between the first branch and the most distant internal unit
b: distance between the first branch and the nearest internal unit
c: the AB difference must be ≤40m.

Smart tuning

TTY-EV has five features (setup):

- Automatic assignment of internal and external unit addresses.
- Automatic start of debugging (setup)
- Automatic calculation of the number of internal and external units.
- Automatic error detection
- Real-time control of pipeline errors





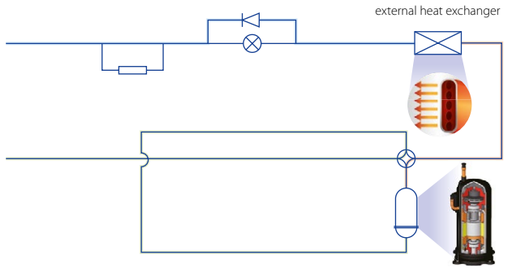
A variety of debugging methods to meet different needs.

There are several ways to fine-tune the system, for example:
1. Through dedicated software **2.** Through the debugger device TCE 41-24 / F (C):
This device has the functions of:

- Development of the complete system
- Development of independent internal units,
- Display of malfunctions, data recording etc ...
- It does not require software and PC connections and can connect to external USB data logging systems.

Automatic refrigerant recovery for easy maintenance

When the automatic refrigerant recovery function is set and the liquid pipe tap is closed during maintenance, the system automatically activates the compressor, the expansion valve, the solenoid valve and the fan. Exploiting the power of the compressor, the refrigerant is recovered on the condensation side of the external unit to avoid dispersion in the environment.
Meanwhile, during refrigerant recovery, the low system pressure is displayed.



Inspection door for easy monitoring

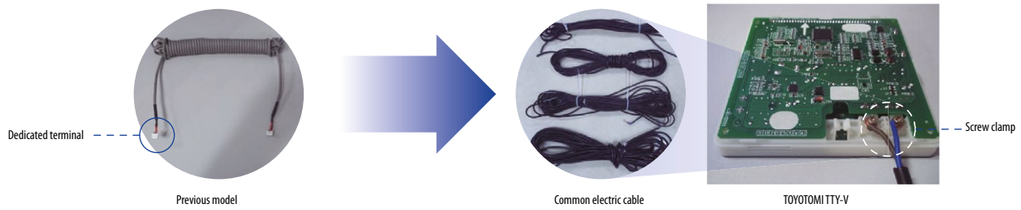
Previous model

VS

TOYOTOMI TTY-V

Flexible wiring

A normal cable is sufficient to meet the communication needs: dedicated communication cables are not needed.
However, it is advisable to use shielded cables.



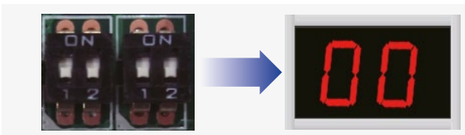
Previous model

Common electric cable

TOYOTOMI TTY-V

Automatic addressing of the external and internal unit

The system uses the CAN network for automatic addressing of external and internal units.
It can allocate UI and EU addresses and detect UI and EU quantities, greatly improving the efficiency of the plant.



Manual addressing
previous model

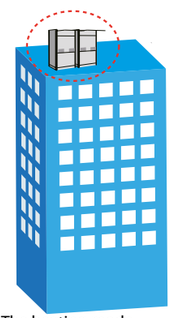
TOYOTOMI automatic addressing

Functions and operation control

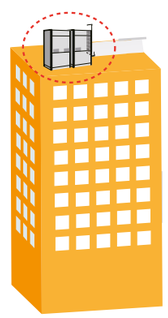
For example, the TOYOTOMI system provides hotels with a special season setting function and a key-card control function

Season setting

It is possible to deactivate the cooling or heating function during a certain season in order to avoid compromising the normal functionality of the unit due to conflicts between operating modes.



The heating mode
is deactivated in the summer



The cooling mode
is deactivated in winter

Key-card control for hotel management

The internal unit can be activated or deactivated by inserting or removing the magnetic key.
When the magnetic key is disconnected, the system is able to remember all the settings and interrupt the operation.
When the magnetic key is reinserted, the system will be in standby mode or it will work according to the condition existing before the magnetic key was disconnected.
The function is ideal in hotels, restaurants, etc.
The command that allows this function is the TXH79.

External Unit Module Combinations

Model	TTY-V224W	TTY-V280W	TTY-V335W	TTY-V400W	TTY-V450W	TTY-V504W	TTY-V560W	TTY-V615W
TTY-EV224W (8 HP)	■							
TTY-EV280W (10 HP)		■						
TTY-EV335W (12 HP)			■					
TTY-EV400W (14 HP)				■				
TTY-EV450W (16 HP)					■			
TTY-EV 504 W (18 HP)						■		
TTY-EV 560 W (20 HP)							■	
TTY-EV 615 W (22 HP)								■
TTY-EV 680 W (24 HP)		■		■				
TTY-EV 730 W (26 HP)		■			■			
TTY-EV 785 W (28 HP)		■				■		
TTY-EV 850 W (30 HP)		■					■	
TTY-EV 900 W (32 HP)		■						■
TTY-EV 960 W (34 HP)			■					■
TTY-EV 1010 W (36 HP)				■				■
TTY-EV 1065 W (38 HP)					■			■
TTY-EV 1130 W (40 HP)						■		■
TTY-EV 1180 W (42 HP)							■	■
TTY-EV 1235 W (44 HP)								■■
TTY-EV 1300 W (46 HP)		■			■		■	
TTY-EV 1350 W (48 HP)		■			■			■
TTY-EV 1410 W (50 HP)			■		■			■
TTY-EV 1460 W (52 HP)		■					■	■
TTY-EV 1515 W (54 HP)		■						■■
TTY-EV 1580 W (56 HP)			■					■■
TTY-EV 1630 W (58 HP)				■				■■
TTY-EV 1685 W (60 HP)					■			■■
TTY-EV 1750 W (62 HP)						■		■■
TTY-EV 1800 W (64 HP)							■	■■
TTY-EV 1845 W (66 HP)								■■■
TTY-EV 1908 W (68 HP)		■			■		■	■
TTY-EV 1962 W (70 HP)		■				■	■	■
TTY-EV 2016 W (72 HP)		■					■■	■
TTY-EV 2072 W (74 HP)		■					■	■■
TTY-EV 2128 W (76 HP)		■						■■■
TTY-EV 2184 W (78 HP)			■					■■■
TTY-EV 2240 W (80 HP)				■				■■■
TTY-EV 2295 W (82 HP)					■			■■■
TTY-EV 2350 W (84 HP)						■		■■■
TTY-EV 2405 W (86 HP)							■	■■■
TTY-V 2460 W (88 HP)								■■■■

External Unit Specifications Base Modules

Model			TTY-EV224W	TTY-EV280W	TTY-EV335W	TTY-EV400W	TTY-E V450W	TTY-E V504W	TTY-E V560W	TTY-E V615W
Capacity range		HP	8	10	12	14	16	18	20	22
Capacity	Cooling	kW	22.40	28.0	33.50	40.0	45.0	50.40	56.0	61.50
	Heating	kW	25.0	31.50	37.50	45.0	50.0	56.50	63.0	69.0
Range min-max capacity outdoor unit		%	20~100	18~100	15~100	11~100	10~100	9~100	8~100	7~100
EER		kW	4.73	4.48	3.99	3.80	3.51	3.20	2.80	2.10
COP		kW	5.20	5.56	5.25	4.73	4.60	4.01	3.80	3.65
Power Supply		Volts/ Phase/Hz	380-415/3/50							
Maximum current / Fuse		A	15,7/20	20,9/25	24,7/32	28,8/40	32,2/40	44,7/50	50/63	52/63
Power absorbed	Cooling	kW	4.74	6.25	8.40	10.53	12.82	15.75	20.0	29.29
	Heating	kW	4.81	5.67	7.14	9.51	10.86	14.10	16.60	18.90
Current absorbed	Cooling	A	8.47	11.17	15.02	18.82	22.92	28.15	35.75	52.35
	Heating	A	8.60	10.14	12.76	17.00	19.41	25.20	29.67	33.78
Fan		tipo				Helical				
Fan motor		tipo				Inverter				
Air flow		m3/h	11,400	11.4000	11.4000	14,000	16,000	16,000	16,000	16,000
Static fan pressure		Pa	0 - 30 - 50 - 82							
Sound pressure		dB(A)	60	61	63	63	63	63	63	63
REFRIGERANT R410 A	Preload	kg	5.9	6.7	8.2	9.8	10.3	11.3	14.3	14.3
Compressor Inverter Scroll			1	1	1	2	2	2	2	2
Piping size	Tube Gas side	mm (inch)	19,05 (3/4")	22 ,4 (7/8")	25,4 (1")	25,4 (1")	28,6 (1"1/8)	28,6 (1"1/8)	28,6 (1"1/8)	28,6 (1"1/8)
	Tube Liquid side	mm (inch)	9,52 (3/8")	9,52 (3/8")	12,7 (1/2")	12,7 (1/2")	12,7 (1/2")	15,88 (5/8")	15,88 (5/8")	15,88 (5/8")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder							
Product Dimension	Width	mm	930	930	1,340	1,340	1,340	1,340	1,340	1,340
	Depth	mm	765	765	765	765	765	765	765	765
	Hight	mm	1,605	1,605	1,605	1,605	1,740	1,740	1,740	1,740
Packing Dimension	Width	mm	1,010	1,010	1,420	1,420	1,420	1,420	1,420	1,420
	Depth	mm	840	840	840	840	840	840	840	840
	Hight	mm	1,775	1,775	1,775	1,775	1,910	1,910	1,910	1,910
Weight (nett)		Kg	225	235	285	360	360	360	385	385
Weight (gross)		Kg	235	245	300	375	375	375	400	400
MIN/MAX Internal Units Connectable		N°	13	16	19	23	26	29	33	36
Maximum Tubage Length		m	1000							
Distance between External and Last Internal		m	165							
Maximum elevation (External Unit above)		m	30							
Maximum elevation (between Internal Units)		m	90/50							
Operating limits	Cooling	°C	-5~52							
	Heating	°C	-20~24							

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 680 W	TTY-EV 730 W	TTY-EV 785 W	TTY-EV 850 W	TTY-EV 900 W	TTY-EV 960 W
Combined outdoor unit			TTY-EV 280 W TTY-EV 400 W	TTY-EV 280 W TTY-EV 450 W	TTY-EV 280 W TTY-EV 504 W	TTY-EV 280 W TTY-EV 560 W	TTY-EV 280 W TTY-EV 615 W	TTY-EV 335 W TTY-EV 615 W
Capacity range		HP	24	26	28	30	32	34
Capacity	Cooling	kW	68.0	73.0	78.4	84.0	89.5	95.0
	Heating	kW	76.5	81.5	88.0	94.5	100.5	106.5
Range min-max capacity indoor unit		%	50÷135					
EER		kW	3.85	3.71	3.69	3.69	3.50	3.53
COP		kW	4.15	4.01	4.11	3.95	3.83	3.81
Power Supply		Volts/Phase/Hz	380-415/3/50					
Maximum current / Fuse		A	49,7/63	54.1/63	65.6/80	70.9/80	72.9/80	76.7/80
Power absorbed	Cooling	kW	17.65	19.65	21.2	23	25.5	26.91
	Heating	kW	18.4	20.3	21.4	23.9	26.2	27.9
Current absorbed	Cooling	A	31.50	35.10	37.90	41.10	45.60	48.10
	Heating	A	32.80	36.20	38.20	42.7	46.8	49.90
Fan		tipo	Helical					
Fan motor		tipo	Inverter					
Air flow		m3/h	See page 29					
Static fan pressure		Pa						
Sound pressure		dB(A)	65	65	66	67	67	68
REFRIGERANT R410 A	Preload	kg	6,7+9,8	6,7+9,8	6,7+10,3	6,7+11,3	6,7+14,3	8,2+14,3
Piping size	Tube Gas side	mm (inch)	28,6 (9/8")	31,8(1-1/4")	31,8(1-1/4")	31,8(1-1/4")	31,8(1-1/4")	31,8(1-1/4")
	Tube Liquid side	mm (inch)	15,88 (5/8")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder					
Dimension and Weight			See page 29					
MIN/MAX Internal Units Connectable		N°	39	43	46	50	53	56
Maximum Tubage Length		m	1000					
Distance between External and Last Internal		m	165					
Maximum elevation (External Unit above)		m	30					
Maximum elevation (between Internal Units)		m	90 / 50					
Operating limits	Cooling	°C	-5~52					
	Heating	°C	-20~24					

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 1010 W	TTY-EV 1065 W	TTY-EV 1160 W	TTY-EV 1180 W	TTY-EV 1235 W	TTY-EV 1300 W
Combined outdoor unit			TTY-EV 400 W TTY-EV 615 W	TTY-EV 450 W TTY-EV 615 W	TTY-EV 504 W TTY-EV 615 W	TTY-EV 560 W TTY-EV 615 W	TTY-EV 615 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 450 W TTY-EV 560 W
Capacity range		HP	36	38	40	42	44	46
Capacity	Cooling	kW	101.5	106.5	111.9	117.5	123.0	129.0
	Heating	kW	114.0	119.0	125.5	132.0	138.0	144.5
Range min-max capacity indoor unit		%	50÷135					
EER		kW	3.48	3.41	3.42	3.40	3.32	3.62
COP		kW	3.80	3.73	3.80	3.71	3.65	3.91
Power Supply		Volts/Phase/Hz	380-415/3/50					
Maximum current / Fuse		A	80,8/100	85.2/100	96.7/100	102/125	104/125	104.1/125
Power absorbed	Cooling	kW	29.15	31.15	32.7	34.5	37.0	35.65
	Heating	kW	30.0	31.9	33.0	35.5	37.8	36.9
Current absorbed	Cooling	A	52.10	55.70	58.50	61.70	66.20	63.70
	Heating	A	53.60	57.0	59.0	63.50	67.60	65.90
Fan		tipo	Helical					
Fan motor		tipo	Inverter					
Air flow		m3/h	See page 29					
Static fan pressure		Pa						
Sound pressure		dB(A)	68	68	68	69	69	69
REFRIGERANT R410 A	Preload	kg	9,8+14,3	10,3+14,3	11,3+14,3	14,3+14,3	14,3+14,3	5,9+10,3+14,3
Piping size	Tube Gas side	mm (inch)	38,1(1-1/2")	38,1(1-1/2")	38,1(1-1/2")	38,1(1-1/2")	38,1(1-1/2")	38,1(1-1/2")
	Tube Liquid side	mm (inch)	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder					
Dimension and Weight			See page 29					
MIN/MAX Internal Units Connectable		N°	59	63	64	64	64	64
Maximum Tubage Length		m	1000					
Distance between External and Last Internal		m	165					
Maximum elevation (External Unit above)		m	30					
Maximum elevation (between Internal Units)		m	90 / 50					
Operating limits	Cooling	°C	-5~52					
	Heating	°C	-20~24					

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 1350 W	TTY-EV 1410 W	TTY-EV 1460 W	TTY-EV 1515 W	TTY-EV 1580 W	TTY-EV 1630 W
Combined outdoor unit			TTY-EV 280 W TTY-EV 450 W TTY-EV 615 W	TTY-EV 335 W TTY-EV 450 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 560 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 335 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 400 W TTY-EV 615 W TTY-EV 615 W
Capacity range		HP	48	50	52	54	56	58
Capacity	Cooling	kW	134.5	140.0	145.0	151.0	156.5	163.0
	Heating	kW	150.5	156.5	163.5	169.5	175.5	183.0
Range min-max capacity indoor unit		%	50÷135					
EER		kW	3.52	3.53	3.49	3.43	3.44	3.42
COP		kW	3.83	3.82	3.82	3.75	3.75	3.74
Power Supply		Volts/Phase/Hz	380-415/3/50					
Maximum current / Fuse		A	106,1/125	109.9/125	122.9/125	124.9/125	128.7/160	132.8/160
Power absorbed	Cooling	kW	38.15	39.56	41.5	44	45.41	47.65
	Heating	kW	39.2	40.9	42.8	45.1	46.8	48.9
Current absorbed	Cooling	A	68.20	70.70	74.20	78.70	81.20	85.20
	Heating	A	70.0	73.10	76.50	80.60	83.60	87.40
Fan		tipo	Helical					
Fan motor		tipo	Inverter					
Air flow		m3/h	See page 29					
Static fan pressure		Pa						
Sound pressure		dB(A)	69	69	69	70	70	70
REFRIGERANT R410 A	Preload	kg	6,7+10,3+14,3	8,2+10,3+14,3	6,7+14,3+14,3	6,7+14,3+14,3	8,2+-14,3+14,+	9,8+14,3+14,3
Piping size	Tube Gas side	mm (inch)	38,1(1-1/2")	41,3 (1-5/8")	41,3 (1-5/8")	41,3 (1-5/8")	41,3 (1-5/8")	41,3 (1-5/8")
	Tube Liquid side	mm (inch)	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder					
Dimension and Weight			See page 29					
MIN/MAX Internal Units Connectable		N°	64	66	69	71	74	77
Maximum Tubage Length		m	1000					
Distance between External and Last Internal		m	165					
Maximum elevation (External Unit above)		m	30					
Maximum elevation (between Internal Units)		m	90 / 50					
Operating limits	Cooling	°C	-5~52					
	Heating	°C	-5~24					

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 1685 W	TTY-EV 1750 W	TTY-EV 1800 W	TTY-EV 1845 W	TTY-EV 1908 W
Combined outdoor unit			TTY-EV 450 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 504 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 560 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 450 W TTY-EV 560 W TTY-EV 615 W
Capacity range		HP	60	62	64	66	68
Capacity	Cooling	kW	168.0	173.4	178.0	184.5	190.5
	Heating	kW	188.0	194.5	201.0	207.0	213.5
Range min-max capacity indoor unit		%	50÷135				
EER		kW	3.38	3.38	3.35	3.32	3.51
COP		kW	3.70	3.74	3.69	3.65	3.82
Power Supply		Volts/Phase/Hz	380-415/3/50				
Maximum current / Fuse		A	137,2/160	148.7/160	154/160	156/160	156.1/160
Power absorbed	Cooling	kW	49.65	51.2	53.0	55.5	54.15
	Heating	kW	50.8	51.9	54.4	56.7	55.8
Current absorbed	Cooling	A	88.80	91.60	94.80	99.30	96.80
	Heating	A	90.80	92.80	97.30	101.40	99.70
Fan		tipo	Helical				
Fan motor		tipo	Inverter				
Air flow		m3/h	See page 29				
Static fan pressure		Pa					
Sound pressure		dB(A)	70	70	71	71	72
REFRIGERANT R410 A	Preload	kg	10,3+14,3+14,3	11,3+14,3+14,3	14,3+14,3+14,3	14,3+14,3+14,3	6,7+10,3+14,3+14,3
Piping size	Tube Gas side	mm (inch)	38,1(1-1/2")	41,3 (1-5/8")	41,3 (1-5/8")	41,3 (1-5/8")	22,2 (7/8")
	Tube Liquid side	mm (inch)	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	19,05 (3/4")	44,5 (1-3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder				
Dimension and Weight			See page 29				
MIN/MAX Internal Units Connectable		N°	80	80	80	80	80
Maximum Tubage Length		m	1000				
Distance between External and Last Internal		m	165				
Maximum elevation (External Unit above)		m	30				
Maximum elevation (between Internal Units)		m	90 / 50				
Operating limits	Cooling	°C	-5~52				
	Heating	°C	-20~24				

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 1962 W	TTY-EV 2016 W	TTY-EV 2072 W	TTY-EV 2128 W	TTY-EV 2184 W
Combined outdoor unit			TTY-EV 280 W TTY-EV 504 W TTY-EV 560 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 560 W TTY-EV 560 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 560 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 280 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 335 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W
Capacity range		HP	70	72	74	76	78
Capacity	Cooling	kW	195.9	201.5	207.0	212.5	218.0
	Heating	kW	220.0	226.5	232.5	238.5	244.5
Range min-max capacity indoor unit		%	50÷135				
EER		kW	3.51	3.49	3.45	3.40	3.41
COP		kW	3.86	3.81	3.76	3.72	3.72
Power Supply		Volts/Phase/Hz	380-415/3/50				
Maximum current / Fuse		A	167.6/200	172.9/200	174.9/200	176.9/200	180.7/200
Power absorbed	Cooling	kW	55.7	57.5	60	62.5	63.91
	Heating	kW	56.9	59.4	61.7	64	65.7
Current absorbed	Cooling	A	99.60	102.80	107.30	111.80	114.30
	Heating	A	101.70	106.2	110.3	114.4	117.50
Fan		tipo	Helical				
Fan motor		tipo	Inverter				
Air flow		m3/h	See page 29				
Static fan pressure		Pa					
Sound pressure		dB(A)	73	73	73	73	74
REFRIGERANT R410 A	Preload	kg	6,7+11,3+14,3+14,3	6,7+14,3+14,3+14,3	6,7+14,3+14,3+14,3	6,7+14,3+14,3+14,3	8,2+14,3+14,3+14,3
Piping size	Tube Gas side	mm (inch)	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")
	Tube Liquid side	mm (inch)	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder				
Dimension and Weight			See page 29				
MIN/MAX Internal Units Connectable		N⁰	80	80	80	80	80
Maximum Tubage Length		m	1000				
Distance between External and Last Internal		m	165				
Maximum elevation (External Unit above)		m	30				
Maximum elevation (between Internal Units)		m	90 / 50				
Operating limits	Cooling	ºC	-5~52				
	Heating	ºC	-20~24				

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Combination Modules

Model			TTY-EV 2240 W	TTY-EV 2295 W	TTY-EV 2350 W	TTY-EV 2405 W	TTY-EV 2460 W
Combined outdoor unit			TTY-EV 400 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 450 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 504 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 560 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W	TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W TTY-EV 615 W
Capacity range		HP	80	82	84	86	88
Capacity	Cooling	kW	224.5	229.5	234.9	240.5	246.0
	Heating	kW	252.0	257.0	263.5	270.0	276.0
Range min-max capacity indoor unit		%	50÷135				
EER		kW	3.39	3.36	3.37	3.36	3.32
COP		kW	3.71	3.68	3.72	3.68	3.65
Power Supply		Volts/Phase/Hz	380-415/3/50				
Maximum current / Fuse		A	18.8/200	189.2/200	200.7/250	208/250	208/250
Power absorbed	Cooling	kW	66.15	68.15	69.7	71.5	74.0
	Heating	kW	67.8	69.7	70.8	73.3	75.6
Current absorbed	Cooling	A	118.30	121.90	124.70	127.90	132.40
	Heating	A	121.20	124.60	126.60	131.10	135.20
Fan		tipo	Helical				
Fan motor		tipo	Inverter				
Air flow		m3/h	See page 29				
Static fan pressure		Pa					
Sound pressure		dB(A)	74	74	75	75	75
REFRIGERANT R410 A	Preload	kg	9,8+14,3+14,3+14,3	10,3+14,3+14,3+14,3	11,3+14,3+14,3+14,3	14,3+14,3+14,3+14,3	14,3+14,3+14,3+14,3
Piping size	Tube Gas side	mm (inch)	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")	22,2 (7/8")
	Tube Liquid side	mm (inch)	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")	44,5 (1-3/4")
	Oil balancing tube	mm (inch)	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")	9,52 (3/8")
Connection method			Solder				
Dimension and Weight			See page 29				
MIN/MAX Internal Units Connectable		N°	80	80	80	80	80
Maximum Tubage Length		m	1000				
Distance between External and Last Internal		m	165				
Maximum elevation (External Unit above)		m	30				
Maximum elevation (between Internal Units)		m	90 / 50				
Operating limits	Cooling	℃	-5~52				
	Heating	℃	-20~24				

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with Internal Units at 100% of the power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

Summary table of the specifications of the external unit combinations

Model	Power Supply	Cooling capacity		Absorption		Dimensions (Length - Width - Height)	Air flow	ESP	Sound level	Noise level during operation	Piping dimensions			Maximum circuit current	Maximum fuse current	Weight
		Cooling	Heating	Cooling	Heating						Liquid	Gas	Oil balancing tube			
		kW	kW	kW	kW	mm	m^3/h	Pa	dB (A)	dB (B)	mm	mm	mm	A	A	kg
TTY-EV 224 W	380~415 V - 3 Ph - 50/60 Hz	22.4	25.0	5.20	5.50	930x 765 x1605	11400	0~82	60	45	Ø 9,52	Ø 19,05	Ø 9,52	15.7	20	225
TTY-EV 280 W		28.0	31.50	7.0	7.30	930x 765 x1605	11400	0~82	61	45	Ø 9,52	Ø 22,20	Ø 9,52	20.9	25	225
TTY-EV335 W		33.50	37.50	8.41	9.0	1340 x 765 x1605	11400	0~82	63	45	Ø 12,7	Ø 25,4	Ø 9,52	24.7	32	285
TTY-EV 400W		40.0	45.0	10.65	11.10	1340 x 765 x1605	11400	0~82	63	45	Ø 12,7	Ø 25,4	Ø 9,52	28.8	40	360
TTY-EV 450 W		45.0	50.0	12.65	13.0	1340 x 765 x1605	11400	0~82	63	45	Ø 12,7	Ø 28,6	Ø 9,52	33.2	40	360
TTY-EV 504 W		50.4	56.5	12.2	12.8	1340 x 765 x1740	14000	0~82	64	45	Ø 15,9	Ø 28,6	Ø 9,52	36.6	40	2x225
TTY-EV 560 W		56	62.5	14	14.6	1340 x 765 x1740	14000	0~82	64	45	Ø 15,9	Ø 28,6	Ø 9,52	41.8	50	2x225
TTY-EV 615 W		61.5	69	15.41	16.3	1340 x 765 x1740	14000	0~82	65	45	Ø 15,9	Ø 28,6	Ø 9,52	49.7	50	225+360
TTY-EV 680 W		68	76.5	17.65	18.4	(930 x 765x 1605)+(1340 x 765 x 1605)	11400+11400	0~82	65	43	Ø 15,9	Ø 28,6	Ø 9,52	49.7	63	225+360
TTY-EV 730 W		73	81.5	19.65	20.3	(930 x 765 x 1605)+(1340 x 765 x 1605)	11400+11400	0~82	65	43	Ø 19,05	Ø 31,8	Ø 9,52	54.1	63	225+360
TTY-EV 785 W		78.4	88	21.2	21.4	(930 x 765 x 1605)+(1340 x 765 x 1740)	11400+16000	0~82	66	43	Ø 19,05	Ø 31,8	Ø 9,52	65.6	80	225+360
TTY-EV 850 W		84	94.5	23	23.9	(930 x 765 x 1605)+(1340 x 765 x 1740)	11400+16000	0~82	67	43	Ø 19,05	Ø 31,8	Ø 9,52	70.9	80	225+385
TTY-EV 900 W		89.5	100.5	25.5	26.2	(930 x 765 x 1605)+(1340 x 765 x 1740)	11400+16000	0~82	67	43	Ø 19,05	Ø 31,8	Ø 9,52	72.9	80	225+385
TTY-EV 960 W		95	106.5	26.91	27.9	(1340 x 765 x 1605)+ (1340 x765 x 1740)	14000+16000	0~82	68	43	Ø 19,05	Ø 31,8	Ø 9,52	76.7	80	285+385
TTY-EV 1010 W		101.5	114	29.15	30	(1340 x 765 x 1605)+ (1340 x765 x 1740)	14000+16000	0~82	68	43	Ø 19,05	Ø 38,1	Ø 9,52	80.8	100	360+385
TTY-EV 1065 W		106.5	119	31.15	31.9	(1340 x 765 x 1605)+ (1340 x765 x 1740)	14000+16000	0~82	68	43	Ø 19,05	Ø 38,1	Ø 9,52	85.2	100	360+385
TTY-EV 1130 W		111.9	126.5	32.7	33	2x (1340 x 765 x 1740)	2 x16000	0~82	68	43	Ø 19,05	Ø 38,1	Ø 9,52	96.7	100	360+385
TTY-EV 1180 W		117.5	132	34.5	35.5	2x (1340 x 765 x 1740)	2 x16000	0~82	69	43	Ø 19,05	Ø 38,1	Ø 9,52	102	125	385+385
TTY-EV 1235 W		123	138	37	37.8	2x (1340 x 765 x 1740)	2 x16000	0~82	69	43	Ø 19,05	Ø 38,1	Ø 9,52	104	125	385+385
TTY-EV 1300 W		129	144.5	35.65	36.9	(930 x 765 x 1605)+(1340 x 765 x 1605)+ (1340 x765 x 1740)	11400+14000+1600	0~82	69	45	Ø 19,05	Ø 38,1	Ø 9,52	104.1	125	225+360+385
TTY-EV 1350 W		134.5	150.5	38.15	39.2	(930 x 765 x 1605)+(1340 x 765 x 1605)+ (1340 x765 x 1740)	11400+14000+1600	0~82	69	45	Ø 19,05	Ø 38,1	Ø 9,52	106.1	125	225+360+385
TTY-EV 1410 W		140	156.5	39.56	40.9	2x(1340 x 765 x 1605)+(1340 x 765 x 1740)	2x14000+16000	0~82	69	45	Ø 19,05	Ø 41,3	Ø 9,52	109.9	125	285+360+385
TTY-EV 1460 W		145.5	163.5	41.5	42.8	(930 x 765 x 1605)+2x (1340 x 765x 1740)	11400+2 x16000	0~82	69	45	Ø 19,05	Ø 41,3	Ø 9,52	122.9	125	225+2x385
TTY-EV 1515 W		151	169.5	44	45.1	(930 x 765 x 1605)+2x (1340 x 765x 1740)	11400+2 x16000	0~82	70	45	Ø 19,05	Ø 41,3	Ø 9,52	124.9	125	225+2x385
TTY-EV 1580 W		156.5	175.5	45.41	46.8	(1340 x 765 x 1605)+ 2x(1340 x765 x 1740)	14000+2 x16000	0~82	70	45	Ø 19,05	Ø 41,3	Ø 9,52	128.7	160	285+2x385
TTY-EV 1630 W		163	183	47.65	48.9	(1340 x 765 x 1605)+ 2x(1340 x765 x 1740)	14000+2 x16000	0~82	70	45	Ø 19,05	Ø 41,3	Ø 9,52	132.8	160	360+2x385
TTY-EV 1685 W		168	188	49.65	50.8	(1340 x 765 x 1605)+ 2x(1340 x765 x 1740)	14000+2 x16000	0~82	70	45	Ø 19,05	Ø 41,3	Ø 9,52	137.2	160	360+2x385
TTY-EV 1750 W		173.4	194.5	51.2	51.9	3x (1340 x 765 x 1740)	3 x16000	0~82	70	45	Ø 19,05	Ø 41,3	Ø 9,52	148.7	160	360+2x385
TTY-EV 1800 W		179	201	53	54.4	3x (1340 x 765 x 1740)	3 x16000	0~82	71	45	Ø 19,05	Ø 41,3	Ø 9,52	154	160	3x385
TTY-EV 1845 W		184.5	207	55.5	56.7	3x (1340 x 765 x 1740)	3 x16000	0~82	71	45	Ø 19,05	Ø 41,3	Ø 9,52	156	160	3x385
TTY-EV 1908 W		190.5	213.5	54.15	55.8	(930 x 765 x 1605)+(1340 x 765 x 1605)+ 2x (1340 x765 x 1740)	1140+1400+ 2 x16000	0~82	72	47	Ø 22,20	Ø 44,5	Ø 9,52	156.1	160	225+360+2x385
TTY-EV 1962W		195.9	220	55.7	56.9	(930 x 765 x 1605)+3 x (1340 x 765 x 1740)	1140+3 x16000	0~82	73	47	Ø 22,20	Ø 44,5	Ø 9,52	167.6	200	225+360+2x385
TTY-EV 2016 W		201.5	226.5	57.5	59.4	(930 x 765 x 1605)+3 x (1340 x 765 x 1740)	1140+3 x16000	0~82	73	47	Ø 22,20	Ø 44,5	Ø 9,52	172.9	200	225+3x385
TTY-EV 2072 W		207	232.5	60	61.7	(930 x 765 x 1605)+3 x (1340 x 765 x 1740)	1140+3 x16000	0~82	73	47	Ø 22,20	Ø 44,5	Ø 9,52	174.9	200	225+3x385
TTY-EV 2128 W		212.5	238.5	62.5	64	(930 x 765 x 1605)+3 x (1340 x 765 x 1740)	1140+3 x16000	0~82	73	47	Ø 22,20	Ø 44,5	Ø 9,52	176.9	200	225+3x385
TTY-EV 2184 W		218	244.5	63.91	65.7	(1340 x 765 x 1605)+3 x (1340 x 765 x 1740)	1400+3 x16000	0~82	74	47	Ø 22,20	Ø 44,5	Ø 9,52	180.7	200	285+3x385
TTY-EV 2240 W		224.5	252	66.15	67.8	(1340 x 765 x 1605)+3 x (1340 x 765 x 1740)	1400+3 x16000	0~82	74	47	Ø 22,20	Ø 44,5	Ø 9,52	184.8	200	360+3x385
TTY-EV 2295 W		229.5	257	68.15	69.7	(1340 x 765 x 1605)+3 x (1340 x 765 x 1740)	1400+3 x16000	0~82	74	47	Ø 22,20	Ø 44,5	Ø 9,52	189.2	200	360+3x385
TTY-EV 2350 W		234.9	263.5	69.7	70.8	4 x (1340 x 765 x 1740)	4 x16000	0~82	75	47	Ø 22,20	Ø 44,5	Ø 9,52	200.7	250	360+3x385
TTY-EV 2405 W		240.5	270	71.5	73.3	4 x (1340 x 765 x 1740)	4 x16000	0~82	75	47	Ø 22,20	Ø 44,5	Ø 9,52	206	250	4x385
TTY-EV 2460 W		246	276	74	75.6	4 x (1340 x 765 x 1740)	4 x16000	0~82	75	47	Ø 22,20	Ø 44,5	Ø 9,52	208	250	4x385

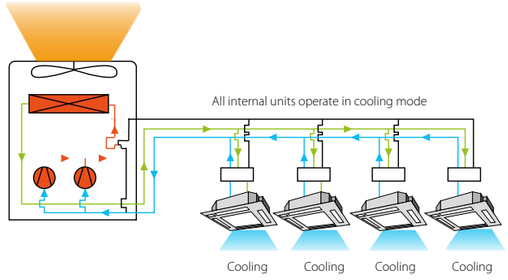
VRF Modular Heat Recovery

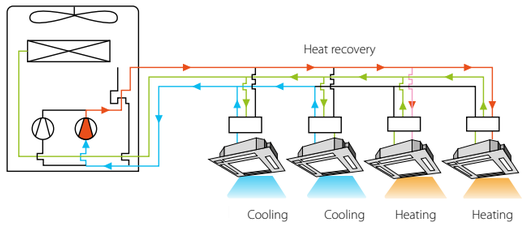
Main features

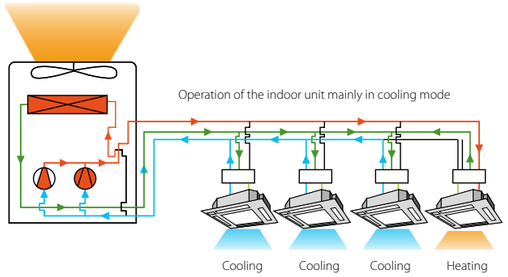
High efficiency

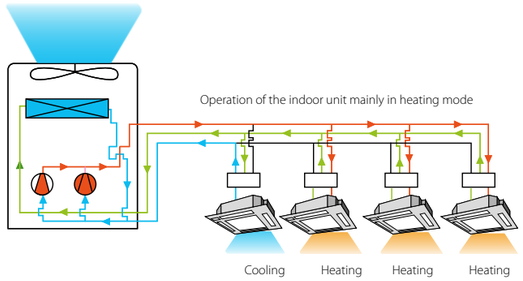
The TTY-EVH VRF heat recovery units represent the excellent features of Toyotomi's new Full Inverter technology (DC inverter technology, Control of DC direct current fan motors operation, Precise control of power output, Control of refrigerant balance, New oil balance technology with high pressure chamber, High efficiency output control, Control technology for low temperature operation, Excellent heating technology, High system versatility, Use of environmentally friendly refrigerant). Its energy efficiency has improved by 78% compared to conventional VRF systems.

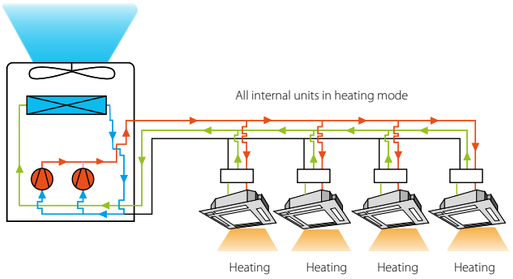
Five high efficiency modes of operation

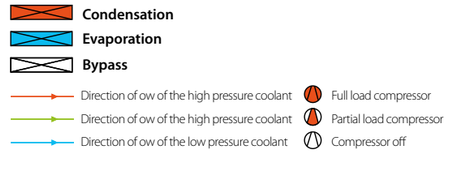








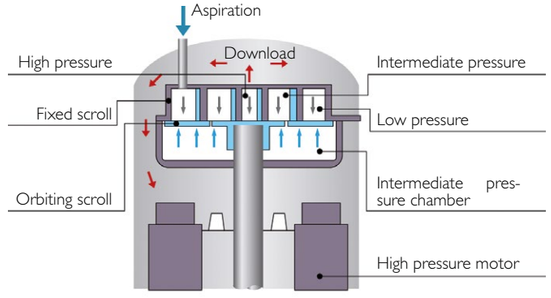


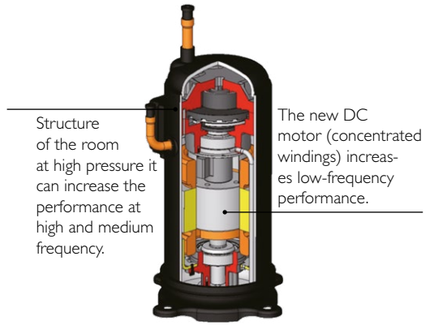


High efficiency compressor

High pressure chamber operation

The refrigerant introduced by the fixed scroll completely fills the hermetic chamber of the compressor and exits directly from the drain. The direct suction of the compressor on the high-pressure chamber improves the efficiency of the compressor itself (3 ~ 5%).





Silent operation during night time

Smart regulation of external ventilation minimises noise during night operation. It is possible to reduce the noise by 8dB (A) with respect to the standard value, thus obtaining a night operating noise level lower than 50dB (A).

New fan design

The new profile of the fan blades of the external unit reduces the turbulence of the air flow helping to reduce noise.

Original design

Optimised

New design with superior performance and less noise: 4dB (A) less!

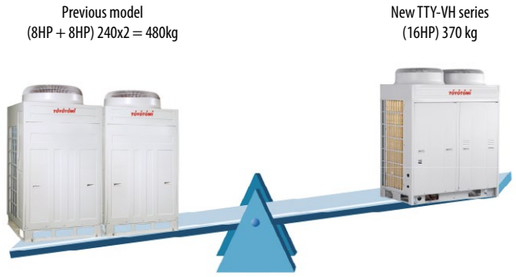
Single command

The set temperature of each room may vary depending on the command of the single thermostat of each internal unit.

Easier installation

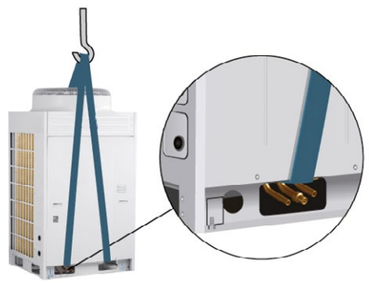
• Transportable with forklift

• Low weight



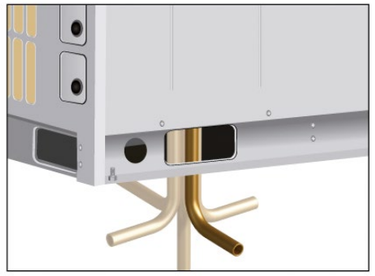
• Movement and positioning

Positioning and anchoring of the safest and easiest external units thanks to the new arrangement of the weights of the internal components.



• Easy connection of the pipes

Maximum connection flexibility of the outdoor unit through its multiple connection possibilities.



External Unit Module Combinations

Model	TTY-EVH224W (8HP)	TTY-EVH280W(10HP)	TTY-EVH335W(12HP)	TTY-EVH400W(14HP)	TTY-EVH450W(16HP)
TTY-EVH224W	■				
TTY-EVH280W		■			
TTY-EVH335W			■		
TTY-EVH400W				■	
TTY-EVH450W					■
TTY-EV H504 W	■	■			
TTY-EVH 560 W		■■			
TTY-EV H615 W		■	■		
TTY-EV H680 W		■		■	
TTY-EVH 730 W		■			■
TTY-EVH785 W			■		■
TTY-EVH850 W				■	■
TTY-EVH900 W					■■
TTY-EVH960 W		■■		■	
TTY-EVH1010 W		■■			■
TTY-EVH1065 W		■	■		■
TTY-EVH1130 W		■		■	■
TTY-EVH1180 W		■			■■
TTY-EVH1235 W			■		■■
TTY-EVH1300 W				■	■■
TTY-EVH1350 W					■■■
TTY-EVH1410 W		■■		■	■
TTY-EVH1460 W		■■			■■
TTY-EVH1515 W		■	■		■■
TTY-EVH1580 W		■		■	■■
TTY-EVH1630 W		■			■■■
TTY-EVH1685 W			■		■■■
TTY-EVH1750 W				■	■■■
TTY-EV H1800 W					■■■■

Specifications of external unit combinations

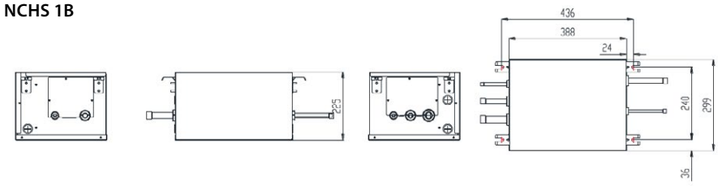
Model			TTY-EVH224W	TTY-EVH280W	TTY-EVH335W	TTY-EVH400W	TTY-EVH450W
Combined outdoor unit		Units					
Capacity range		HP	8	10	12	14	16
Capacity	Cooling	kW	22.4	28	33.5	40	45
	Heating	kW	25	31.5	37.5	45	50
EER		kW	4.09	3.44	4.04	3.36	3.04
COP		kW	4.75	4.32	4.87	4.50	3.94
Power Supply		Volts/Phase/ Hz	380-415/3/50/60	380-415/3/50/60	380-415/3/50/60	380-415/3/50/60	380-415/3/50/60
Power absorbed	Cooling	kW	5.48	8.15	8.30	11.90	14.80
	Heating	kW	5.26	7.30	7.70	10.0	12.70
Current absorbed	Cooling	A	9.80	14.57	14.84	21.27	26.48
	Heating	A	9.40	13.05	13.76	17.88	22.70
Maximum input power		kW	-	-	-	-	-
Maximum voltage		A	-	-	-	-	-
Air flow		m3/h	-	-	-	-	-
Static fan pressure		Pa	11,400	11,400	14,000	14,000	14,000
Sound pressure		dB(A)	-	-	-	-	-
Refrigerante		Type	TIPO	61	63	63	63
	Preload	kg	R410A				
	Compressor		TIPO / N°	7.1	9.6	11.1	11.6
Piping size		Gas pipe (low pressure)	mm (inch)				
	Gas pipe (high pressure)	mm (inch)	19,05 (3/4")	22,2 (7/8")	25,4 (1")	25,4 (1")	28,6 (9/8")
	Liquid side pipe	mm (inch)	15,90 (5/8)	19,05 (3/4")	19,05 (3/4")	22,2 (7/8")	22,2 (7/8")
	Oil balancing tube	mm (inch)	19,05 (3/4")	22,2 (7/8")	25,4 (1")	25,4 (1")	28,57 (1-1/8")
	MIN/MAX Internal Units Connectable	(Lenght - Width - Height)	mm	9,52 (3/8")	12,7 (1/2")	12,7 (1/2")	12,7 (1/2")
Maximum Tubage Length	(Lenght - Width - Height)	mm	930 / 765 / 1,605	930 / 765 / 1,605	1.340 /765 / 1.605	1.340 /765 / 1.605	1.340 /765 / 1.605
Distance between External and Last Internal		kg	1,010 / 840 / 1,775	1,010 / 840 / 17.75	1.420 / 840 /1.775	1.420 / 840 /1.775	1.420 / 840 /1.775
Maximum elevation (External Unit above)		No	233 / 243	233 / 243	302 / 317	346 / 361	346 / 361
Maximum elevation (between Internal Units)		m	13	16	19	23	26
Operating limits		Cooling	°C				
	Heating	°C	-5~52				
	Heat recovery	°C	-20~24				
	Recupero calore	ºC	-10~20				

The technical data reported refer to the European standard EN14511.
The cooling and heating capacities indicated refer to the External Unit operating with an Internal Unit at 100% power.
Sound pressure level measured in a semi-anechoic chamber under the following conditions: 1 metre from the surface of the Unit's service cover and 1.5 metres from the floor level.

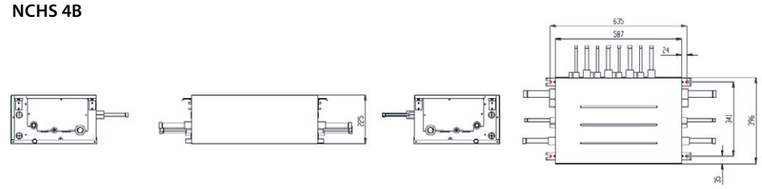
Specific heat recovery diverters for VRFs

NCHS 1B	NCHS 4B	NCHS 8B

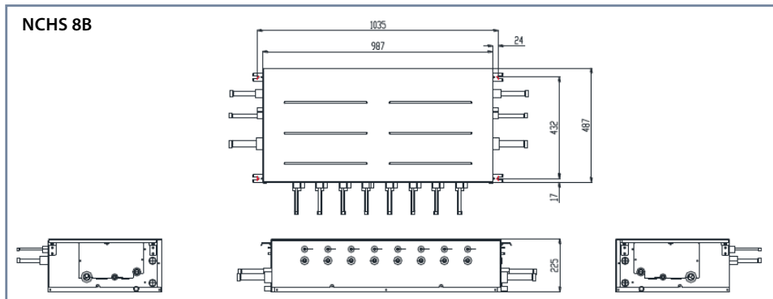
NCHS 1B



NCHS 4B



NCHS 8B



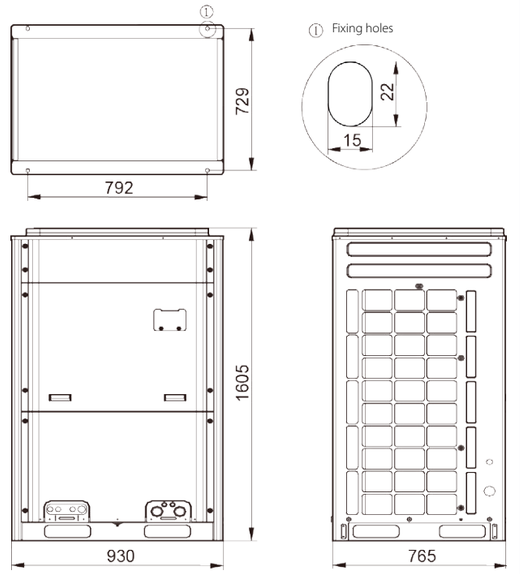
Model		Units	NCHS-1B	NCHS-2B	NCHS-4B	NCHS-8B
Max. number branch		unit	1	2	4	8
Max. number connections per branch		unit	8	8	8	8
Total connections		unit	8	16	32	64
Max. capacity per branch		kW/kW	14	14	14	14
max. capacity per connection		kW/kW	14	28	45	65
Power supply		Volts/Phase/ Hz	270/320/400	270/320/400	310/400/480	500/600/680
Power		W	8	20	44	80
Max. numb er of checks		unit	1	2	4	8
Piping size	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 12,70	ø 12,70
	Gas pipe (low pressure)	mm	ø 22,20	ø 22,20	ø 28,60	ø 28,60
	Gas pipe (high pressure)	mm	ø 15,90	ø 19,05	ø 22,20	ø 22,20
Piping size	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90	ø 15,90	ø 15,90

Summary table of the specifications of the external unit combinations

Model	Power Supply	Cooling capacity		Absorption		Dimensions (Length - Width - Height)	Air flow	ESP	Sound level	Noise level during operation	Piping dimensions			Maximum circuit current	Maximum fuse current	Weight
		Cooling	Heating	Cooling	Heating						Liquid	Gas	Oil balancing tube			
		kW	kW	kW	kW	mm	m³/h	Pa	dB (A)	dB (B)	mm	mm	mm	A	A	kg
TTY-EV H224 W		22.40	25.0	5.20	5.30	930 x 765 x 1605	11400	82	60	40	Ø 9,52	Ø 15,9	Ø 19,05	16.3	20	233.0
TTY-EV H280 W		28.0	31.50	6.90	7.30	930 x 765x 1605	11400	82	61	40	Ø 9,52	Ø 19,05	Ø 22,20	20.9	25	233.0
TTY-EV H335 W		33.50	37.50	8.20	8.70	1340 x 765 x 1605	14000	82	63	40	Ø 12,70	Ø 19,05	Ø 25,40	24.7	32	302.0
TTY-EV H400 W		40.0	45.0	10.60	10.80	1340 x765x 1605	14000	82	63	40	Ø 12,7	Ø 22,20	Ø 25,40	28.8	40	346.0
TTY-EV H450 W		15.0	50.0	12.10	12.50	1340 x 765 x 1605	14000	82	63	40	Ø 12,70	Ø 22,20	Ø 28,60	33.2	40	346.0
TTY-EV H504 W		50.4	56.5	12.2	12.8	2x(930 X 765 x 1605)	2 x11400	82	64	45	Ø 15,9	Ø 28,6	Ø 9,52	36.6	40	2x225
TTY-EVH560 W		56	62.5	14	14.6	2x(930 x 765 x 1605)	2 x11400	82	64	45	Ø 15,9	Ø 28,6	Ø 9,52	41.8	50	2x225
TTY-EV H615 W		61.5	69	15.41	16.3	(930 x 765 x 1605)+(1340 x 765 x 1605)	11400+14000	82	65	45	Ø 15,9	Ø 28,6	Ø 9,52	19.7	50	285+225
TTY-EV H680 W		68	76.5	17.65	18.4	(930 x 765 x 1605)+(1340 x 765 x1605)	11400+14000	82	65	45	Ø 15,9	Ø 28,6	Ø 9,52	54.1	63	225+360
TTY-EVH 730 W		73	81.5	19.65	20.3	(930 x 765 x 1605)+(1340 x 765 x 1605)	11400+14000	82	65	45	Ø 19,05	Ø 31,8	Ø 9,52	57.9	63	225+360
TTY-EV H785 W		78.5	87.5	21.06	22	2x(1340 x 765 x 1605)	2 x14000	82	66	45	Ø 19,05	Ø 31,8	Ø 9,52	66.1	80	285+360
TTY-EV H850 W		85	95	23.3	24.1	2x(1340 x 765 x 1605)	2 x14000	82	66	45	Ø 19,05	Ø 31,8	Ø 9,52	66.4	80	2x360
TTY-EV H900 W		90	100	25.3	26	2x(1340 x 765 x 1605)	2 x14000	82	66	45	Ø 19,05	Ø 31,8	Ø 9,52	66.5	80	2x360
TTY-EVH 960 W		96	108	24.65	25.7	2x(930 x 765 x 1605)+ (1340 x 765 x 1605)	2 x11400+14000	82	67	45	Ø 19,05	Ø 31,8	Ø 9,52	70.6	80	2x225+360
TTY-EV H1010 W		101	113	26.65	27.6	2x(930 x 765 x 1605)+ (1340 x 765 x 1605)	2 x11400+14000	82	67	45	Ø 19,05	Ø 38,1	Ø 9,52	75	80	2x225+360
TTY-EV H1065 W	380~415 V - 3 Ph - 50/60 Hz	106.5	119	28.06	29.3	(930 x 765 x 1605)+2x (1340 x 765 x 1605)	11400+2 x14000	82	67	45	Ø 19,05	Ø 38,1	Ø 9,52	78.8	100	225+285+360
TTY-EV H1130 W		113	126.5	30.3	31.4	(930 x 765 x 1605)+2x (1340 x 765 x 1605)	11400+2 x14000	82	67	45	Ø 19,05	Ø 38,1	Ø 9,52	82.9	100	225+2x360
TTY-EVH 1180 W		118	131.5	32.3	33	(930 x 765 x 1605)+2x (1340 x 765 x 1605)	11400+2 x14000	82	67	45	Ø 19,05	Ø 38,1	Ø 9,52	87.3	100	225+2x360
TTY-EVH 1235 W		123.5	137.5	33.71	35	3x (1340 V 765 x 1605)	3 x14000	82	68	45	Ø 19,05	Ø 38,1	Ø 9,52	91.1	125	285+2x360
TTY-EVH 1300 W		130	145	35.95	37.1	3x (1340 x 765 x 1605)	3 x14000	82	68	45	Ø 19,05	Ø 38,1	Ø 9,52	95.2	125	3x360
TTY-EV H1350 W		135	150	37.95	39	3x (1340 x 765 x 1605)	3 x14000	82	68	45	Ø 19,05	Ø 38,1	Ø 9,52	99.6	125	3x360
TTY-EV H1410 W		141	158	37.3	38.7	2x(930 x 765 x 1605)+2x (1340 x 765 x 1605)	2x11400+2 x14000	82	69	47	Ø 22,2	Ø 44,5	Ø 9,52	103.8	125	2x225+3x360
TTY-EV H1460 W		146	163	39.3	40.6	2x(930 x 765 x 1605)+2x (1340 x 765 x 1605)	2x11400+2 x14000	82	69	47	Ø 22,2	Ø 44,5	Ø 9,52	108.2	125	2x225+2x360
TTY-EV H1515 W		151.5	169	40.71	42.3	(930 x 765 x1605)+3x (1340 x 765 x 1605)	11400+3 x14000	82	69	47	Ø 22,2	Ø 44,5	Ø 9,52	112.0	125	225+285+2x360
TTY-EV H1580 W		158	176.5	42.95	44.4	(930 x 765 x 1605)+3x (1340 x 765 x 1605)	11400+3 x14000	82	69	47	Ø 22,2	Ø 44,5	Ø 9,52	116.1	125	225+3x360
TTY-EV H1630 W		163	181.5	44.95	46.3	(930 x 765 x 1605)+3x (1340 x 765 x 1605)	11400+3 x14000	82	69	49	Ø 22,2	Ø 44,5	Ø 9,52	120.5	160	225+3x360
TTY-EV H1685 W		168.5	187.5	46.36	48	3x (1340 x 765 x 1605)	4 x14000	82	70	49	Ø 22,2	Ø 44,5	Ø 9,52	124.3	160	285+3x360
TTY-EVH 1750 W		175	195	48.6	50.1	3x (1340 x 765 x 1605)	4 x14000	82	70	49	Ø 22,2	Ø 44,5	Ø 9,52	128.4	160	4x360
TTY-EV H1800 W		180	200	50.6	52	3x (1340 x 765 x 1605)	4 x14000	82	70	49	Ø 22,2	Ø 44,5	Ø 9,52	132.8	160	4x360

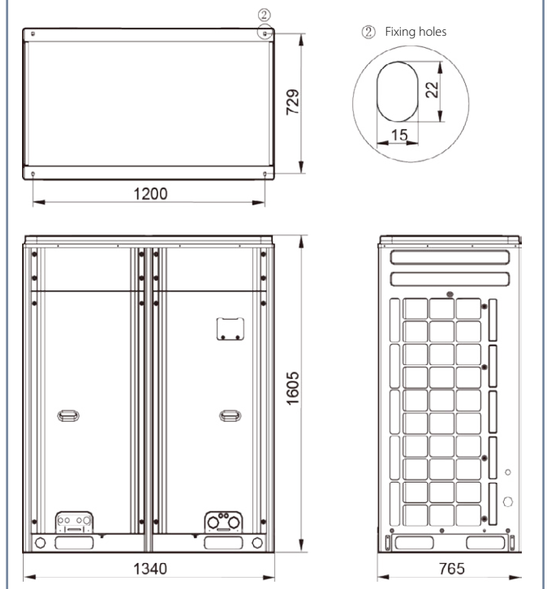
Dimensional drawings of Modular External and Heat Recovery Units

TTY-EV224÷280W; TTY-EVH224÷280W



Measurement unit: mm

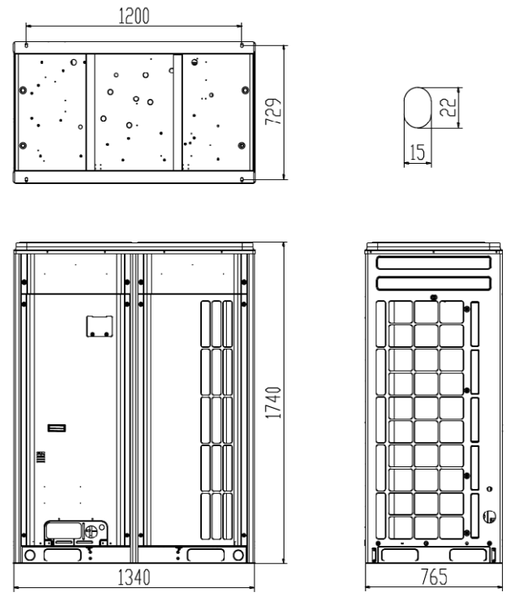
TTY-EV335÷450W; TTY-EVH335÷450W



Measurement unit: mm

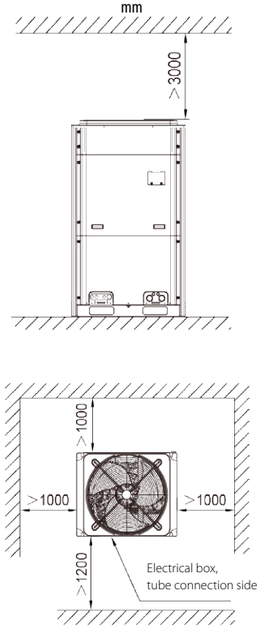
TTY-EV504÷615W

Measurement unit: mm



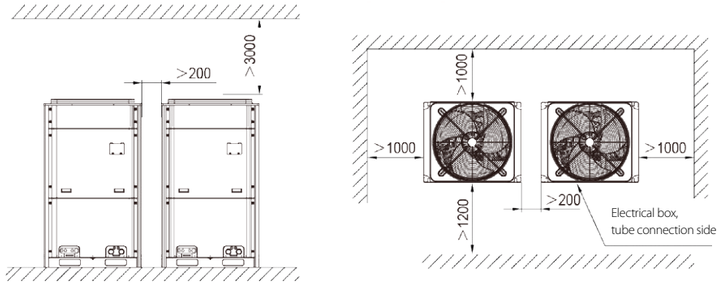
Installation space requirements 1 module

Measurement unit: mm



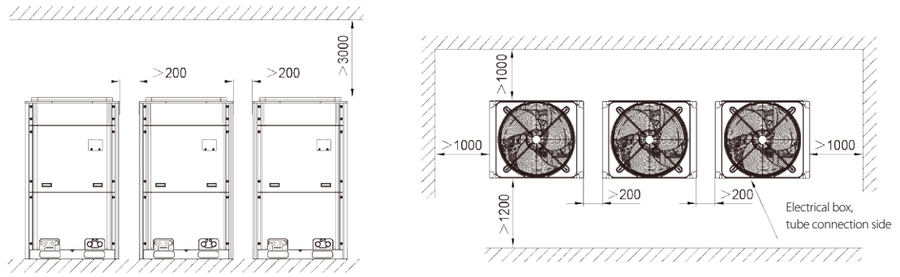
Installation space requirements 2 modules

Measurement unit: mm



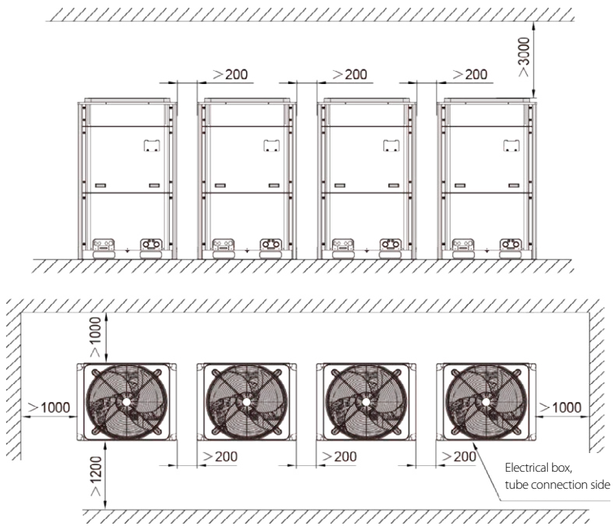
Installation space requirements 3 modules

Measurement unit: mm



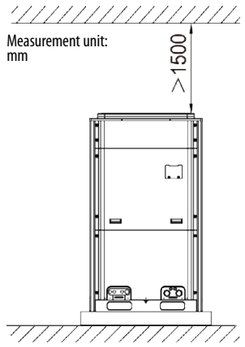
Installation space requirements 4 modules

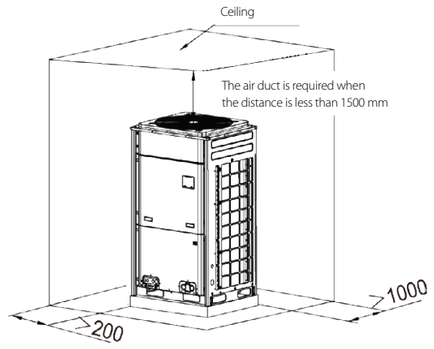
Measurement unit: mm



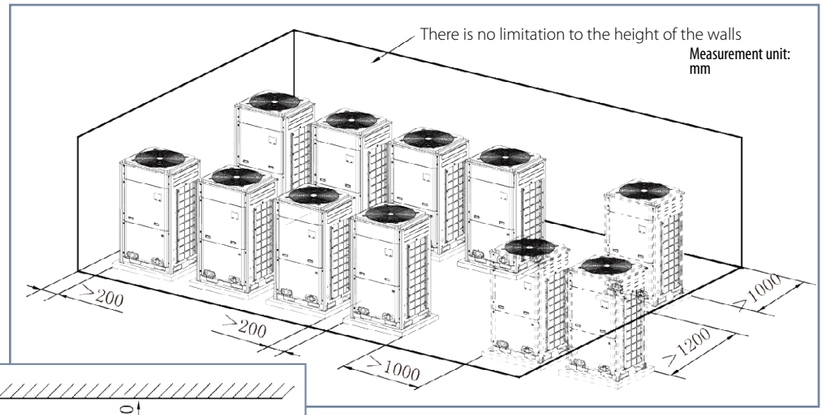
Minimum space requirements in height

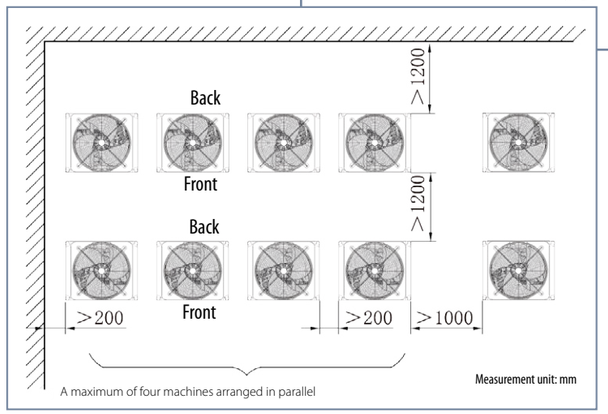
Measurement unit: mm



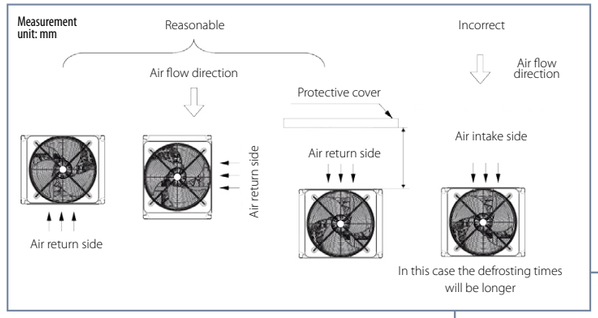


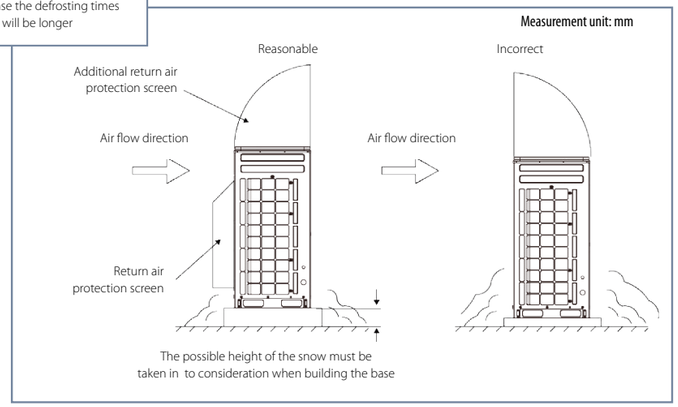
Minimum space requirements multiple module installations



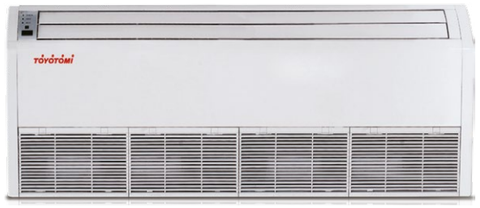


Installation precautions in places with prevailing winds





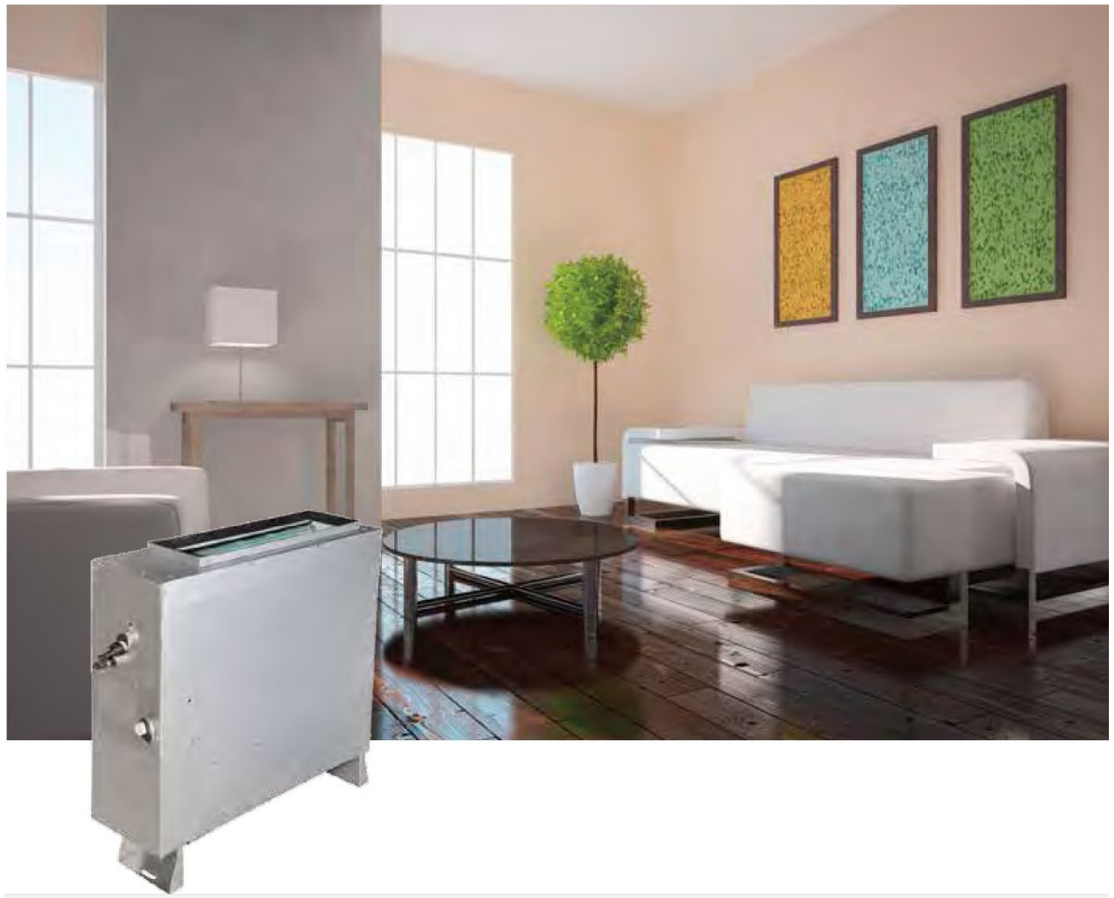
Internal Units



Internal Unit Specifications

Model		Size																						
		22	25	28	32	36	40	45	50	56	63	71	72	80	90	100	112	125	140	160	224	280	450
	High Static Pressure Duct Type Unit									■	■	■		■	■	■	■	■	■	■	■	■	
	Low Static Pressure Duct Type Unit	■	■	■	■	■	■	■	■	■	■	■		■	■	■	■	■	■				
	Slim Ducted Type Indoor Unit	■	■	■	■	■	■	■	■	■	■		■										
	4-Way Cassette Unit	■		■		■		■	■	■													
	Compact 4-Way Cassette Indoor Unit										■	■		■	■	■	■	■	■	■			
	2-Way Cassette Indoor Unit			■		■		■	■	■	■	■											
	1-Way Cassette Unit	■		■		■		■	■														
	Wall Mounted Type Unit	■		■		■		■	■	■	■	■											
	Floor Ceiling Type Indoor Unit			■		■			■	■	■	■			■		■	■	■				
	Console Indoor Unit	■		■		■			■	■													
	Floor Standing Type Indoor Unit															■			■				
	Fresh Air Proccesing Indoor Unit																		■		■	■	■
	Floor Type Indoor Unit	■		■		■		■		■	■	■											

Hidden Floor



Model		Units	-	-	-	-	-	-	-
Cooling capacity	Cooling	kW	22 ,2	22.8	3.6	4.5	5.6	6.3	7.1
	Heating	kW	2.5	3.2	4.0	5.0	6.3	7.1	8.0
Power supply		Volts/ Phase/Hz	220-240/1/50						
Power		W	35	35	43	45	80	80	90
Air flow		m3/h	250/350/450	250/350/450	350/450/550	400/500/650	600/750/900	600/750/900	700/900/1100
Rated Current	Cooling	A	0.18	0.18	0.22	0.23	0.41	0.41	0.46
	Heating	A	0.18	0.18	0.22	0.23	0.41	0.41	0.46
Static fan pressure		Pa	10/0~40	10/0~40	10/0~40	15/0~60	15/0~60	15/0~60	15/0~60
Sound pressure		dB(A)	25/28/30	25/28/30	28/31/33	28/31/33	30/33/35	30/31/33	33/35/37
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 9,52	ø 9,52	ø 12,70	ø 12,70	ø 15,90	ø 15,90	ø 15,90
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	1.50	1.50	1.50
Dimensions	Unit (L-W-H)	mm	700 x 615 x 200	700 x 615 x 200	700 x 615 x 200	900 x 615 x 200	1100 x 615 x 200	1100 x 615 x 200	1100 x 615 x 200
	Packaging (L-W-H)	mm	893 x 743 x 305	893 x 743 x 305	893 x 743 x 305	1123 x 743 x 305	1323 x 743 x 305	1323 x 743 x 305	1323 x 743 x 305
Weight (Nett / Gross)		kg	23/30	23/30	23/30	27/36	32/41	32/41	32/41

High prevalence duct

Installation versatility
Great installation versatility thanks to the possibility of adjusting the static pressure of the fan, which can reach up to 150Pa, and the possibility of using ducts with circular or rectangular sections

Easy maintenance:
The system has an access door to simplify maintenance operations.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 0.8m, it is possible to effectively discharge the condensation water and save space.

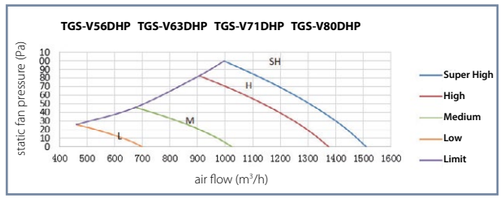
DC Inverter Motor
Through improved ventilation speed, engine efficiency is improved by 30% compared to previous models.

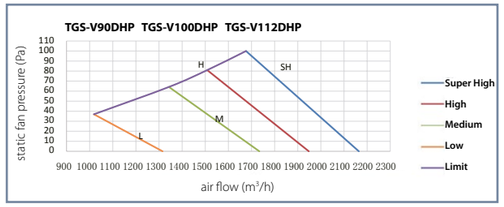
Air intake
During the installation phase it is possible to carry out air recovery from below.

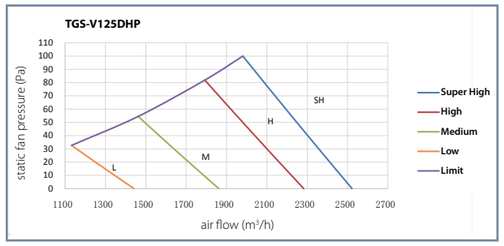
Model		Units	TGS-V56DHP	TGS-V63DHP	TGS-V71DHP	TGS-V80DHP	TGS-V90DHP
capacity	Cooling	kW	5.6	6.3	7.1	8.0	9.0
	Heating	kW	6.3	7.1	8.0	9.0	10.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	120	120	120	120	120
Air flow (min.-med.-max.)		m3/h	600/800/1000	600/800/1000	700/900/1100	700/900/1100	1100/1450/1700
Rated Current	Cooling	A	0.6	0.6	0.6	0.6	1.0
	Heating	A	0.6	0.6	0.6	0.6	1.0
Static fan pressure		Pa	70/0~100	70/0~100	70/0~100	70/0~100	70/0~100
Sound pressure (min.-med.-max.)		dB(A)	36/40/44	36/40/44	37/41/45	37/41/45	42/44/46
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	1271 x 558 x 268	1271 x 558 x 268	1271 x 558 x 268	1271 x 558 x 268	1229 x 775 x 290
	Packaging (L-W-H)	mm	1348 x 597 x 283	1348 x 597 x 283	1348 x 597 x 283	1348 x 597 x 283	1338 x 877 x 305
Weight (Nett / Gross)		kg	35/40	35/40	35/40	35/40	47/54

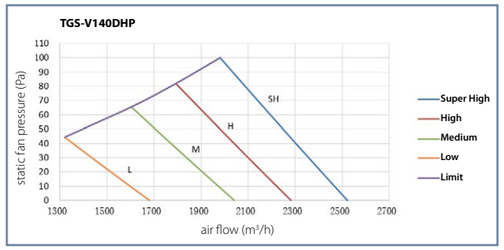
Model		Units	TGS-V 100DHP	TGS-V 112DHP	TGS-V 125DHP	TGS-V 140DHP	TGS-V 160DHP	TGS-V 224DHP	TGS-EV280DHP
capacity	Cooling	kW	10.2	11.2	12.5	14.0	16.0	22.4	28.0
	Heating	kW	11.2	12.5	14.0	16.0	18.0	25.0	31.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	200	200	220	220	560	800	900
Air flow (min.-med.-max.)		m3/h	1100/1450/1700	1100/1450/1700	1200/1550/2000	1400/1700/2000	3100	4000	4400
Rated Current	Cooling	A	1.0	1.0	1.0	1.0	4.0	4.1	4.6
	Heating	A	1.0	1.0	1.0	1.0	4.0	4.1	4.6
Static fan pressure		Pa	70/0~100	70/0~100	70/0~100	70/0~100	70/0~150	150/50~200	150/50~200
Sound pressure (min.-med.-max.)		dB(A)	42/44/46	42/44/46	42/45/48	44/46/48	55.0	54.0	55.0
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 19,0	ø 22,20	ø 22,20
	Type of connection		A Cartella					Solder	
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø30,0	ø30,0	ø30,0
	thickness	mm	2.50	2.50	2.50	2.50	1.50	1.50	1.50
Dimensions	Unit (L-W-H)	mm	1229 x 775 x 290	1229 x 775 x 290	1229 x 775 x 290	1229 x 775 x 290	1340 x 750 x 350	1483 x 791 x 385	1686 x 870 x 450
	Packaging (L-W-H)	mm	1338 x 877 x 305	1338 x 877 x 305	1338 x 877 x 305	1338 x 877 x 305	1423 x 837 x 455	1578 x 883 x 470	1788 x 988 x 580
Weight (Nett / Gross)		kg	47/54	47/54	47/54	47/54	79/103	82/104	105/140

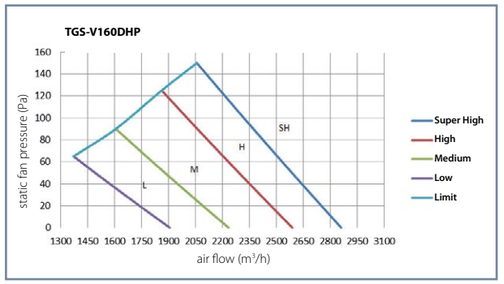
Fan characteristics High prevalence ductable

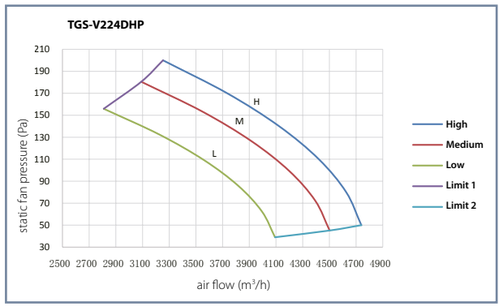


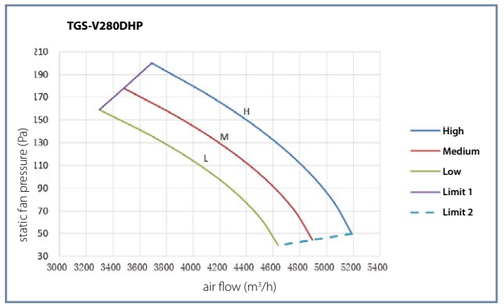




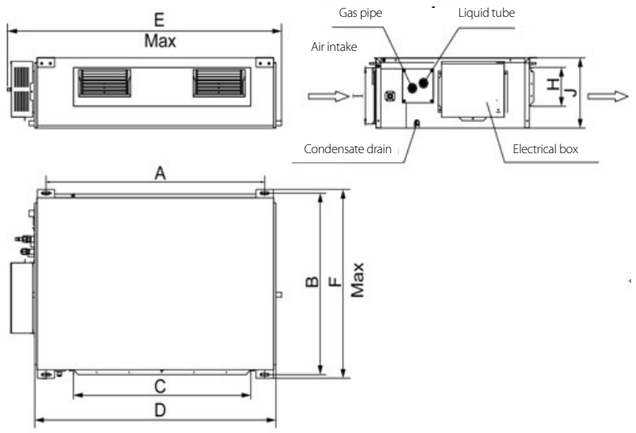


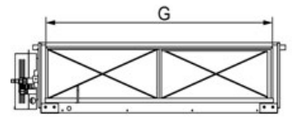


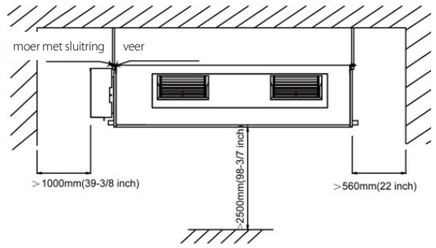


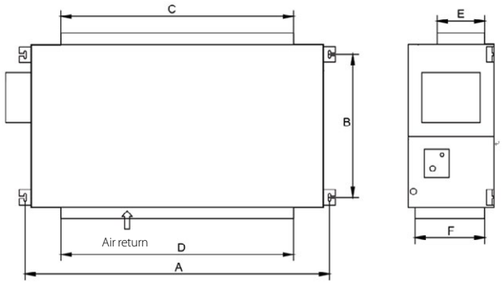


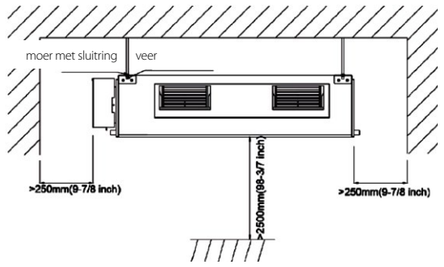
Dimensional drawings of high prevalence channels











Measurement unit: mm

Model	A	B	C	D	E	F	G	H	I	L
TGS-EV56DHP	1101	517	820	1159	1271	558	1002	160	235	268
TGS-EV63DHP										
TGS-EV71DHP										
TGS-EV80DHP										
TGS-EV90DHP	1101	748	820	1115	1229	775	979	160	231	290
TGS-EV100DHP										
TGS-EV112DHP										
TGS-EV125DHP										
TGS-EV140DHP										
TGS-V160DHP	1177	545	852	1150	1340	750	953	190	316	350

Measurement unit: mm

Model	A	B	C	D	E	F
TGS-EV224DHP	1353	632	992	1150	192	327
TGS-EV280DHP	1563	706	992	1350	192	402

Medium prevalence ductable

Medium prevalence, low sound level
These units are suitable for small environments or installation spaces, ensuring a comfortable and quiet environment.

Easy maintenance
Maintenance is simplified thanks to the use of the easily removable plastic filter, from the fan motor separated from the condensate drain pump unit and the electrical panel assembly.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 0.8m, it is possible to effectively discharge the condensation water and save space.

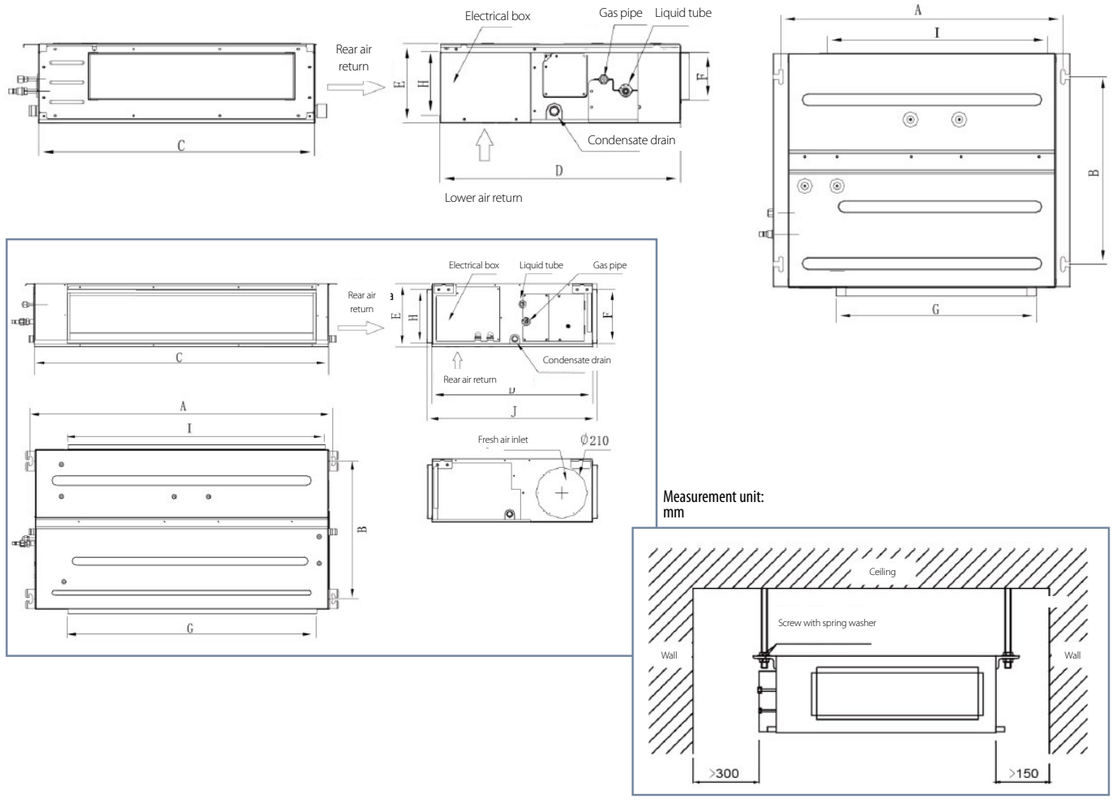
External air intake
It is possible to connect a circular external air intake duct.

Model		Units	TGS-V 22 DTA	TGS-V 25 DTA	TGS-V 28 DTA	TGS-V 32 DTA	TGS-V 36 DTA
capacity	Cooling	kW	2.2	2.5	2.8	3.2	3.6
	Heating	kW	2.5	2.8	3.2	3.6	4.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	35	35	35	43	43
Air flow (min.-med.-max.)		m3/h	250/350/450	250/350/450	250/350/450	350/450/550	350/450/550
Rated Current	Cooling	A	0.2	0.2	0.2	0.2	0.2
	Heating	A	0.2	0.2	0.2	0.2	0.2
Static fan pressure		Pa	15/0~30	15/0~30	15/0~30	15/0~30	15/0~30
Sound pressure (min.-med.-max.)		dB(A)	25/28/31	25/28/31	25/28/31	27/30/32	27/30/32
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35
	Gas pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 12,70	ø 12,70
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	700 x 615 x 200	700 x 615 x 200	700 x 615 x 200	700 x 615 x 200	700 x 615 x 200
	Packaging (L-W-H)	mm	893 x 743 x 305	893 x 743 x 305	893 x 743 x 305	893 x 743 x 305	893 x 743 x 305
Weight (Nett / Gross)		kg	22/27	22/27	22/27	22/28	22/28

Model		Units	TGS-V 40 DTA	TGS-V 45 DTA	TGS-V 50 DTA	TGS-V 56 DTA	TGS-V 63 DTA
capacity	Cooling	kW	4.0	4.5	5.0	5.6	6.3
	Heating	kW	4.5	5.0	5.6	6.3	7.1
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	52	52	52	99	99
Air flow (min.-med.-max.)		m3/h	450/600/700	450/600/700	450/600/700	600/800/1000	600/800/1000
Rated Current	Cooling	A	0.3	0.3	0.3	0.5	0.5
	Heating	A	0.3	0.3	0.3	0.5	0.5
Static fan pressure		Pa	15/0~30	15/0~30	15/0~30	15/0~30	15/0~30
Sound pressure (min.-med.-max.)		dB(A)	28/31/33	28/31/33	28/31/33	30/33/35	30/33/35
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52
	Gas pipe	mm	ø 12,70	ø 12,70	ø 12,70	ø 15,90	ø 15,90
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	900 x 615 x 200	900 x 615 x 200	900 x 615 x 200	1100 x 615 x 200	1100 x 615 x 200
	Packaging (L-W-H)	mm	1123 x 743 x 305	1123 x 743 x 305	1123 x 743 x 305	1323 x 743 x 305	1323 x 743 x 305
Weight (Nett / Gross)		kg	27/33	27/33	27/33	31/38	31/38

Model		Units	TGS-V 71 DTA	TGS-V 80 DTA	TGS-V 90 DTA	TGS-V 100 DTA	TGS-V 112 DTA	TGS-V 125 DTA	TGS-V 140 DTA
capacity	Cooling	kW	7.1	8.0	9.0	10.0	11.2	12.5	14.0
	Heating	kW	8.0	9.0	10.0	11.2	12.5	14.0	16.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	105	140	209	209	209	230	230
Air flow (min.-med.-max.)		m3/h	600/800/1000	800/1000/1100	950/1250/1500	1000/1350/1500	1100/1500/1700	1150/1500/2000	1150/1500/2000
Rated Current	Cooling	A	0.5	0.7	1.0	1.0	1.0	1.1	1.1
	Heating	A	0.5	0.7	1.0	1.0	1.0	1.1	1.1
Static fan pressure		Pa	30/0~50	30/0~50	30/0~50	30/0~50	30/0~50	30/0~50	30/0~50
Sound pressure (min.-med.-max.)		dB(A)	30/33/35	31/34/36	32/36/40	32/36/40	32/36/40	37/40/42	37/40/42
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella						
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	1200 x 655 x 260	1200 x 655 x 260	1340 x 655 x 260	1340 x 655 x 260	1340 x 655 x 260	1340 x 655 x 260	1340 x 655 x 260
	Packaging (L-W-H)	mm	1448 x 858 x 315	1448 x 858 x 315	1591 x 861 x 330	1591 x 861 x 330	1591 x 861 x 330	1591 x 861 x 330	1591 x 861 x 330
Weight (Nett / Gross)		kg	40/47	40/47	46/55	46/55	46/55	46/55	46/55

Dimensional drawings Medium prevalence ducted



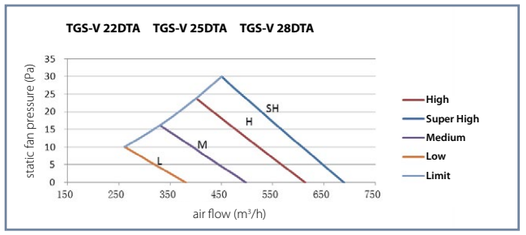
Measurement unit: mm

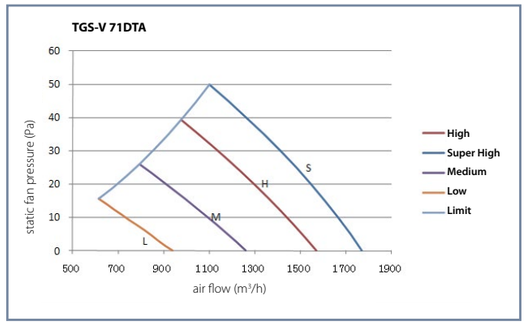
Model	A	B	C	D	E	F	G	H	I
TGS-V22DTA	742	491	700	615	200	121	528	161	580
TGS-V25DTA									
TGS-V28DTA									
TGS-V32DTA									
TGS-V36DTA									
TGS-V40DTA	942	491	900	615	200	121	728	161	780
TGS-V45DTA									
TGS-V50DTA									
TGS-V56DTA	1142	491	1100	615	200	121	928	161	980
TGS-V63DTA									

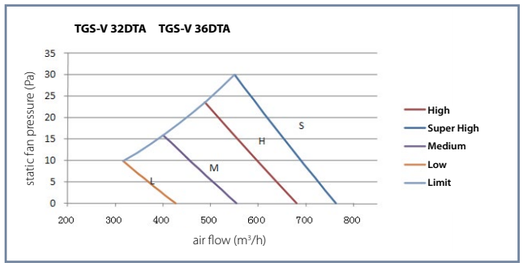
Measurement unit: mm

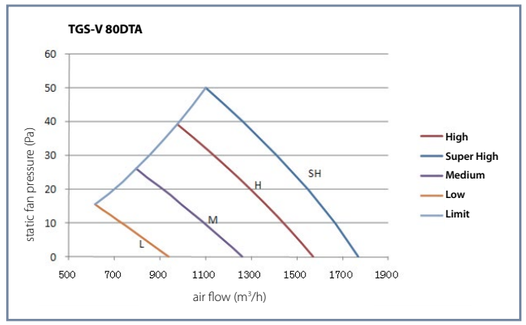
Model	A	B	C	D	E	F	G	H	I	L
TGS-V71DTA	1236	565	1200	655	260	222	1016	220	1050	695
TGS-V80DTA										
TGS-V90DTA	1379	565	1340	665	260	207	1153	220	1188	716
TGS-V100DTA										
TGS-V112DTA										
TGS-V125DTA										
TGS-V140DTA										

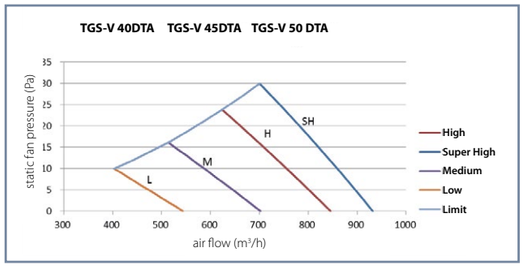
Fan characteristics Medium prevalence ductable

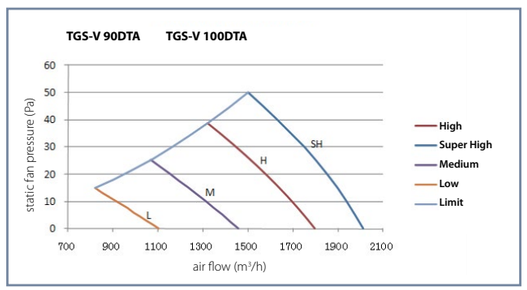


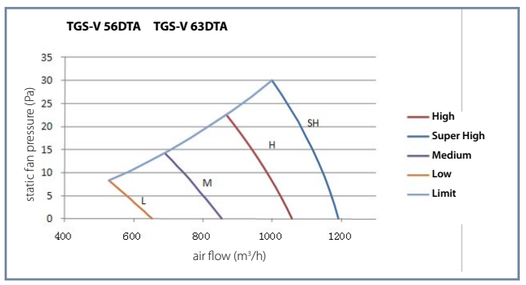


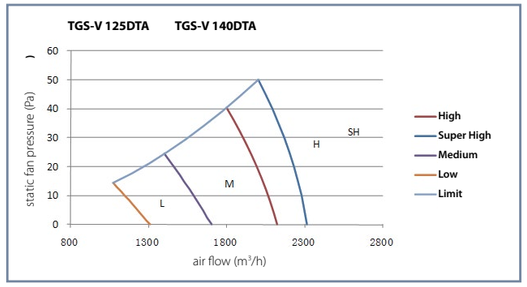




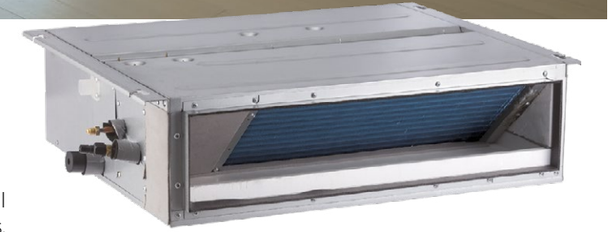








Ductable Slim



Low prevalence, low sound level
These units solve problems where low noise is an essential requirement such as in hotels, hospitals, libraries, museums.

Thin and small
With a height of only 200 mm and a depth of 450 mm, the unit can be installed in small spaces without difficulty.

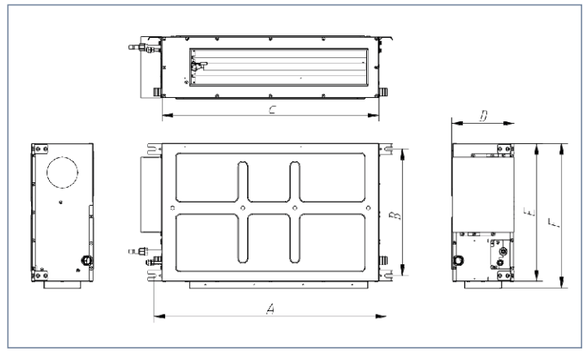
Ultra-quiet
The highly efficient centrifugal fan, the patented, low-noise housing and the quiet expansion valve allow the sound level of the entire unit to be significantly reduced.

Easy operation & maintenance
The electrical control panel is connected independently and therefore can be completely disconnected to make maintenance more convenient.
Installation and maintenance of the fan and motor are also easy.

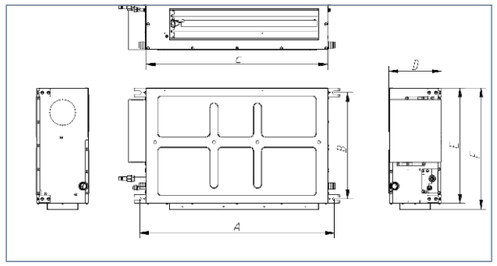
Model		Units	TGS-V22 DTA-SL	TGS-V 25 DTA-SL	TGS-V 28 DTA-SL	TGS-V 32 DTA-SL	TGS-V 36 DTA-SL
capacity	Cooling	kW	2.2	2.5	2.8	3.2	3.6
	Heating	kW	2.5	2.8	3.2	3.6	4.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	25	25	25	25	25
Air flow (min.-med.-max.)		m3/h	450/600/700	450/600/700	450/600/700	600/800/1000	600/800/1000
Rated Current	Cooling	A	0.2	0.2	0.2	0.3	0.3
	Heating	A	0.2	0.2	0,	0.3	0.3
Static fan pressure		Pa	15/0~30	15/0~30	15/0~30	15/0~30	15/0~30
Sound pressure (min.-med.-max.)		dB(A)	22/28/30	22/28/30	22/28/30	25/29/31	35/29/31
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35
	Gas pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200
	Packaging (L-W-H)	mm	1003 x 551 x 285	1003 x 551 x 285	1003 x 551 x 285	1003 x 551 x 285	1003 x 551 x 285
Weight (Nett / Gross)		kg	18.5/22	18.5/22	18.5/22	18.5/22	18.5/22

Model		Units	TGS-V 40 DTA-SL	TGS-V45 DTA-SL	TGS-V 50 DTA-SL	TGS-V 56 DTA-SL	TGS-V 63 DTA-SL	TGS-V 72 DTA-SL
capacity	Cooling	kW	4.5	4.5	5.0	5.6	6.3	7.1
	Heating	kW	4.5	5.0	5.6	6.3	7.0	8.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	35	35	35	45	45	50
Air flow (min.-med.-max.)		m3/h	540/660/750	540/660/750	540/660/750	610/700/850	610/700/850	640/800/1100
Rated Current	Cooling	A	0.3	0.3	0.3	0.3	0.3	0.5
	Heating	A	0.3	0.3	0.3	0.3	0.3	0.5
Static fan pressure		Pa	0/15	0/15	0/15	0/15	0/15	0/15
Sound pressure (min.-med.-max.)		dB(A)	27/30/33	27/30/33	27/30/33	29/33/35	29/33/35	30/34/37
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 12,70	ø 12,70	ø 12,70	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella					
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	1010 x 450 x 200	1010 x 450 x 200	1010 x 450 x 200	1010 x 450 x 200	1010 x 450 x 200	1310 x 450 x 200
	Packaging (L-W-H)	mm	1303 x 551 x 285	1303 x 551 x 285	1303 x 551 x 285	1303 x 551 x 285	1303 x 551 x 285	1603 x 551 x 285
Weight (Nett / Gross)		kg	23.5/28	23.5/28	23.5/28	24.5/29	24.5/29	30.5/36

Dimensional Drawings Ducted Slim



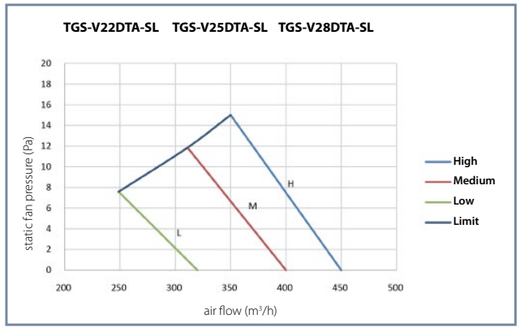
Measurement unit:
mm

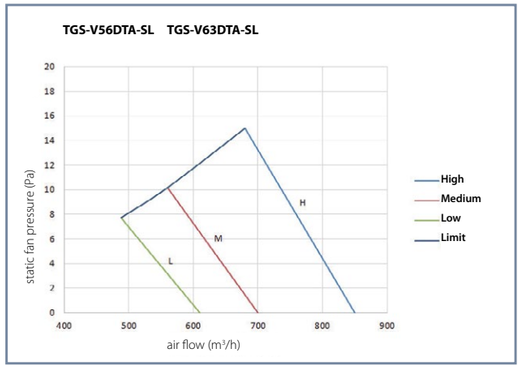


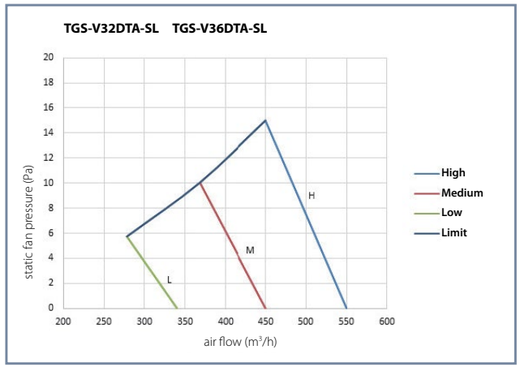
Measurement unit: mm

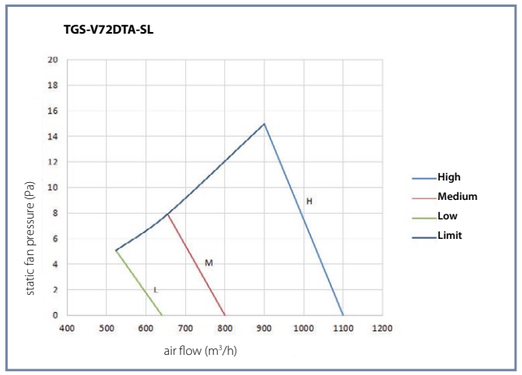
Model	A	B	C	D	E	F
TGS-V22DTA-SL	760	415	710	200	450	475
TGS-V25DTA-SL						
TGS-V28DTA-SL						
TGS-V32DTA-SL						
TGS-V36DTA-SL						
TGS-V40DTA-SL	1060	415	1010	200	450	475
TGS-V45DTA-SL						
TGS-V50DTA-SL						
TGS-V56DTA-SL						
TGS-V63DTA-SL						
TGS-V72DTA-SL	1360	415	1310	200	450	475

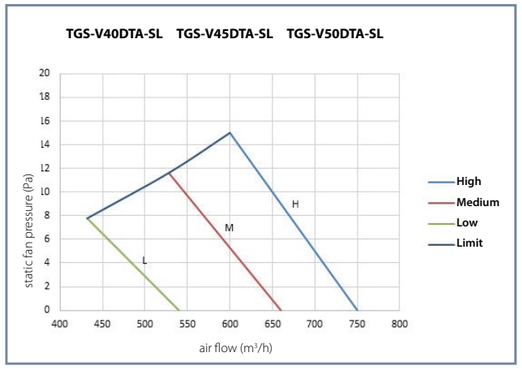
Characteristics of the Slim Ductable fans



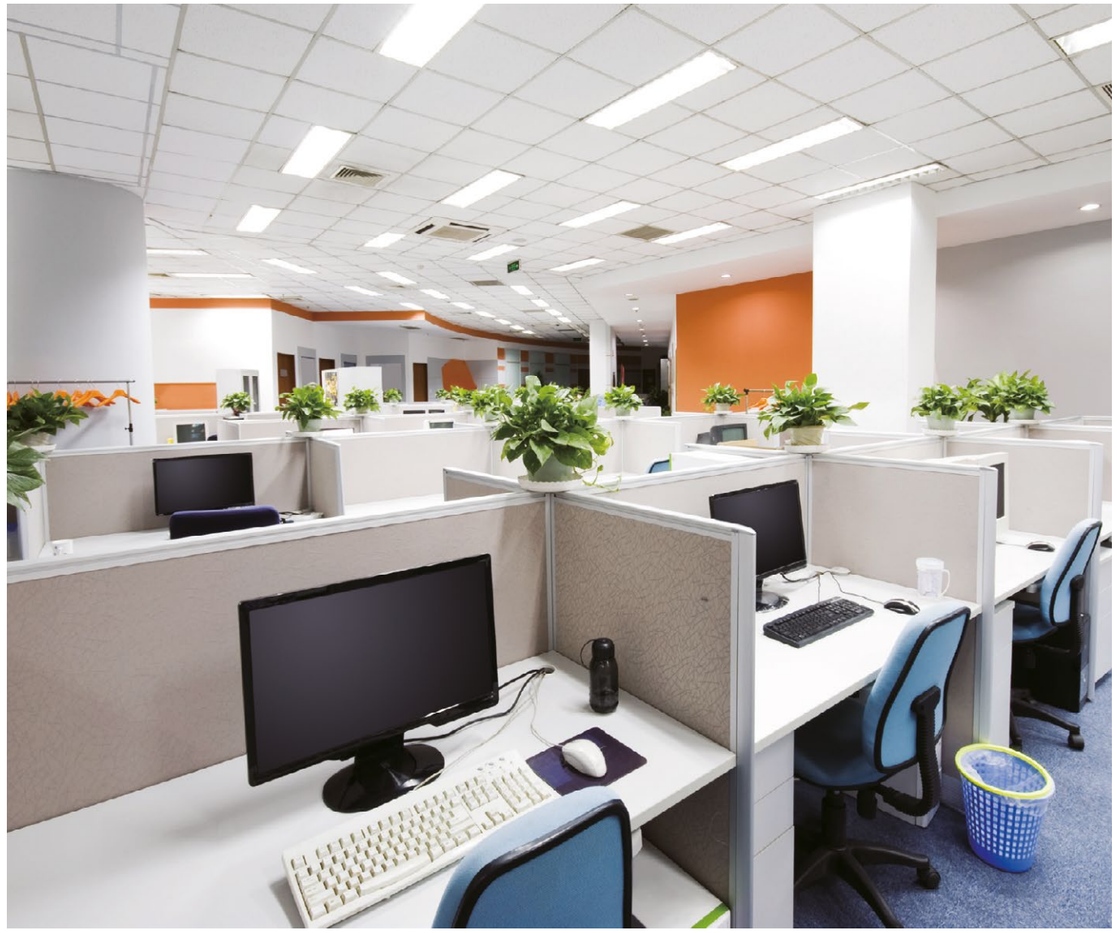








Compact 4-ways Cassettes

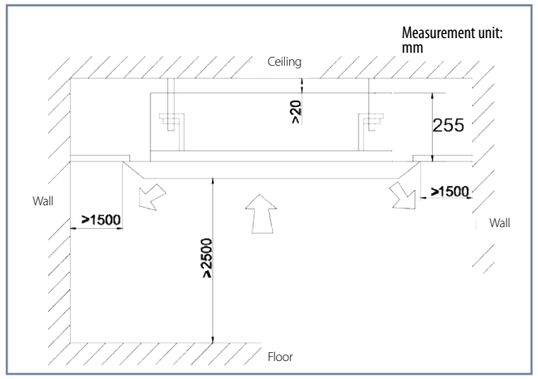


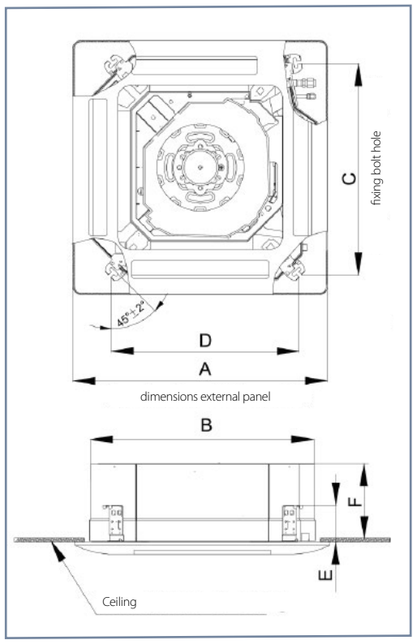
Compact design for easy installation
With only 240 mm of height and with the same length and width, with a weight of 20.5 kg, the installation is possible even in limited spaces.
With the ceiling openings and panel dimensions unchanged for all models in this series, these units are ideal for installation in 600 x 600 mm modular ceilings.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 0.8m, it is possible to effectively discharge the condensation water and save space.

Model		Units	TGS-V 22 FWCA-CP	TGS-V 28 FWCA-CP	TGS-V 36FWCA-CP	TGS-V45 FWCA-CP	TGS-V 50 FWCA-CP	TGS-V 56 FWCA-CP
capacity	Cooling	kW	2.2	2.8	3.6	4.5	5.0	5.6
	Heating	kW	2.5	3.2	4.0	5.0	5.6	6.3
Power Supply		Volts/ Phase/ Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	35	35	35	45	45	45
Air flow (min.-med.-max.)		m3/h	400/500/600	400/500/600	400/500/600	500/500/700	500/600/700	500/600/700
Rated Current	Cooling	A	0.4	0.4	0.4	0.5	0.5	0.5
	Heating	A	0.4	0.4	0.4	0.5	0.5	0.5
Sound pressure (min.-med.-max.)		dB(A)	35/39/46	35/39/46	35/39/46	38/43/47	38/43/47	38/43/47
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 9,52
	Gas pipe	mm	ø 9,52	ø 9,52	ø 12,70	ø 12,70	ø 12,70	ø 15,90
	Type of connection		A Cartella					
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	596 x 596 x 240	596 x 596 x 240	596 x 596 x 240	596 x 596 x 240	596 x 596 x 240	596 x 596 x 240
	Packaging (L-W-H)	mm	773 x 733 x 300	773 x 733 x 300	773 x 733 x 300	773 x 733 x 300	773 x 733 x 300	773 x 733 x 300
Weight (Nett / Gross)		kg	20.5/25.5	20.5/25.5	20.5/25.5	20.5/25.5	20.5/25.5	20.5/25.5

Dimensional drawings Compact 4-ways Cassettes





Measurement unit:
mm

Model	A	B	C	D	E	F
TGS-V22FWCA-CP	670	596	592	571	145	240
TGS-V28FWCA-CP						
TGS-V36FWCA-CP						
TGS-V45FWCA-CP						
TGS-V50FWCA-CP						
TGS-V56FWCA-CP						

4-ways Cassettes

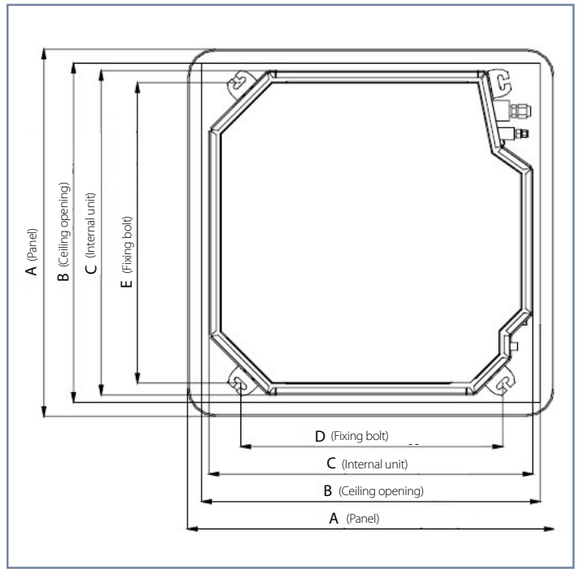
Strong and balanced air flow
The unit has the following features: automatic operation, 4-ways air flow, 7-speed fan and increased air flow.

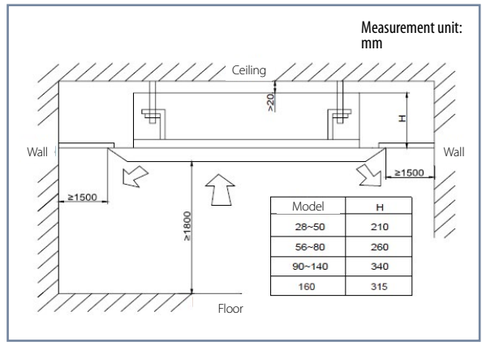
Very low sound level in operation
The DC inverter motor is able to achieve a linear speed adjustment to reduce noise.
The internal unit can also be set to operate in automatic silent mode via the wired control.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 0.8m, it is possible to effectively discharge the condensation water and save space.

Model		Units	TGS-V 63 FWCA	TGS-V 71 FWCA	TGS-V 80 FWCA	TGS-V 90 FWCA	TGS-EV 100 FWCA	TGS-V 112 FWCA	TGS-EV 125 FWCA	TGS-V 140 FWCA	TGS-V 160 FWCA
capacity	Cooling	kW	6.30	7.10	8.0	9.0	10.0	11.2	12.5	14.0	16.0
	Heating	kW	7.10	8.0	9.0	10.0	11.2	12.5	14.0	16.0	17.5
Power Supply		Volts/ Phase/ Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	59	68	68	98	98	110	110	110	130
Air flow (min.-med.-max.)		m3/h	750/900/1000	850/950/1180	850/950/1180	1100/1350/1500	1100/1350/1500	1100/1350/1700	1150/1500/1860	1150/1500/1860	1400/1700/2100
Rated Current	Cooling	A	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6
	Heating	A	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.5	0.6
Sound pressure (min.-med.-max.)		dB(A)	32/34/36	33/36/38	33/36/38	35/37/40	35/37/40	36/38/41	38/41/43	38/41/43	42/44/47
Piping size refrigerant	Liquid side pipe	mm	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)	ø 9,52 (3/8)
	Gas pipe	mm	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 15,90 (5/8)	ø 19,05
	Type of connection		A Cartella								
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	840 x 840 x 240	840 x 840 x 240	840 x 840 x 240	840 x 840 x 320	840 x 840 x 320	840 x 840 x 320	840 x 840 x 320	840 x 840 x 320	910 x 910 x 293
	Packaging (L-W-H)	mm	963 x 963 x 325	963 x 963 x 325	963 x 963 x 325	963 x 963 x 409	963 x 963 x 409	963 x 963 x 409	963 x 963 x 409	963 x 963 x 409	1023 x 993 x 375
Weight (Nett / Gross)		kg	26.5/34.5	26.5/34.5	26.5/34.5	32.5/40.0	32.5/40.0	32.5/40.0	32.5/40.0	32.5/40.0	46.5/56.5
Dimensions Panel	Unit (L-W-H)	mm	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	950 x 950 x 65	1040 x 1040 x 65
	Packaging (L-W-H)	mm	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1033 x 1038 x 133	1137 x 1137 x 140
Weight (Nett / Gross)		kg	7/11	7/11	7/11	7/11	7/11	7/11	7/11	7/11	7/11

Dimensional drawings 4-ways Cassette





Measurement unit: mm

Model	A	B	C	D	E
TGS-V63FWCA	950	890	840	680	780
TGS-V71FWCA					
TGS-V90FWCA					
TGS-V100FWCA					
TGS-V112FWCA					
TGS-V125FWCA					
TGS-V140FWCA					
TGS-V160FWCA	1040	975	910	787	840

2-ways Cassettes

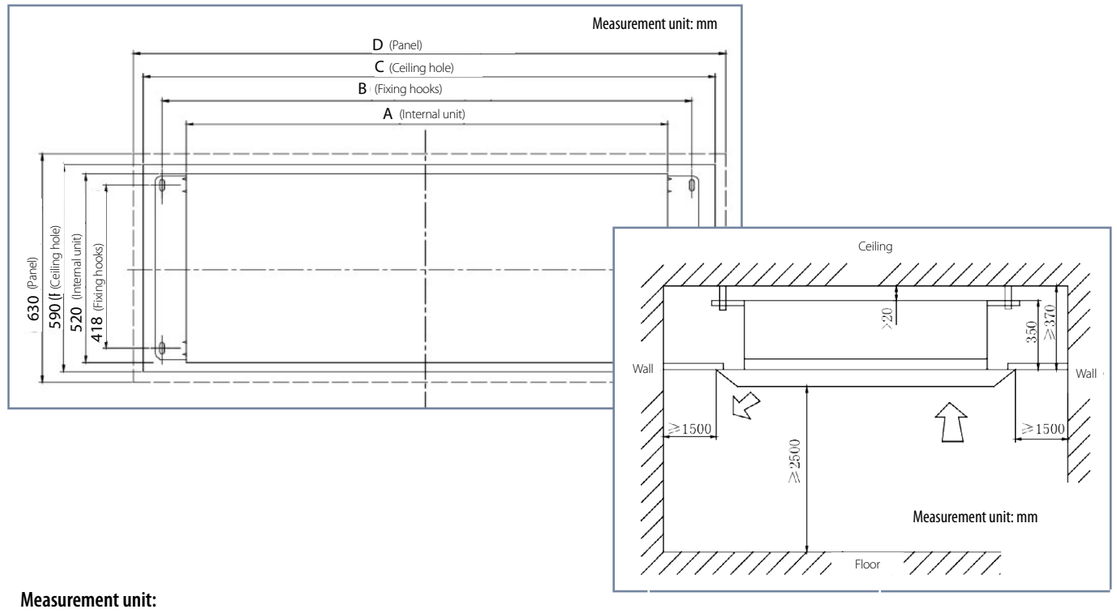
Attractive appearance
With an attractive and elegant front panel, it is congenial for the internal environment.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 1.0m, it is possible to effectively discharge the condensation water and save space.

Bi-directional air outlet flow
The bi-directional air outlet makes it possible to lengthen the range of the air and solve the problem of air distribution in an elongated rectangular room.

Model		Units	TGS-V 28 WCA-2W	TGS-V 36 WCA-2W	TGS-V 45 WCA-2W	TGS-V 50 WCA-2W	TGS-V 56 WCA-2W	TGS-V 63 WCA-2W	TGS-V 71 WCA-2W
capacity	Cooling	kW	2.8	3.6	4.5	5.0	5.6	6.3	7.1
	Heating	kW	3.2	4.0	5.0	5.6	6.3	7.1	8.0
Power Supply		Volts/ Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	55	55	55	55	103	103	103
Air flow (min.-med.-max.)		m3/h	580/660/830	580/660/830	580/660/830	580/660/830	750/900/1100	750/900/1100	750/900/1100
Rated Current	Cooling	A	0.3	0.3	0.3	0.3	0.7	0.7	0.7
	Heating	A	0.3	0.3	0.3	0.3	0.7	0.7	0.7
Sound pressure (min.-med.-max.)		dB(A)	29/32/35	29/32/35	29/32/35	29/32/35	33/36/39	33/36/39	33/36/39
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 9,52	ø 12,70	ø 12,70	ø 12,70	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella						
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Dimensions	Unit (L-W-H)	mm	1200 x 520 x 315	1200 x 520 x 315	1200 x 520 x 315	1200 x 520 x 315	1200 x 520 x 315	1200 x 520 x 315	1200 x 520 x 315
	Packaging (L-W-H)	mm	1520 x 655 x 415	1520 x 655 x 415	1520 x 655 x 415	1520 x 655 x 415	1520 x 655 x 415	1520 x 655 x 415	1520 x 655 x 415
Weight (Nett / Gross)		kg	43/54	43/54	43/54	43/54	43/54	43/54	43/54
Dimensions Panel	Unit (L-W-H)	mm	1443 x 630 x 33	1443 x 630 x 33	1443 x 630 x 33	1443 x 630 x 33	1443 x 630 x 33	1443 x 630 x 33	1443 x 630 x 33
	Packaging (L-W-H)	mm	1575 x 765 x 105	1575 x 765 x 105	1575 x 765 x 105	1575 x 765 x 105	1575 x 765 x 105	1575 x 765 x 105	1575 x 765 x 105
Weight (Nett / Gross)		kg	7/11	7/11	7/11	7/11	7/11	7/11	7/11

Dimensional drawings 2-ways Cassette



Measurement unit: mm

Model	A	B	C	D
TGS-V28WCA-2W	1200	1252	1403	1443
TGS-V36WCA-2W				
TGS-V45WCA-2W	1200	1252	1403	1443
TGS-V50WCA-2W				
TGS-V56WCA-2W				
TGS-V63WCA-2W	1200	1252	1403	1443
TGS-V71WCA-2W				

1-way Cassette

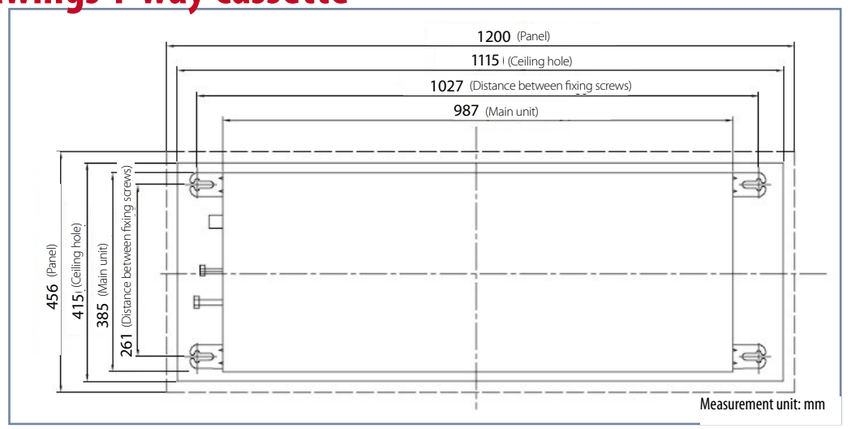
Small installation space
With an ultra compact design, the unit can be installed in false ceilings with limited space.

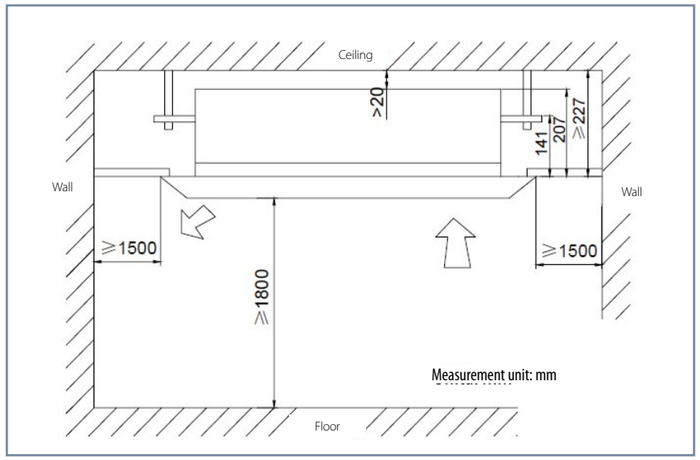
Detachable grid and long-lasting filter
The grill is detachable for easy cleaning.
With the resistant filter, the cleaning cycle is 20 times longer.

Condensate drain pump
With the aid of a condensate discharge pump with a head up to 1.0m, it is possible to effectively discharge the condensation water and save space.

Model		Units	TGS-V 22 WCA-1W	TGS-V 28 WCA-1W	TGS-V 36 WCA-1W	TGS-V 45 WCA-1W	TGS-V 50 WCA-1W
capacity	Cooling	kW	2.2	2.8	3.6	4.5	5.0
	Heating	kW	2.5	3.2	4.0	5.0	5.6
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	30	30	30	45	45
Air flow (min.-med.-max.)		m3/h	450/500/600	450/500/600	450/500/600	500/600/830	500/600/830
Rated Current	Cooling	A	0.2	0.2	0.2	0.3	0.3
	Heating	A	0.2	0.2	0,	0.3	0.3
Sound pressure (min.-med.-max.)		dB(A)	15/0~30	15/0~30	15/0~30	15/0~30	15/0~30
Piping size refrigerant		Liquid side pipe	mm	22/28/30	22/28/30	25/29/31	35/29/31
	Gas pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35
	Type of connection		ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Condensate drain hose	external diameter	mm				
	thickness	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	Dimensions	Unit (L-W-H)	mm	2.50	2.50	2.50	2.50
	Packaging (L-W-H)	mm	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200	710 x 450 x 200
	Weight (Nett / Gross)		KG	1003 x 551 x 285	1003 x 551 x 285	1003 x 551 x 285	1003 x 551 x 285
Dimensions Panel		Unit (L-W-H)	MM	18.5/22	18.5/22	18.5/22	18.5/22
	Packaging (L-W-H)	mm	1200 x 460 x 55	1200 x 460 x 55	1200 x 460 x 55	1200 x 460 x 55	1200 x 460 x 55
	Weight (Nett / Gross)		KG	1265 x 536 x 118	1265 x 536 x 118	1265 x 536 x 118	1265 x 536 x 118
Peso Netto / Lordo		kg	4.2/6.0	4.2/6.0	4.2/6.0	4.2/6.0	4.2/6.0

Dimensional drawings 1-way Cassette





Wall Mounted Type Unit

Comfortable and balanced air flow
Air jet upwards:
in cooling the fresh air is delivered horizontally and then the jet gradually drops.
Air jet down:
in heating the hot air is delivered downwards and then gradually rises.

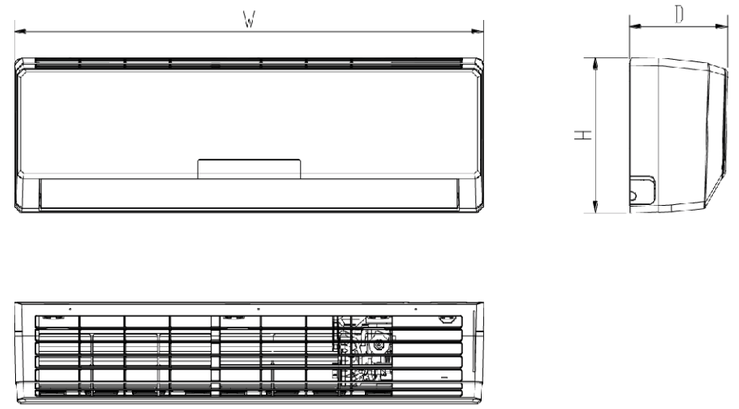
Triple defence for better purification
Anti-mould filter, electrostatic fibres and antibiotic fibres to remove dust, odours, bacteria and mould.

Design for cold air prevention
In heating mode during the winter, the cold air prevention function is enabled, thanks to which the air is supplied only when it is hot.

Installation flexibility
All the pipes, including the condensate drain pipe, can be connected starting from the back, from the right or left side of the unit, from below, allowing greater flexibility in the distribution of the pipes.

Model		Units	TGS-V 22 WA	TGS-V 28 WA	TGS-V 36 WA	TGS-V 45 WA	TGS-V 50 WA	TGS-V 56 WA	TGS-V 63 WA	TGS-V 71 WA
capacity	Cooling	kW	2.2	2.8	3.6	4.5	5.0	5.8	6.3	7.1
	Heating	kW	2.5	3.2	4.0	5.0	5.8	6.3	7.0	7.5
Power Supply		Volts/ Phase/ Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	50	50	60	60	60	70	70	70
Air flow (min.-med.-max.)		m3/h	350/420/500	350/420/500	480/550/630	480/550/630	480/550/630	500/600/750	500/600/750	500/600/750
Rated Current	Cooling	A	0.2	0.2	0.31	0.31	0.31	0.31	0.31	0.31
	Heating	A	0.2	0.2	0.31	0.31	0.31	0.31	0.31	0.31
Sound pressure (min.-med.-max.)		dB(A)	30/34/38	30/34/38	38/41/44	38/41/44	38/41/44	38/41/44	38/41/44	38/41/44
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 9,52	ø 9,52	ø 12,70	ø 12,70	ø 12,70	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella							
Condensate drain hose	external diameter	mm	ø20,0	ø20,0	ø20,0	ø20,0	ø20,0	ø30,0	ø30,0	ø30,0
	thickness	mm	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Dimensions	Unit (L-W-H)	mm	843 x 180 x 275	843 x 180 x 275	940 x 200 x 298	940 x 200 x 298	940 x 200 x 298	1008 x 221 x 319	1008 x 221 x 319	1008 x 221 x 319
	Packaging (L-W-H)	mm	973 x 258 x 370	973 x 258 x 370	1068 x 288 x 395	1068 x 288 x 395	1068 x 288 x 395	1131 x 398 x 328	1131 x 398 x 328	1131 x 398 x 328
Weight (Nett / Gross)		kg	10/12.5	10/12.5	12.5/15.5	12.5/15.5	12.5/15.5	15/18.5	15/18.5	15/18.5

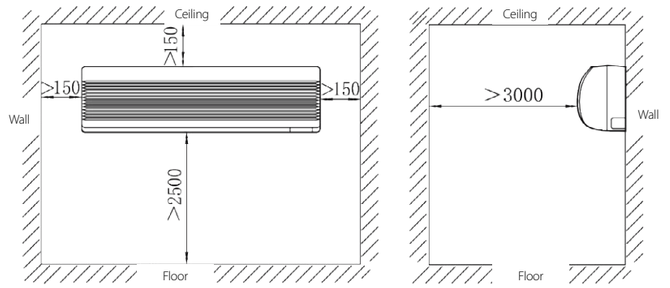
Dimensional drawings Wall



Measurement unit: mm

Model	A	B	C
TGS-V22WA	843	275	180
TGS-V28WA			
TGS-V36WA	940	298	200
TGS-V45WA			
TGS-V50WA			
TGS-V56WA	1008	221	319
TGS-V63WA			
TGS-V71WA			

Measurement unit: mm

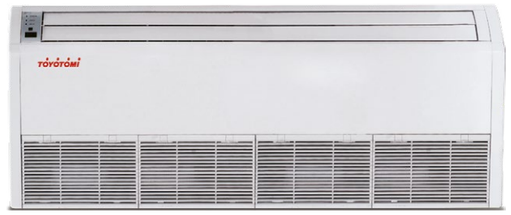


Floor Ceiling Type Indoor Unit

Pleasant aesthetics
With a nice and elegant front panel, the unit fits perfectly into any interior.

Flexible installation on the ceiling or floor
The unit can be installed on the ceiling or on the floor.

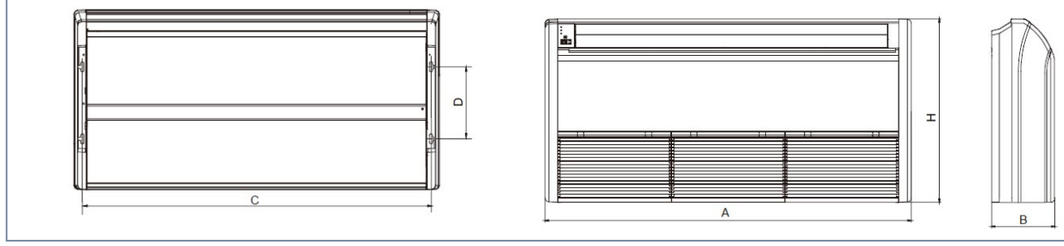
Air distribution with horizontal and vertical oscillation
The oscillation radius for air distribution is wider to make the home or work environment more comfortable.
The air flow is maintained at an optimal level based on the ceiling height.

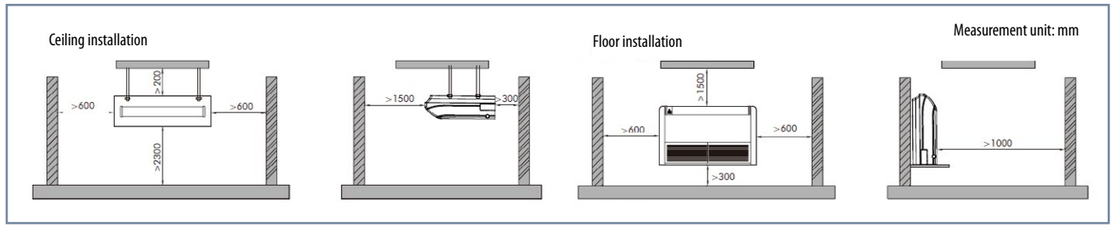


Model		Units	TGS-V 28 CFTA	TGS-V 36 CFTA	TGS-V 50 CFTA	TGS-V 56CFTA	TGS-V 63 CFTA
capacity	Cooling	kW	2.8	3.6	5.0	5.6	6.3
	Heating	kW	3.2	4.0	5.8	6.3	7.1
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	40	40	50	50	75
Air flow (min.-med.-max.)		m3/h	500/580/650	500/580/650	700/850/950	700/850/950	1000/1150/1400
Rated Current	Cooling	A	0.2	0.2	0.25	0.4	0.38
	Heating	A	0.2	0.2	0.25	0.4	0.38
Sound pressure (min.-med.-max.)		dB(A)	32/34/36	32/34/36	33/38/42	33/38/42	39/42/44
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 9,52	ø 9,52
	Gas pipe	mm	ø 9,52	ø 12,70	ø 12,70	ø 15,90	ø 15,90
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø17,0	ø17,0	ø17,0	ø17,0	ø17,0
	thickness	mm	1.75	1.75	1.75	1.75	1.75
Dimensions	Unit (L-W-H)	mm	1220 x 225 x 700	1220 x 225 x 700	1220 x 225 x 700	1220 x 225 x 700	1420 x 245 x 700
	Packaging (L-W-H)	mm	1343 x 315 x 823	1343 x 315 x 823	1343 x 315 x 823	1343 x 315 x 823	1343 x 345 x 823
Weight (Nett / Gross)		kg	40/49	40/49	40/49	40/49	50/58

Model		Units	TGS-V 71 CFTA	TGS-V 90 CFTA	TGS-V 112 CFTA	TGS-V 125CFTA	TGS-V 140 CFTA
capacity	Cooling	kW	7.1	9.0	11.2	12.5	6.3
	Heating	kW	8.0	10.0	12.5	14.0	7.1
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	75	140	160	160	75
Air flow (min.-med.-max.)		m3/h	1000/1150/1400	1200/1400/1600	1450/1800/2000	1450/1800/2000	1450/1800/2000
Rated Current	Cooling	A	0.38	0.7	0.95	0.95	0.95
	Heating	A	0.38	0.7	0.95	0.95	0.95
Sound pressure (min.-med.-max.)		dB(A)	39/42/44	43/47/50	42/46/51	45/49/52	45/49/52
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90	ø 15,90	ø 15,90	ø 15,90
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø17,0	ø17,0	ø17,0	ø17,0	ø17,0
	thickness	mm	1.75	1.75	1.75	1.75	1.75
Dimensions	Unit (L-W-H)	mm	1420 x 245 x 700	1220 x 225 x 700	1700 x 245 x 700	1700 x 245 x 700	1700 x 245 x 700
	Packaging (L-W-H)	mm	1343 x 345 x 823	1343 x 315 x 823	1828 x 315 x 823	1828 x 315 x 823	1828 x 315 x 823
Weight (Nett / Gross)		kg	50/58	50/58	60/68	60/68	60/68

Dimensional drawings Foil Floor





Measurement unit: mm

Model	A	B	C	D	H
TGS-V28CFTA	1220	225	1158	280	280
TGS-V36CFTA					
TGS-V50CFTA					
TGS-V56CFTA	1420	245	1354	280	700
TGS-V63CFTA					
TGS-V71CFTA					
TGS-V90CFTA					
TGS-V112CFTA	1700	245	1634	280	700
TGS-V125CFTA					
TGS-V140CFTA					

Console

Multi-speed fan
The fan is able to operate at multiple speeds and meet different volume flow requirements.

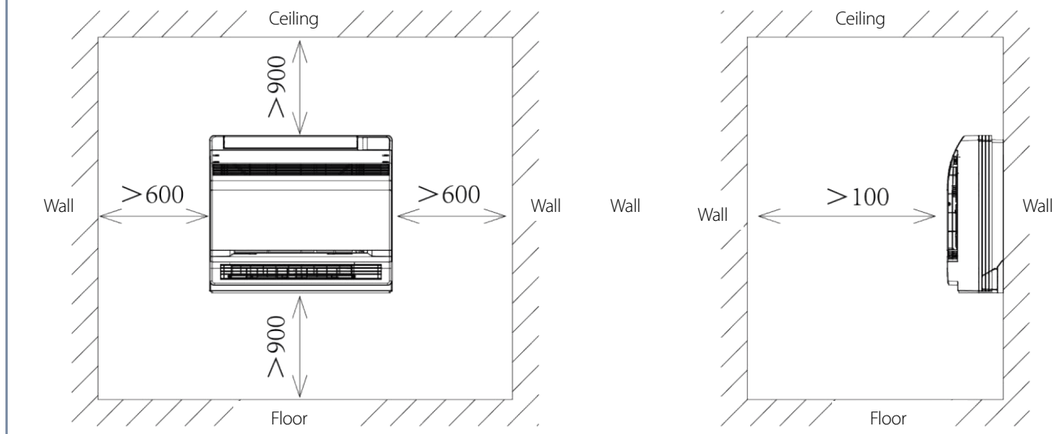
Removable grid and long-life filter
The grill is removable to ensure easy cleaning.
With the long-life filter, the cleaning cycle is 20 times longer.

Optimal air distribution
The air distribution is made through the upper and lower air outlets so as to obtain a more uniform temperature inside the room.

Model		Units	TGS-V 22 CT	TGS-V 28 CT	TGS-V 36 CT	TGS-V 45 CT	TGS-V 50 CT
capacity	Cooling	kW	2.2	2.8	3.6	4.5	5.0
	Heating	kW	2.5	3.2	4.0	5.0	5.5
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50	220-240/1/50
Absorption		W	15	15	20	40	40
Air flow (min.-med.-max.)		m3/h	270/320/400	270/320/400	310/400/480	500/600/680	500/600/680
Rated Current	Cooling	A	0.17	0.17	0.25	0.4	0.4
	Heating	A	0.17	0.17	0.25	0.4	0.4
Static fan pressure		Pa	0	0	0	0	0
Sound pressure (min.-med.-max.)		dB(A)	27/33/38	27/33/38	32/37/40	39/43/46	39/43/46
Piping size refrigerant	Liquid side pipe	mm	ø 6,35	ø 6,35	ø 6,35	ø 6,35	ø 6,35
	Gas pipe	mm	ø 9,52	ø 9,52	ø 12,70	ø 12,70	ø 12,70
	Type of connection		A Cartella				
Condensate drain hose	external diameter	mm	ø28,0	ø28,0	ø28,0	ø28,0	ø28,0
	thickness	mm	1.0	1.0	1.0	1.0	1.0
Dimensions	Unit (L-W-H)	mm	700 x 215 x 600	700 x 215 x 600	700 x 215 x 600	700 x 215 x 600	700 x 215 x 600
	Packaging (L-W-H)	mm	788 x 283 x 777	788 x 283 x 777	788 x 283 x 777	788 x 283 x 777	788 x 283 x 777
Weight (Nett / Gross)		kg	16/19	16/19	16/19	16/19	16/19

Dimensional drawings Console

Measurement unit: mm



Measurement unit: mm

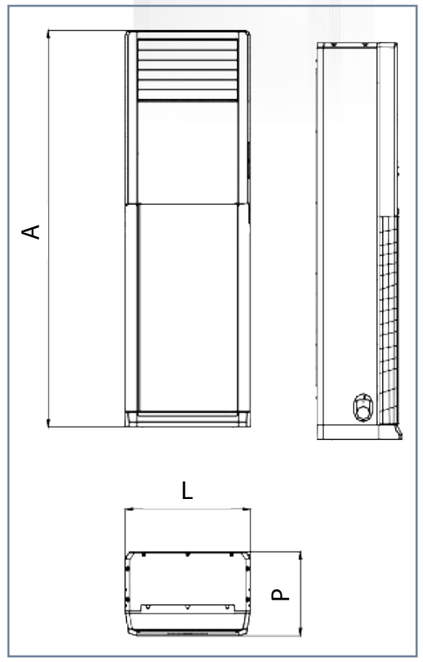
Model	Larghezza	Altezza	Profondità
TGS-V22CT	700	600	215
TGS-V28CT			
TGS-V36CT			
TGS-V45CT			
TGS-V5050			

Floor Standing Type Indoor Unit

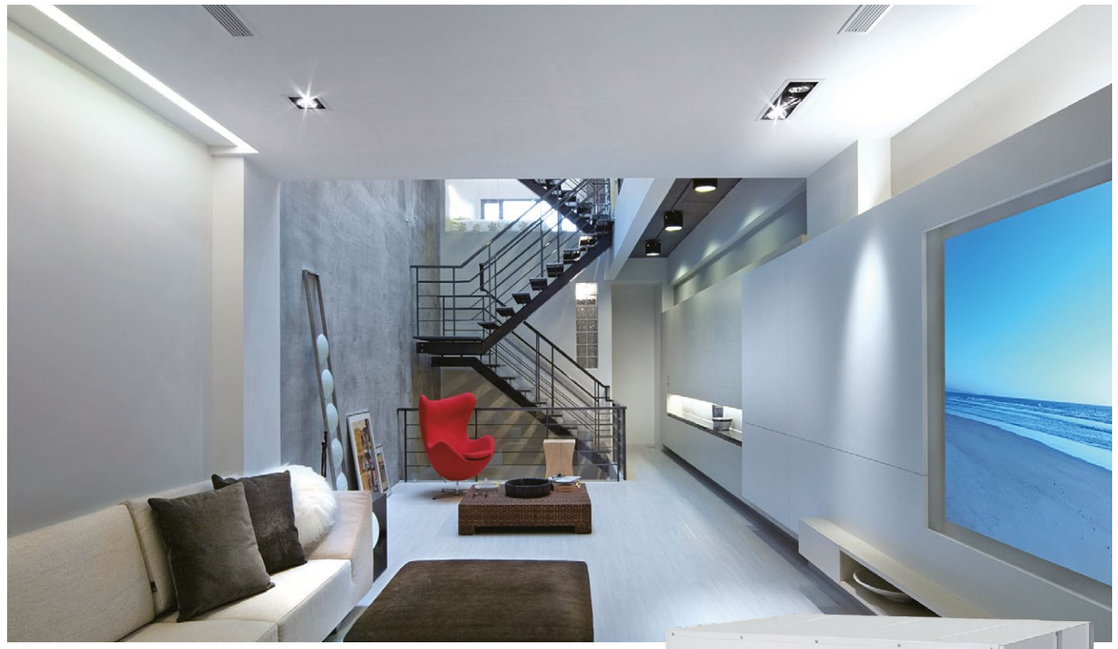
Multiple applications
It can be widely used in hotels, restaurants offices etc ...

Automatic cleaning to ensure a healthy life
After turning the unit off, the internal fan will continue to run at low speed for a certain period in order to dry the components and the internal parts in order to prevent the formation of mould and thus maintain an healthy environment.

Model		Units	TGS-V 100 FSA	TGS-V 140 FSA
capacity	Cooling	kW	10.0	14.0
	Heating	kW	11.0	15.0
Power Supply		Volts/Phase/Hz	220-240/1/50	220-240/1/50
Absorption		W	185	185
Air flow (min.-med.-max.)		m3/h	1400/1600/1850	1400/1600/1850
Rated Current	Cooling	A	1.5	1.5
	Heating	A	1.5	1.5
Sound pressure (min.-med.-max.)		dB(A)	46/48/50	46/48/50
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52
	Gas pipe	mm	ø 15,90	ø 15,90
	Type of connection		A Cartela	
Condensate drain hose	external diameter	mm	ø31,0	ø31,0
	thickness	mm	4.50	4.50
Dimensions	Unit (L-W-H)	mm	580 x 400 x 1870	580 x 400 x 1870
	Packaging (L-W-H)	mm	738 x 545 x 2083	738 x 545 x 2083
Weight (Nett / Gross)		kg	54/74	57/77



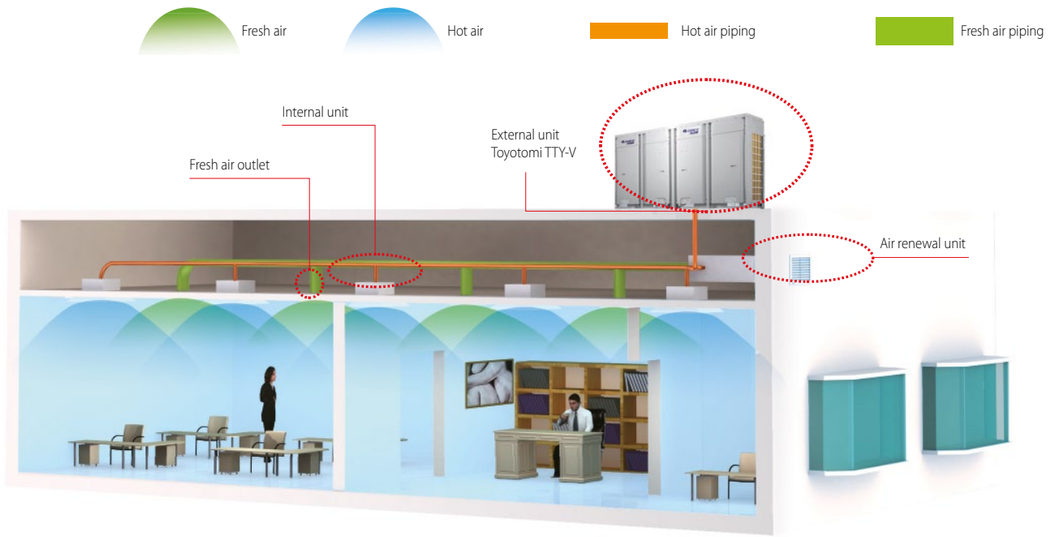
Ductable unit for outdoor air treatment



Air flow: 1200~4000 m³/h
Fields of application: commercial buildings, hotels, etc.

One system, two functions

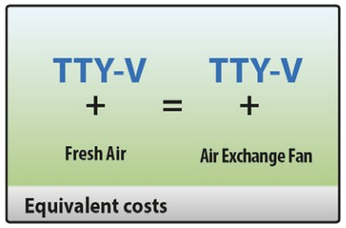
Using the DC inverter technology, the ductable models for outdoor air treatment offer both the air conditioning function and the air exchange function.

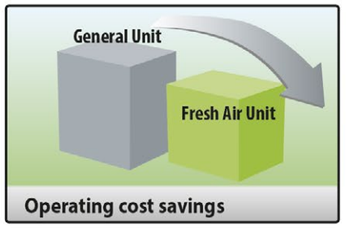


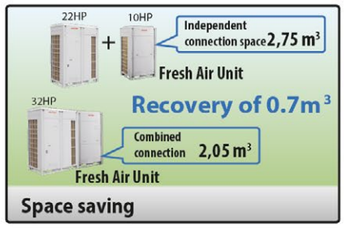
Air conditioning and air renewal, two in one

Less investment
The external air handling units can be combined with the other external units of the TTY-V series

Lower operating cost
The unit can control the refrigerant outlet according to the actual needs to guarantee a constant air flow temperature.
By adjusting the output power it is possible to avoid operation at low loads and high consumption, thus reducing costs.





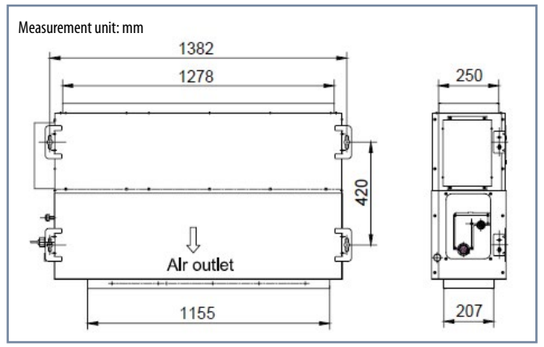


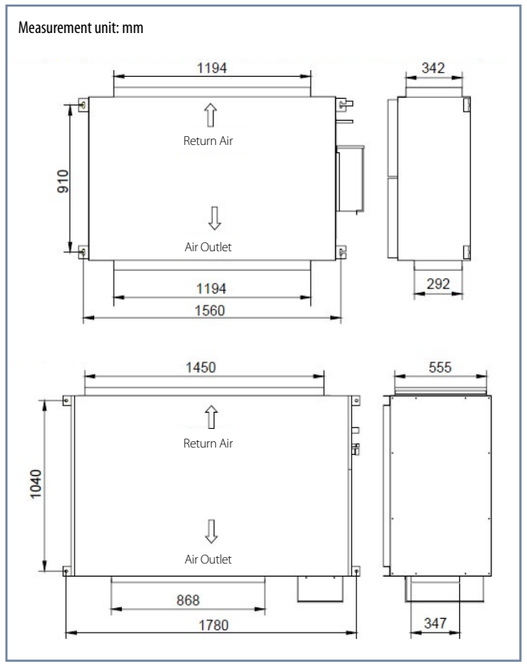
Model		Units	TGS-V 140DTFA	TGS-V 224DTFA	TGS-V 280(2.5)DTFA	TGS-V 280(3.0)DTFA	TGS-V 450(4.0)DTFA
capacity	Cooling	kW	14.0	22.4	28.0	28.0	5.0
	Heating	kW	10.0	16.0	20.0	20.0	5.5
Power Supply		Volts/Phase/Hz	220-240/1/50	380-415/3/50/60			
Absorption		W	360	740	760	1060	1240
Air flow (min.-med.-max.)		m3/h	1200	2000	2500	3000	4000
Rated Current	Cooling	A	1.82	1.32	1.36	1.89	2.22
	Heating	A	1.82	1.32	1.36	1.89	2.22
Static fan pressure		Pa	150	200	200	200	200
Sound pressure (min.-med.-max.)		dB(A)	42	47	48	51	52
Piping size refrigerant	Liquid side pipe	mm	ø 9,52	ø 9,52	ø 9,52	ø 9,52	ø 12,70
	Gas pipe	mm	ø 15,90	ø 19,05	ø 22,20	ø 22,20	ø 28,60
	Type of connection		A Cartella	Solder			
Condensate drain hose	external diameter	mm	ø25,0	ø25,0	ø25,0	ø25,0	ø25,0
	thickness	mm	2.5	2.5	2.5	2.5	2.5
Dimensions	Unit (L-W-H)	mm	1462 x 756 x 300	1500 x 1000 x 500	1500 x 1000 x 500	1500 x 1000 x 500	1700 x 1100 x 650
	Packaging (L-W-H)	mm	1514 x 785 x 360	1840 x 1200 x 673	1840 x 1200 x 673	1840 x 1200 x 673	1890 x 1460 x 835
Weight (Nett / Gross)		kg	63.5/71	130/182	134/188	134/188	208/266

Enjoy the fresh air

- Air flow: 1200 ~ 4000 m ³ / h Cooling capacity: 14-45 kW Applicable in any building
- Adapted direct evaporative cooling, cooling + fresh air can be achieved with accuracy and precision.
- The DC inverter technology adopted, a constant humidity rate allow energy savings.
- Can be integrated with the TTY-V VRF control systems

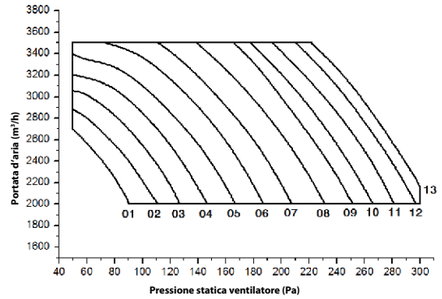
Dimensional drawings for outdoor air treatment

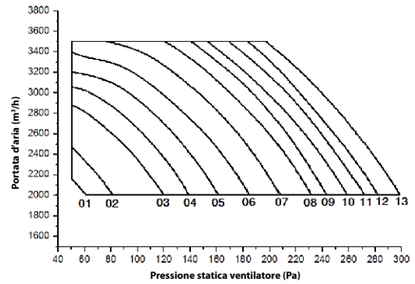




Floor

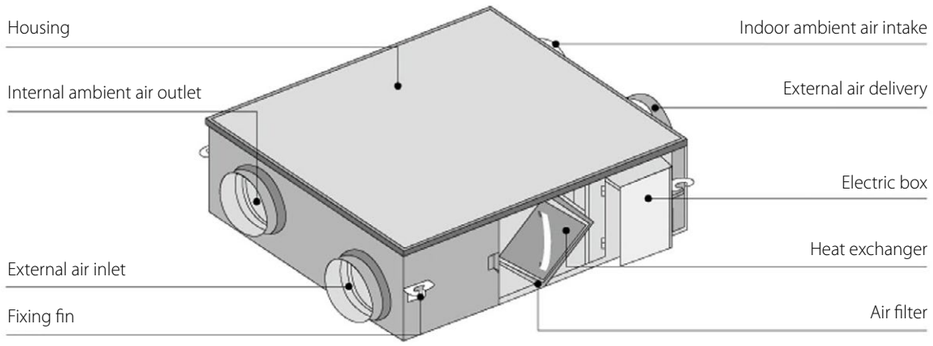
Fan characteristics



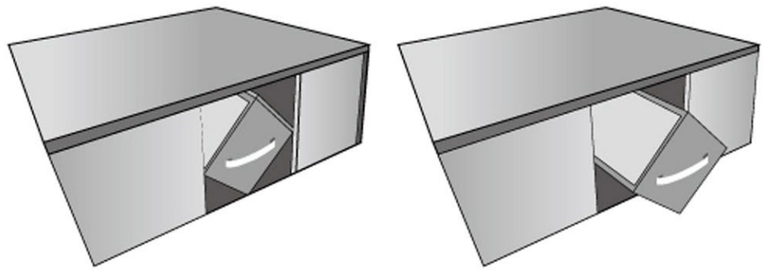


Heat recovery units

Introduction of fresh air from the outside and expulsion of the air present in the room, with recovery of thermal energy, to give you the feeling of being outdoors.



The filter and the heat exchanger can be easily removed from the access door for cleaning.



Wide range of models

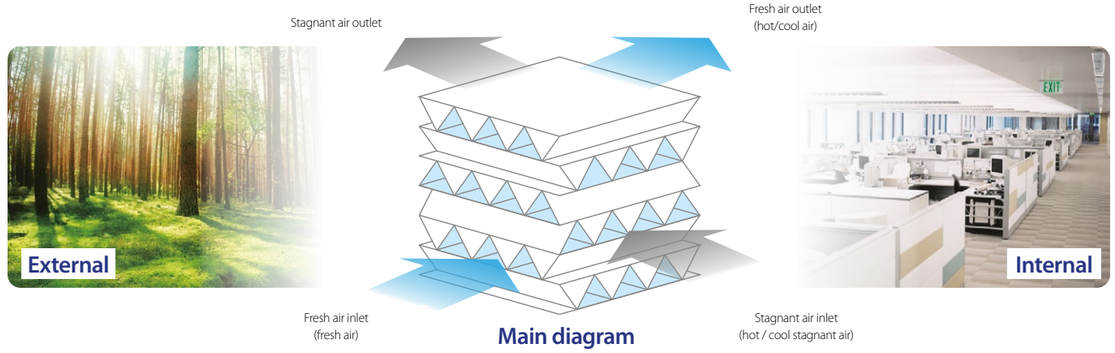
7 models in a range from 350-3000 m ^{3} / h, which adapt todif-ferent spaces and increase energy savings.

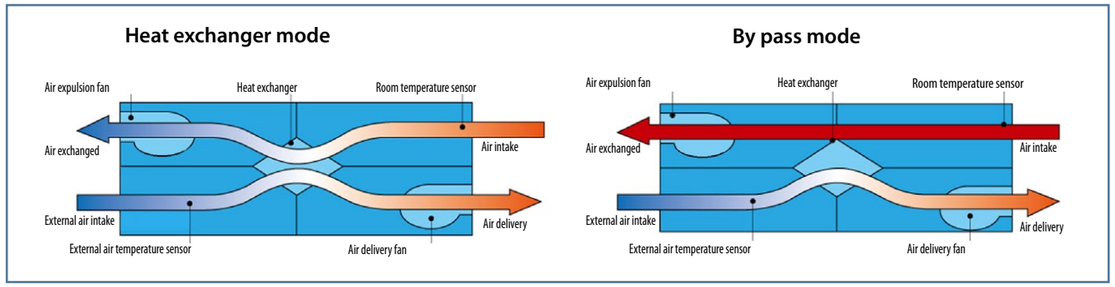
Reliability and ease of maintenance

The unit can operate for long periods without requiring-maintenance except forthe fan motor.

Energy saving

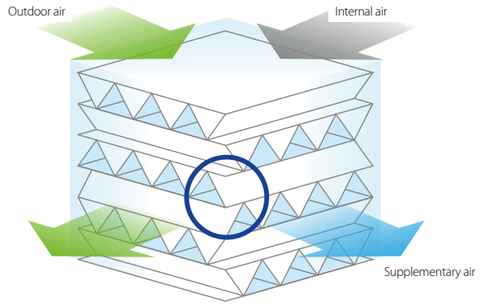
- The internal heat exchanger performs the cooling / heating exchange between the expelled air and the fresh air.
- The energy recovery rate is over 70%, with great energy savings.
- The unique by-pass mode is able to reduce the energy consumption of the fan motor with consequent life extension of the heat exchanger core.
- Due to the combination of heat exchanger and by-pass mode, the unit load can be reduced by 25% in one year.

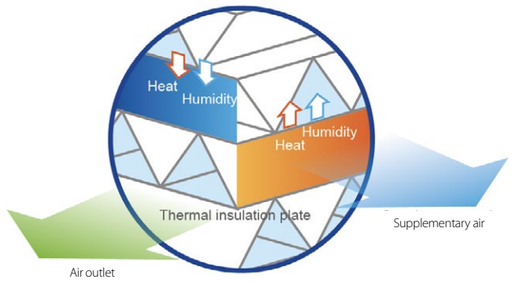




Air filtration and purification function

The internal air filter keeps the fresh air introduced in the pure and dust-free room.
The insulation between the fresh air pipe and the exhaust air pipe guarantees the delivery of pure air.
Thanks to antibacterial and anti-mold materials, the core of the heat exchanger is ideal for health.

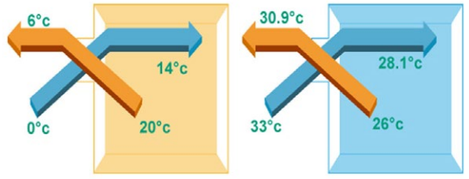




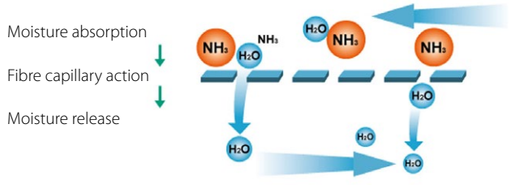
Highly efficient heat exchange

The heat recovery unit (ERV) is able to exchange latent heat and sensible heat simultaneously, allowing you to adjust both temperature and humidity.
It finds various applications in environments with great difference in humidity between inside and outside.

Heat exchange (sensible heat) inside the core.
Heat exchange between expelled air and fresh air, so that the fresh air temperature decreases and approaches the internal temperature.
It avoids the feeling of discomfort, with an effective reduction in the load of the conditioner.



Moisture exchange (latent heat).
The steam with high humidity is absorbed on one side by the hygroscopic agent and discharged on the other side with low humidity through the capillary action of the fibre.
Through the heat exchange between the indoor air and the fresh air, the internal heat exchanger reduces the variation of the internal temperature and prevents the introduction of air at too different temperature reducing the humidity load.



Flexible control

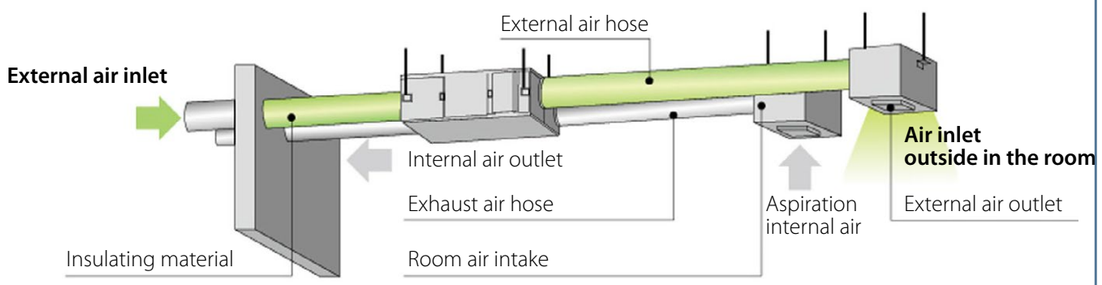
LED display - Energy saving mode - 24h timer - Centralised control - Weekly timer

Long distance monitoring command (optional)

Compact design and easy installation

With a minimum height of 306 mm, the unit is space-saving and can also be installed in places where ceiling space is restricted while maintaining low noise.

Installation example



Heat Exchanger Specifications

Model			TGS-350 ERV	TGS-500 ERV	TGS-800 ERV	TGS-1000 ERV
Air flow		m3/h	360-260-210	500-380-300	800-600-480	1000-750-600
Static fan pressure		Pa	100-80-60	100-80-60	110-85-65	110-85-65
Sensitive Heat Recovery Efficiency (based on speed)		%	71-73-75	68-70-72	70-72-74	75-77-79
Sensitive Heat Recovery Efficiency (based on speed)	Cooling	%	65-67-68	62-64-65	63-65-67	66-68-70
Sensitive Heat Recovery Efficiency (based on speed)	Heating	%	61-63-65	57-59-61	60-62-64	62-64-65
Power Supply		Volts/ Phase/ Hz	230/1/50			
Absorption		Cooling	W	262	400	440
Sound pressure level		dB(A)	37	39	45	46
Dimensions	Length	mm	800	800	832	832
	Width	mm	879	879	1016	1016
	Height	mm	306	306	380	380
Weight (Nett)		kg	45	45	57	57
Duct attachments dimensions		mm	Φ197	Φ197	Φ246	Φ246

Model			TGS-1500 ERV	TGS-2000 ERV	TGS-3000 ERV
Air flow		m3/h	1500	2000	3000
Static fan pressure		Pa	150	150	220
Sensitive Heat Recovery Efficiency (based on speed)		%	73	71	70
Sensitive Heat Recovery Efficiency (based on speed)	Cooling	%	65	62	62
Sensitive Heat Recovery Efficiency (based on speed)	Heating	%	60	58	58
Power Supply		Volts/ Phase/Hz	400/3+N+T/50		
Absorption		Cooling	600	950	2800
Sound pressure level		dB(A)	48	50	54
Dimensions	Length	mm	1210	1210	1340
	Width	mm	1215	1215	1550
	Height	mm	452	452	572
Weight (Nett)		kg	100	100	215
Duct attachments dimensions		mm	Φ297	Φ297	360x352

Note:

1. The models with 230V single-phase power supply have 3 speeds and the three-phase 400V modules have only one speed.
2. The recovery efficiencies of Sensitive Heat and Total Heat are measured under the following conditions:
   Cooling down: Internal Temperature 27 ° C BU / 20 ° C BS; Outdoor Temperature 35 ° C BU / 29 ° C BS
   Heating: Indoor temperature air 20 ° C BU / 14 ° C BS; Outdoor Temperature 5 ° C BU / 2 ° C BS
3. The sound pressure level is calculated according to ISO5151 at a distance of 1m.
4. Operating Conditions: Ambient Temperature -15 ° C ~ 50 ° C, Relative Humidity ≤80%.
5. The TGS-3000ERV-E duct connection measurements refer to the flange distance.

Control Systems

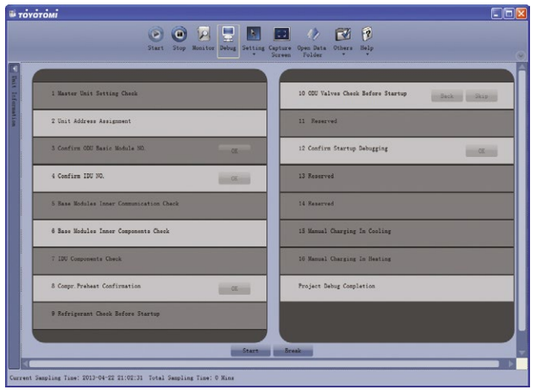
Smart Model Selection Software and Debug Software (setup)

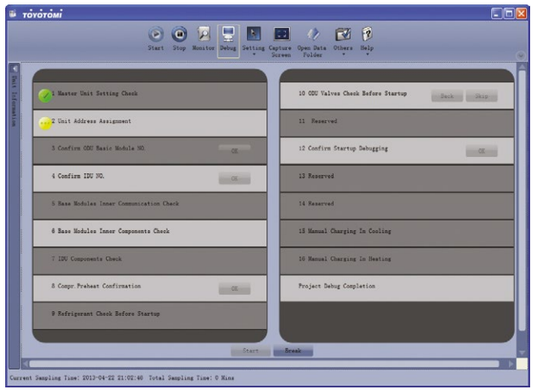
Selection software

The VRF-TTY-V selection software is an advanced software for automatically selecting external and internal unit models during the pre-sales phase.
The software integrates the logic for the selection of VRF and the software to provide an easy-to-use interactive interface, able to automatically recommend the models best suited to the user according to the design conditions and installation requirements.

Flexible project condition settings

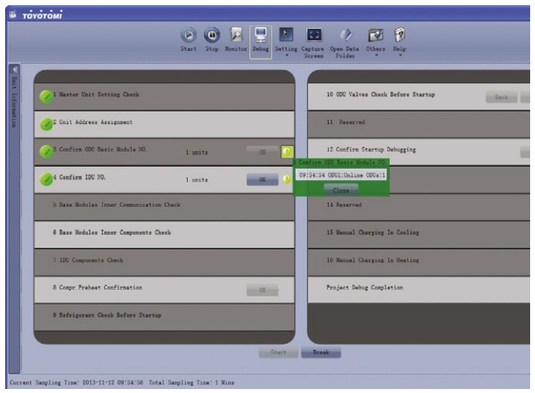
When you start the selection of a new project, you can set the information of the customer, of the designer, the type of units desired and the operating conditions, etc. as relevant parameters for choosing the model.
This information can then be sent to the data report for verification during project development.





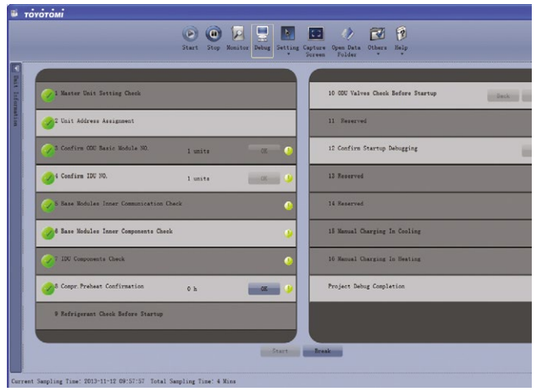
Choice of internal units and external units

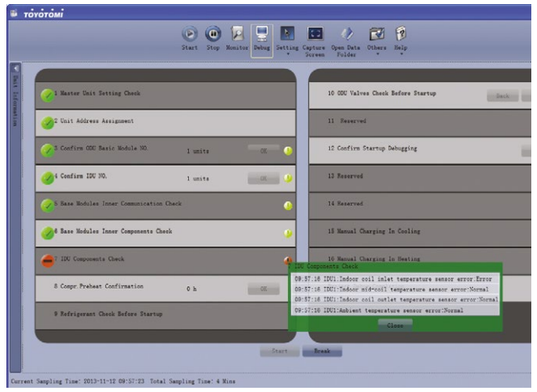
When choosing the internal unit model with the software, you can use the automatic selection mode by entering only the required thermal load and the type of internal unit. The software therefore suggests the most suitable internal unit model based on the model selection logic. Theautomatic selection mode can also be used to select the most suitable external unit model.

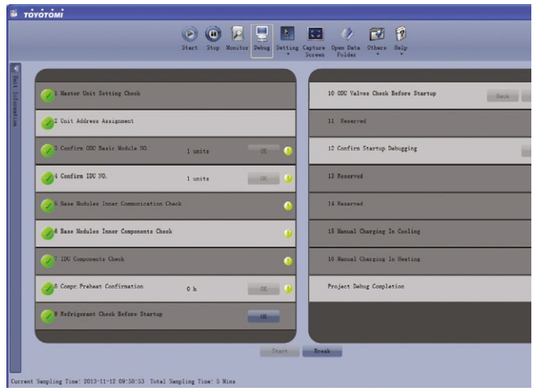


Free modification of selected models

If you are not satisfied with the system suggested by the software, you can select or adapt the internal unit model through an alternative selection function.



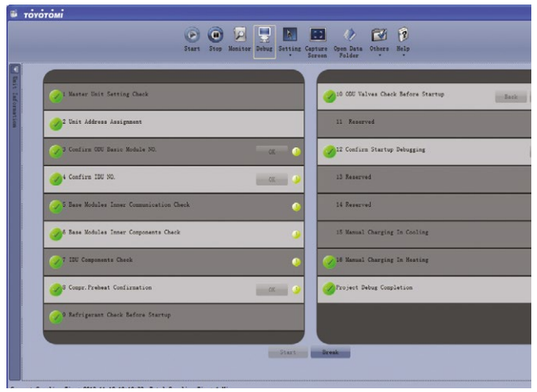




One-click system modification and validation

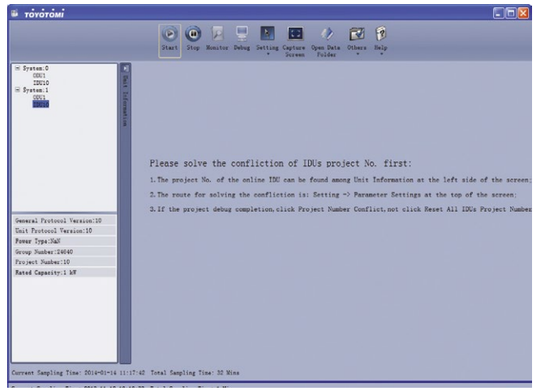
When it is necessary to modify a previous selection because the internal units have been modified, you can use the selection function with a click to select all the internal units with a simple operation.

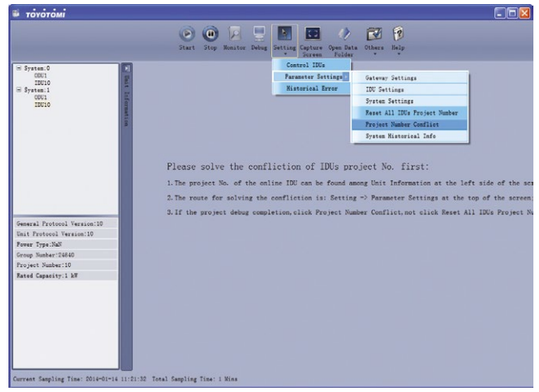
Once the model has been chosen, the system validation function can be used with a click to verify the various requirements of the air conditioning system parameters.

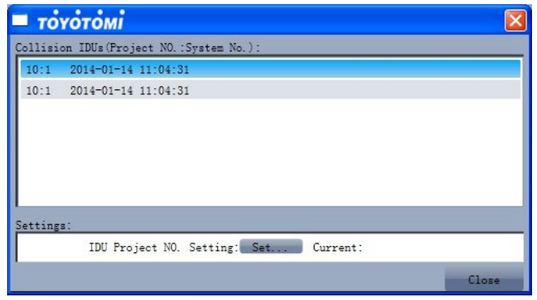


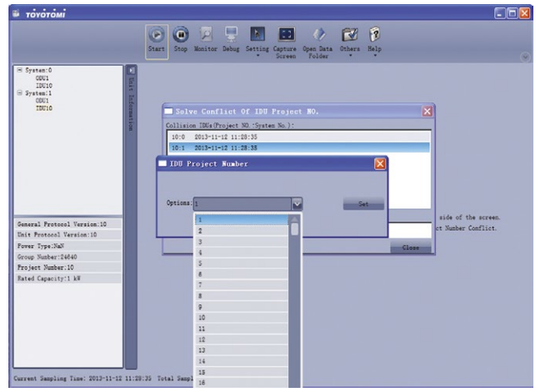
Saving of the project, generation of the data report and the wiring diagram of the system

Once the system and its various configurations have been selected, the project can be saved.
Furthermore, it is possible to extract the relevant parameters in an Excel file and obtain a system diagram to be used during installation.







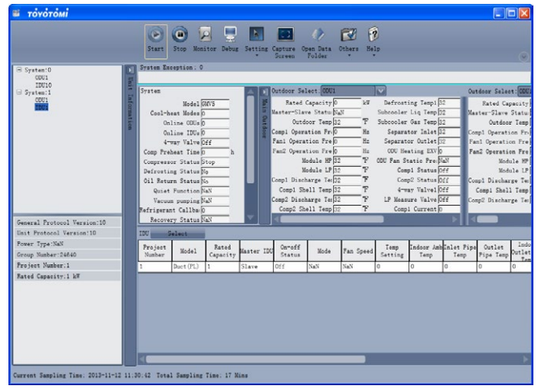


Intelligent debugging (debugging) software

Toyotomi offers to the enabled service centre an intelligent debugging software (setup).

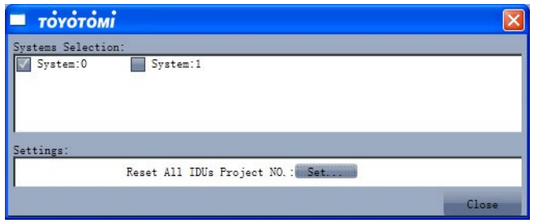
Monitoring functions

- Complete control of the operating status of each system device.
- Display of values by positioning the mouse on the selected parameter.
- Display of online devices in a tree structure.
- Display of unit information in separate areas.
- Each display area can be moved or hidden.
- Display of the updated status of the units in real time.



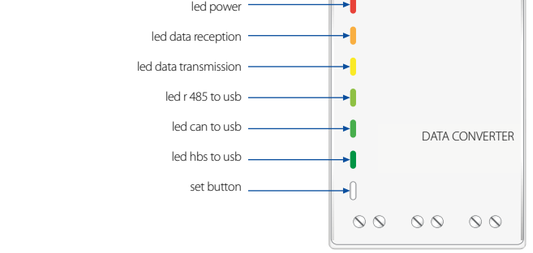
Control functions

- Check the operation of the unit as desired.
- Complete control of the external unit and internal unit.
- Real-time display of the current status or status after the check.
- Both single control and group control are available.



System debugging (setup) functions

- Setting up the system with one click and automatically.
- The development of the project takes place step by step, from left to right.
- It is possible to skip, by intervening manually, some of the debug phases.
- Green icons will be displayed for items that have been debugged, red icons will be displayed for items with exceptions, and yellow icons will display debug information.



Automatic data saving function

The data is saved automatically.
The save path in the database can be changed or a data document can be generated repeatedly.

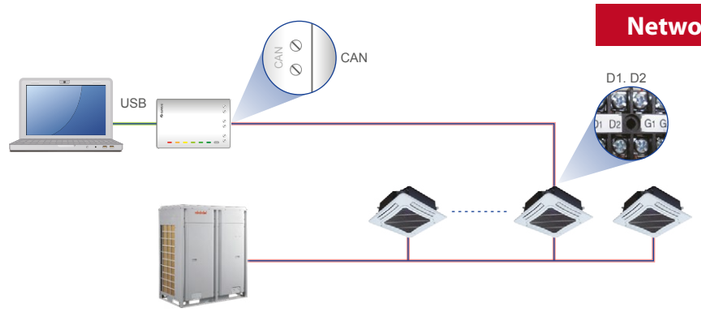
USB data converter (dedicated to service centres)

Service centres can use a USB data converter to freely and easily convert CAN / HBS / RS485 data into USB data, making the data interchangeable between the computer and the TTY-V system.

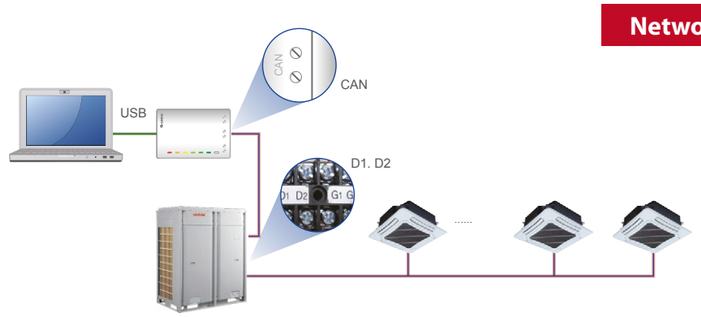
Automatic indication of the connection path

The wiring diagram automatically indicates the connection path so that the installer can quickly get the connection path.

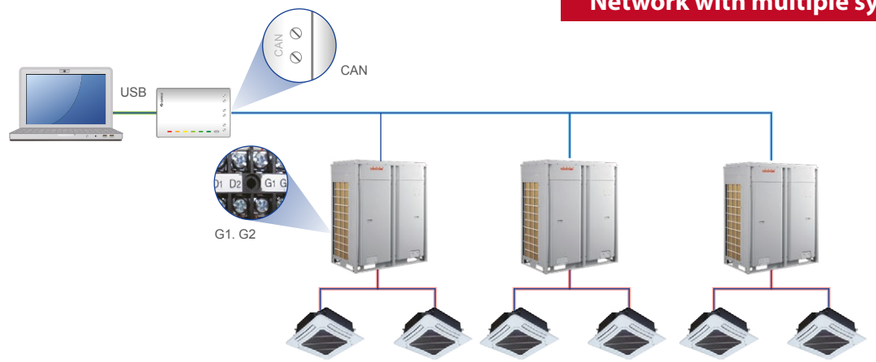
Network with single system



Network with single system

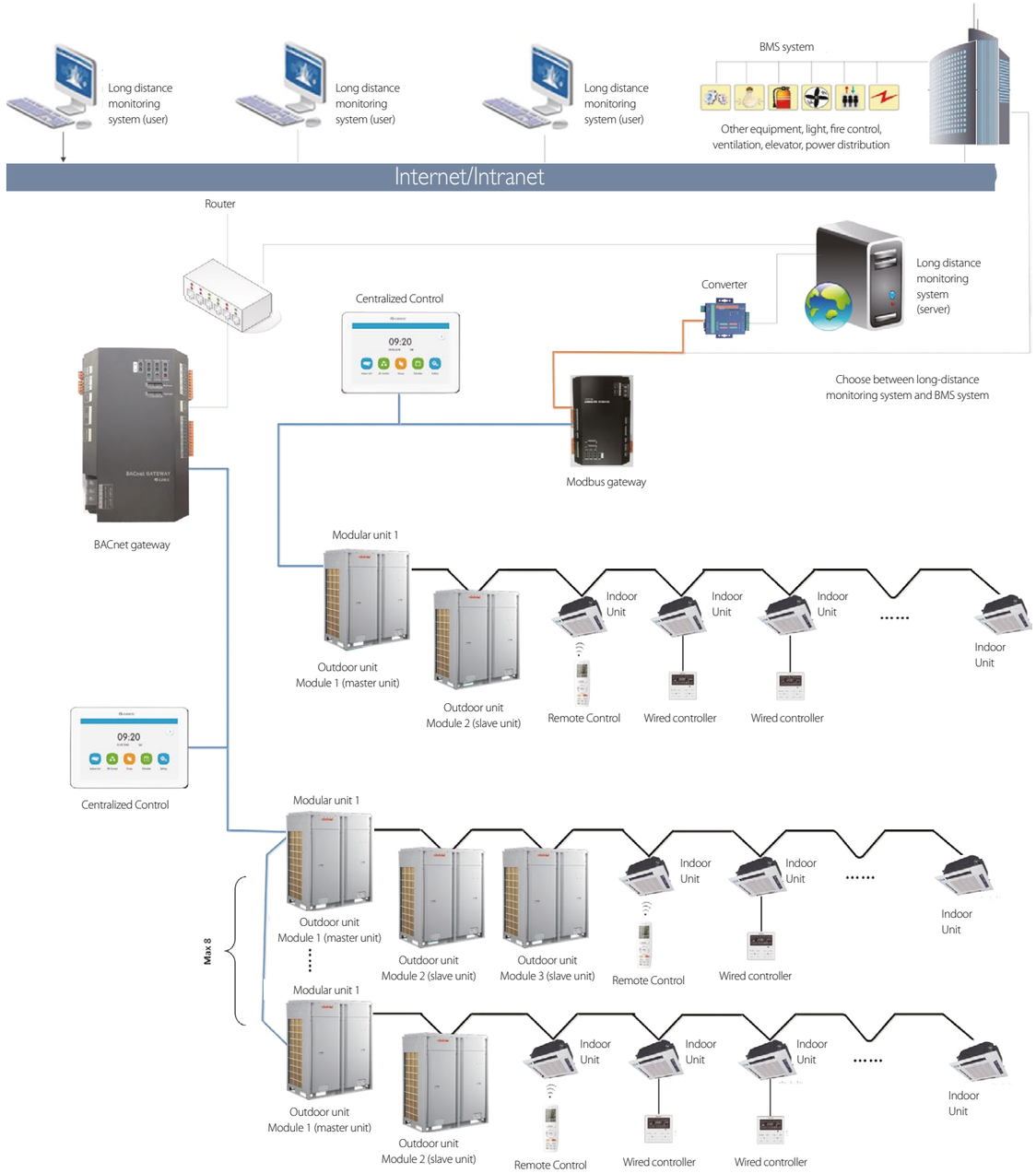


Network with multiple systems



Multiple intelligent control

A TTY-V series system ensures intelligent and multiple control to satisfy all requests.
Both a single room and a building can be controlled simultaneously.



Visual management

Setting for daily operation

a. Management in days / weeks / months / years.

b. Management in each unit.

c. Simple management display.

OTHER FUNCTIONS

a.Switching on / off, mode, humidity and ventilation speed.

b. You can avoid wasting energy that can be caused by forgetting to turn off the units.

Daily management

Setting for daily operation

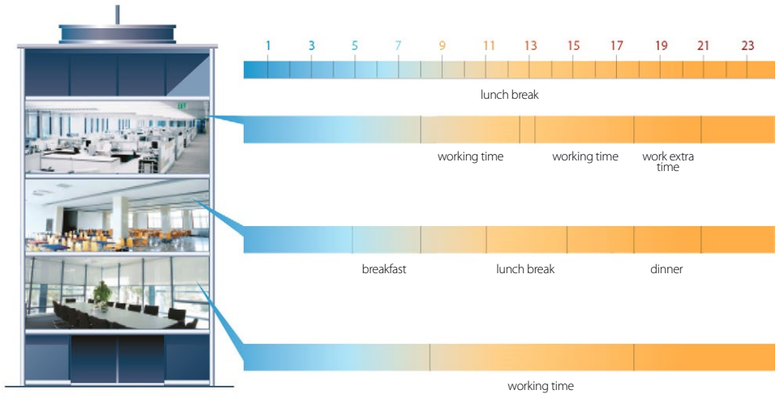
a. Management in days / weeks / months / years.
b. Management in each unit.
c. Simple management display.

Other functions

a. Switching on off, mode, humidity and speed of ventilation.
b. You can avoid energy wastage that can be be caused by forgetting to turn off the units.

Daily management of different situations

a. Management for overtime work.
b. Management for lunch breaks.
c. Working time management.



Group management

Centralised management in groups

a. Free choice of the division of the units into groups.
b. Centralised switching on and off control.
c. Centralised temperature control.
d. Centralised control of the modes.
is. Centralised control of user authorizations

Management of user authorisations

Only for internal units

a. Limited control on switching the units on and off.

b. Limited temperature setting control.

c. Limited control over how it works.

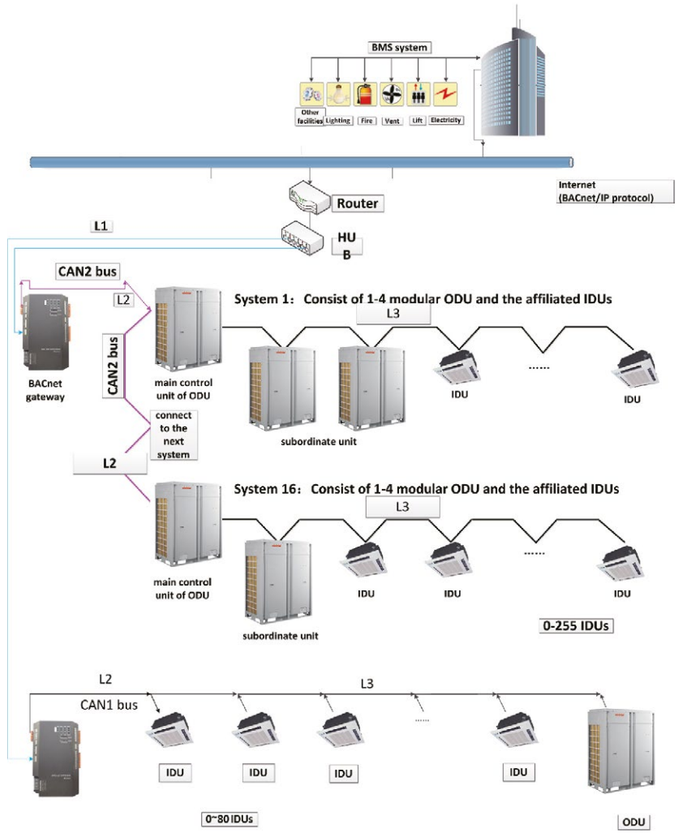
VIP management

The system is able to provide an independent and unique service to VIP users.

BAC net Gateway

The BACnet gateway kit of Toyotomi ME30-24 / D2 (B) is designed to exchange data between the air conditioning unit and the BAS system and constitute the standard interface between the BACnet / IP system and the input system and outputs (five inputs which are DI1, DI2, DI3, DI4, DI5 and five outputs which are DO1, DO2, DO3, DO4, DO5).
DI1 is the fire alarm interface.
The status of the other inputs and outputs is mapped to specific objects on the BACnet / IP bus and are user-defined.

The VRF models to which the gateway can be connected are the Full DC Inverter Modular units.



- International standard BACnet / IP interface
- Real-time monitoring of the unit's operating status, eg. Switching on and off, Mode, Temperature;
- VRF system error monitoring;
- Real-time response to unit control (on / off, ventilation mode and speed setting, etc.) via software monitoring
- Total or partial block of the states of operation of the units;
- Limitation of cooling and heating temperatures;
- Interface (5 Inputs and 5 Outputs for the reception of alarm signals and user definition logic;
- Centralised control up to 255 internal units.

Wire control and infrared control

There are two types of commands: the wired control and the infrared control. The system offers users various controls, such as cooling, heating, dehumidification and ventilation, etc. Users can select the mode flexibly based on their usage preferences

TXK46 wired control

- LCD display with black background and touch buttons.
- The clock can be viewed and set; 24-hour timer setting for switching on and off.
- 7 ventilation speed and both vertical and horizontal oscillation adjustment.
- Settable operating modes: Automatic, Cooling, Heating, Dehumidification, Ventilation, 3D Heating and Environmental Heating.
- The command can be set as master or slave.
- Simultaneous control is possible on multiple IDU's with a single command.
- Available functions: Sleep, ventilation, silent / silent automatic, light function, energy saving, auxiliary heating, drying, memory, low temperature dehumidification, heating in the absence of people, controllable auxiliary heating in dehumidification, signalling filter cleaning, etc .;
- Detection of room temperature, infrared remote control signal receiver, parameter display and function setting.

TXK79 wired control (for hotels)

- Small and elegant with a thickness of only 12mm and a backlit LCD display with a black background;
- Eight touch buttons;
- The clock can be displayed and set for the countdown and timer;
- In addition to normal functions, it is also possible to set other functions such as low temperature dehumidification, heating in the absence of people, adjustable auxiliary heating in the event of dehumidification and signalling filter cleaning;
- It is possible to connect the door control system (card door switch).

TYAP1F command

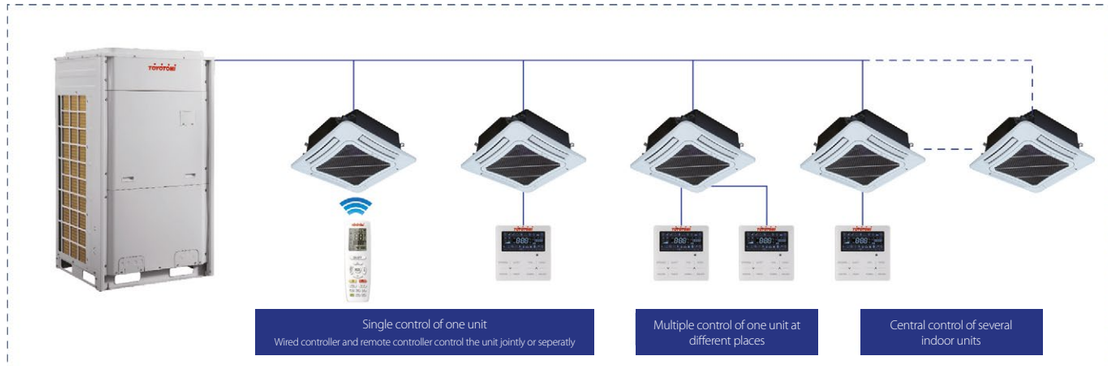
- Settable operating modes: Automatic, Cooling, Dehumidification, Ventilation and Heating.
- In addition to the turbo, 6 fan speed levels can be set.
- Other features available: Child Lock, Dehumidification, Health, Ventilation, Turbo, Sleep, Light, Absence, I-Feel and Timer.
- Functions for displaying the clock and the indoor / outdoor room temperature.
- Air distribution with vertical and horizontal oscillation.

TYV1L1 command

- Backlit LCD display with time display, display and setting of system parameters.
- Settable operating modes: Automatic, Cooling, Dehumidification, Ventilation, Heating, Underfloor Heating, 3D Heating.
- 7 ventilation speed, vertical and horizontal oscillation.
- Available functions: Child lock, Energy saving, Dehumidification, Health, Ventilation, silence / automatic silence, Sleep, Light, Absence, Low temperature dehumidification, I Feel and timer;
- Display and setting of system parameters.

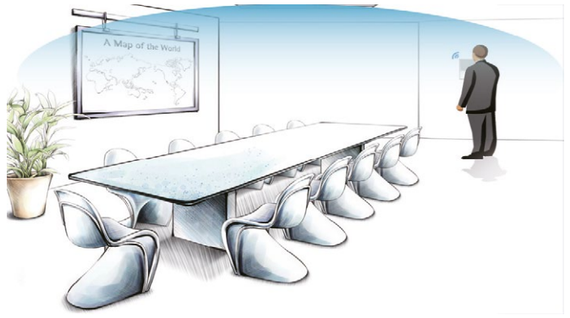
TXK55 wired control

- High resolution colour LCD display.
- Capacitive touch control; Command signal receiver included.
- Different timing functions: three weekly timers and a countdown timer can be set simultaneously; the mode, temperature and fan speed can be set in the weekly timer.
- Complete system functions.
  Each function will be implemented in a single page with an interactive interface.
- Custom functions, such as setting the brightness and backlit time.
- Essential display of functions, such as the display of the on / off status and the after-sales service line



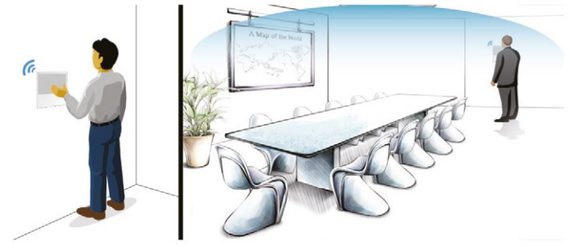
Single command of a unit

Each internal unit has its own independent command.



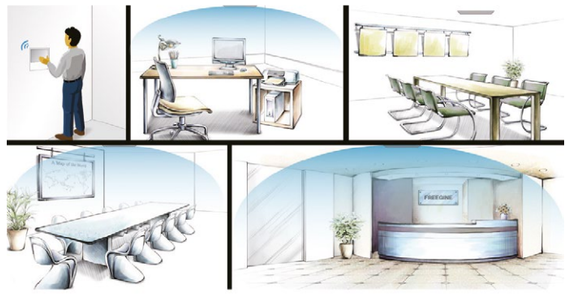
Multiple command of a unit

An internal unit can be controlled by different wired controls positioned in different environments.



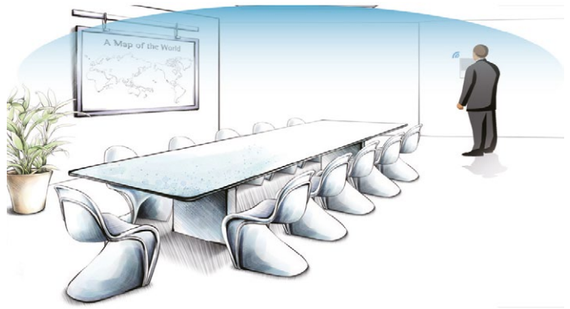
Centralised control of different internal units

A single wired control can control up to 16 internal units.



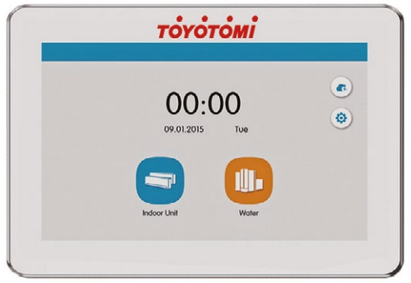
Possibility to manage the unit with infrared control and wired control

Users can control a unit with two types of commands: a convenient and flexible control or a wired control that includes all the functions.



Zone Command and Centralised Command

Zone Smart Command TCE53-24 / F (C)



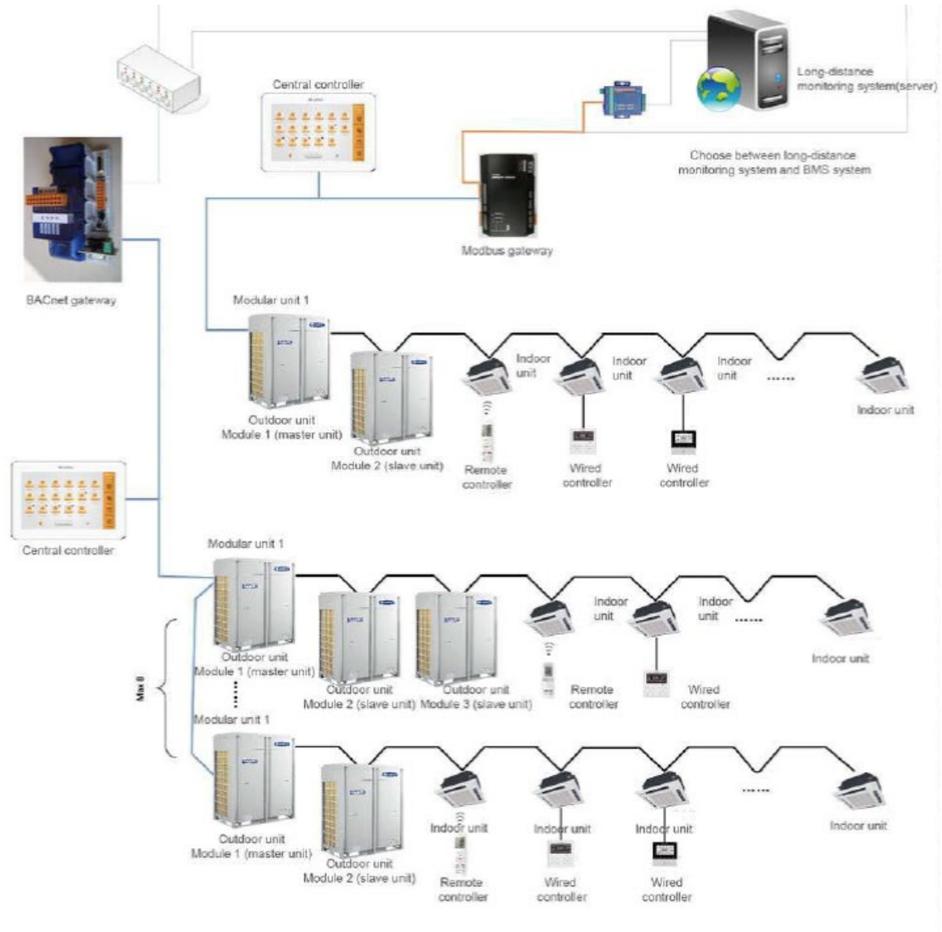
- High resolution 1280 x 800 colour LCD display.
- 7 " capacitive touch screen for easy operation.
- Screening function of the single unit, of a group and of all the internal units (on / off shielding, mode, temperature setting, etc.).
- Equipped with various functions: centralised control (control of all internal units), group management (customisable), programming management (setting of different programs) and single unit control (on / off, mode, temperature setting, speed of fan, silent, air distribution control, etc.).
- Assignment of names to the internal units, selection of icons and customized settings (background setting, backlighting, etc.).
- Possibility to control up to 32 units.
- Modern and elegant look.
- Recessed wall installation with a projection of only 11 mm.
- Possibility of connection to the network of internal units or external units.
- Independent power supply in a wide range of voltages between 110 and 240 V.
- Equipped with the functions of project setting, parameter display, fault recording and access management.

Centralised control TCE52/24/F(C)

- High resolution 1280 x 800 colour LCD display.
- 7 " capacitive touch screen for easy operation.
- Screening function of the single unit, of a group and of all the internal units (on / off shielding, mode, temperature setting, etc.).
- Equipped with the functions of project setting, parameter display, fault recording and access management.
- Equipped with various functions: centralised control (control of all internal units), group management (customisable), programming management (setting of different programs) and single unit control (on / off, mode, temperature setting, speed of fan, silent, air distribution control, etc.).
- Assignment of names to the internal units, selection of icons and customized settings (background setting, backlighting, etc.).
- Possibility to control up to 16 sets of external units, 128 internal units.
- Modern and elegant look.
- Recessed wall installation with a projection of only 11 mm.
- Possibility of connection to the network of internal units or external units.
- Independent power supply in a wide range of voltages between 110 and 240 V.

Modbus Gateway

The Modbus Gateway provides the TTY-V system with the Modbus protocol interface when it is connected with the Building Management System (building management system - BMS) to realise the centralised and remote control of the TTY-V system via the BMS



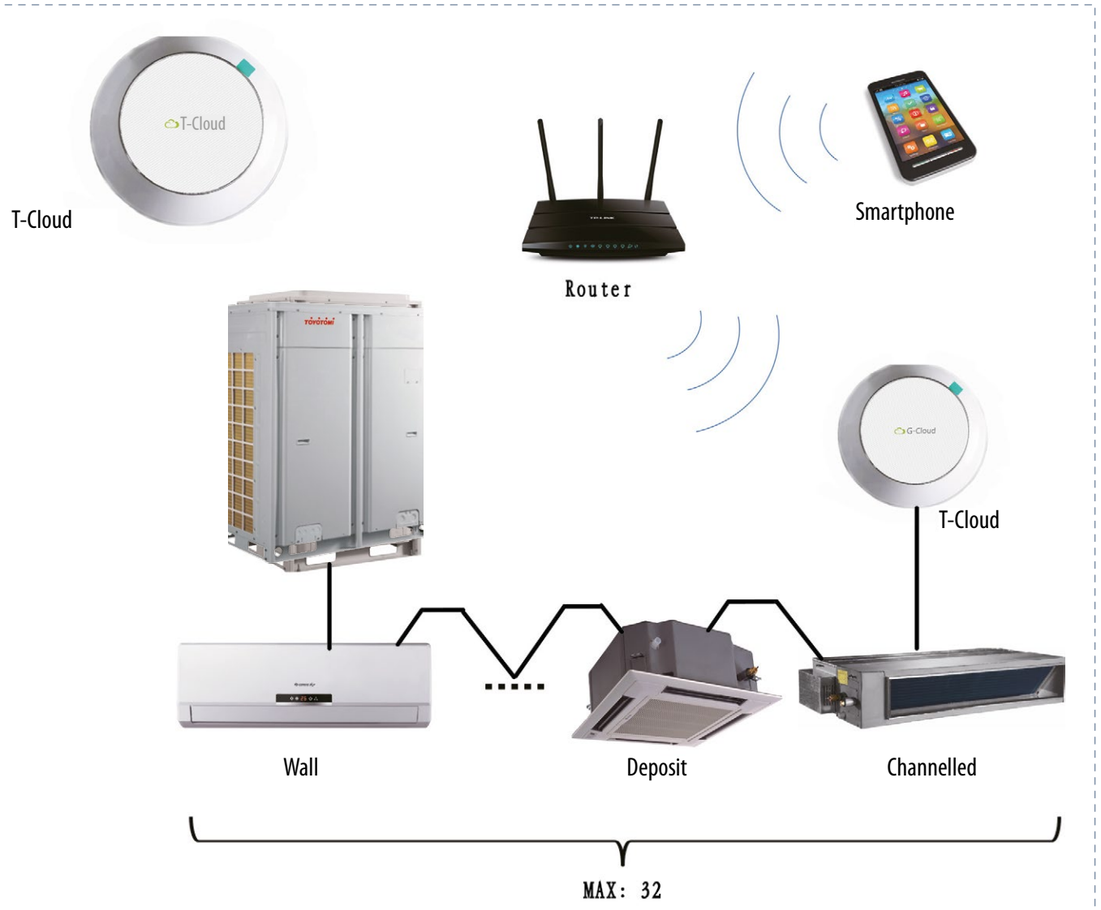
Applicable models: TTY-V

- Real-time monitoring of the unit's operating status, for example on / off, mode, temperature.
- Real-time response to the unit command (on / off, mode and speed setting, etc.) via the monitoring software.
- Control of the on / off switches of all units.
- Unit error monitoring.
- A Modbus bus can support up to 255 gateways. A Modbus gateway can support up to 16 external units (up to 64 modular outdoor units) and 128 internal units.
- Blocking the states of operation of the units, addressing all the control functions of the unit itself or a specific setting function.
- Connection control, with 5 DI and 5 DO support to receive the fire alarm signal and the user definition logic.
- CAN, RS485 communication ports are polarised, convenient for wiring.
- Functions for limiting the temperature of cooling and heating.
- Wide range of voltages at 50/60 Hz between 100 and 240 VAC, suitable for each country.

T-Cloud

T-Cloud can work with smartphones and wireless routers.

Configure the smartphone and the T-Cloud with the same router to achieve intelligent control, preset management, scene management, connection between devices and other functions.



Quick setup:

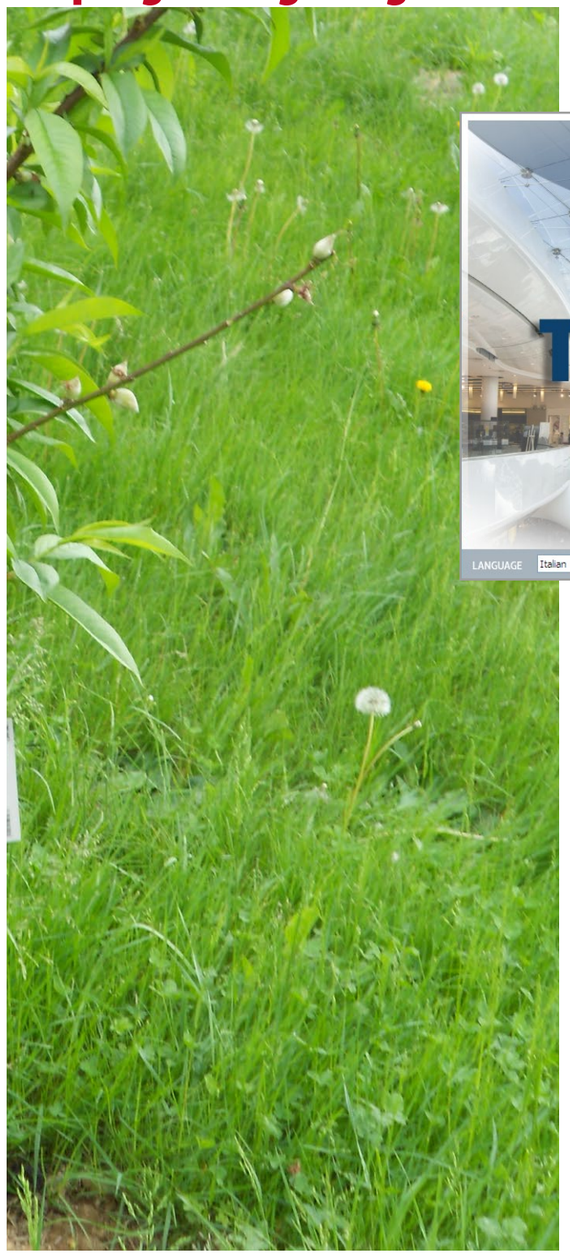
- The connection between smartphone and T-Cloud can be obtained at the touch of a button, so very simply.
- Device check:
  The user can set the temperature, turn on and off and the operating mode via the smartphone and view the operating parameters in real time.
- Long distance control:
  The user can control the device from a long distance through the Internet after logging in (T-Cloud must be connected to the Internet).
- Setting a scene:
  A series of commands can be set to form a scene and therefore it is possible to activate the scene by simply pressing a button.
- Connecting devices:
  The devices can be connected according to the settings provided by the customer.
- Preset function:
  The user can set the preset function according to his needs, so that the device works automatically according to the settings.

Control Systems Lineup

Control system		Product series		Deposit	Ducted	Ductable external air treatment	Wall	Ceiling floor	Console	Column
TV remote		TYAP1F		●	○	○	●	●	●	●
		TYV1L1		○	○	○	○	○	○	○
Cable control		TXK46		○	●	●	○	○	○	○
		TXK79		○	○	○	○	○	○	○
		TXK55		○	○	○	○	○	○	○
		TJS05(receiver)			○	○				
Centralised command		TCE52-24/F(C)		○	○	○	○	○	○	○
Intelligent zone control		TCE53-24/F(C)		○	○	○	○	○	○	○
Long distance monitoring software		TFE31-00/AD(BM)		○	○	○	○	○	○	○
BMS Accessories	Communication module (modbus) TTY-V BACnet gateway (BACnet)	TME30-24/E4(M)		○	○	○	○	○	○	○
		TME30-24/D4(B)		○	○	○	○	○	○	○
Other modules	Isolated optoelectronic converter	TRS232-RS422\485		○	○	○	○	○	○	○
	Isolated multi-signal optoelectronic converter	TRS-422\485		○	○	○	○	○	○	○
T-Cloud				○	○	○	○	○	○	○

Note: ● Standard ○ Optional

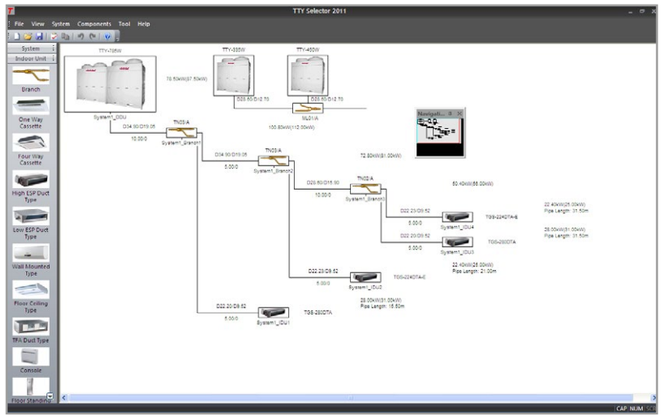
Piping Sizing Program

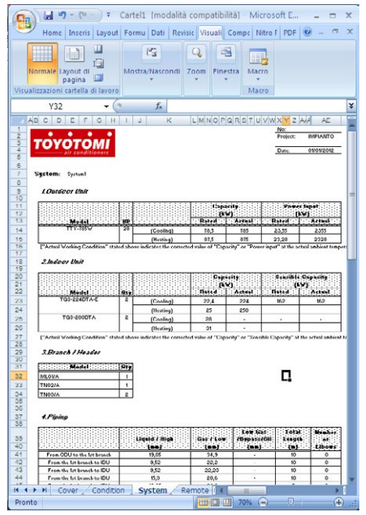


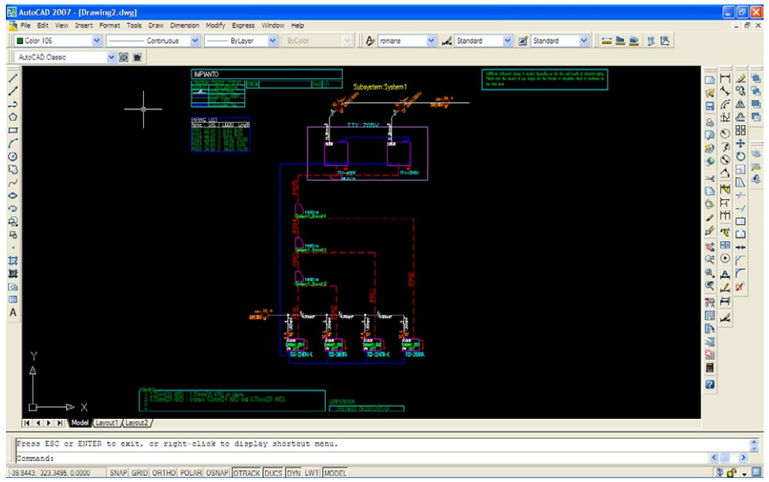
TOYOTOMI Selector is a program for sizing the pipes of VRF systems of the TTY-V series

The software provides two methods to perform the design

- **Excel summary file:**
  It is a summary of the planned system, system information and remote monitoring.
- **Autocad drawing:**
  Sizing of piping, electrical cable and system communication wiring.

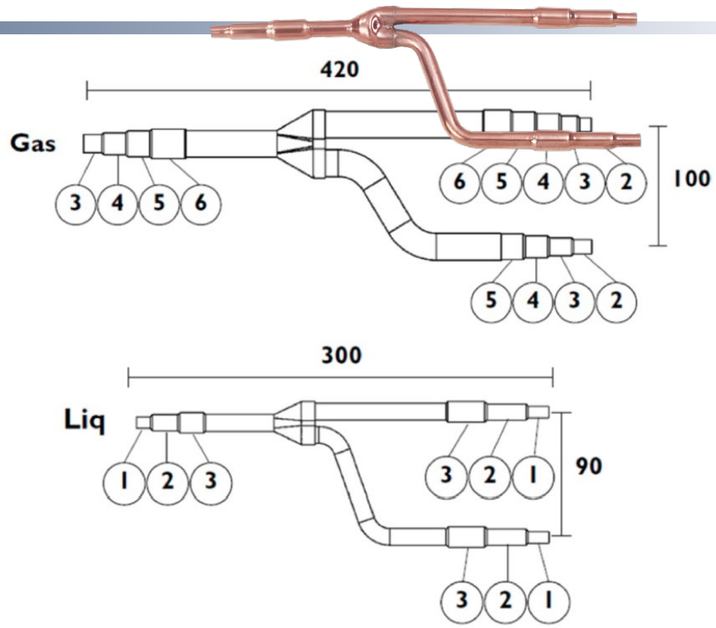




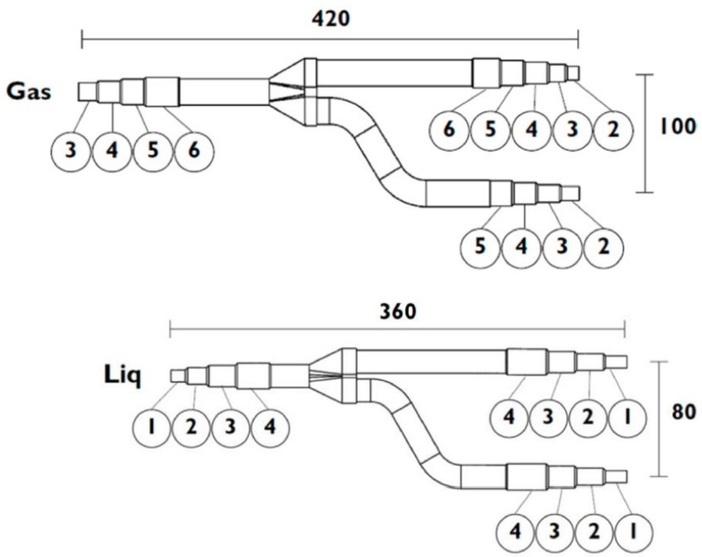


Derivations

TN01A/A

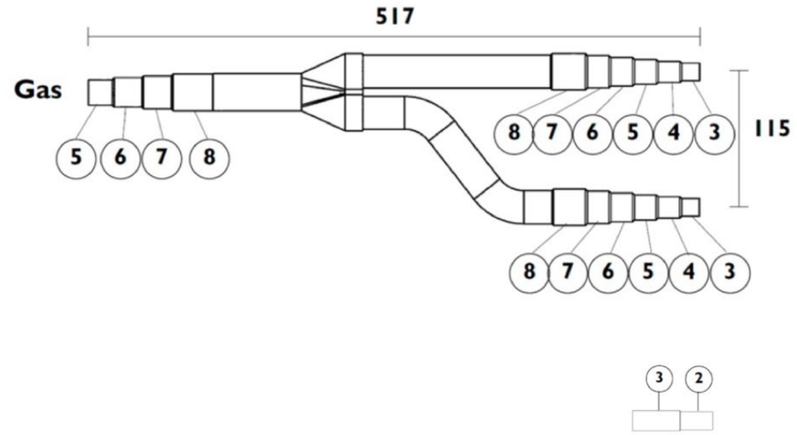


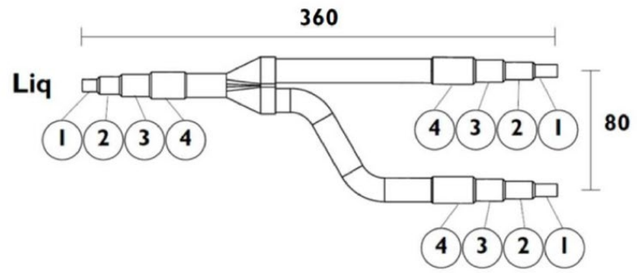
TN01B/A



Diameters							
1	6,35 mm - 1/4"	5	19,05 mm - 3/4"	9	31,75 mm - 1"1/4	13	44,45 mm - 1"3/4
2	9,52 mm - 3/8"	6	22,40 mm - 7/8"	10	34,92 mm - 1"3/8	14	50,80 mm - 2"
3	12,70 mm - 1/2"	7	25,40 mm - 1"	11	38,10 mm - 1"1/2		
4	15,88 mm - 5/8"	8	28,57 mm - 1"1/8	12	41,28 mm - 1"5/8		

TN02/A





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Notes:

Notes:

TOYOTOMI
Japan

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