



Voyager™ II Rooftop Units

Cooling-only

TKD-TKH 155-175-200-250-265-290-340

Heat pump

WKD-WKH 125-155-200-265-290-340

Cooling-only with gas-fired heating

YKD-YKH 155-175-200-250

Heat pump with gas-fired heating

DKD/DKH 125-155-200-265-290-340

R410A Refrigerant



RT-PRC014H-E4



Table of Contents

Features and Benefits	4
Compressors	4
ReliaTel™ Micro Controls	4
Drum And Tube Heat Exchanger	4
Weather Tight Top and C abinet	4
Quality And Reliability	5
Ease Of Installation	5
Variable Speed Direct Drive Supply Fan.....	5
Serviceability	5
Options and Accessories	8
Selection Procedure	11
General Data	12
Sound Levels	18
Electrical Data	19
Dimensions and Weights	20
Controls	21
Equipment Protection/Operation Timings and Features.....	21
Field-installed Control Options	22
Room thermostats	22
Tracker™ multi rooftops centralized control.....	23
Mechanical Specifications	24
Options and Accessories	25

Features and Benefits

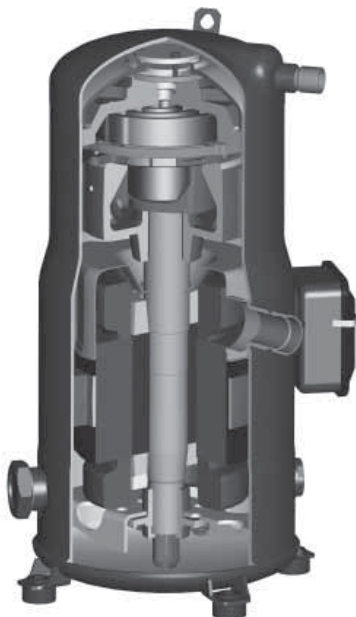
Compressors

- Voyager contains the best Scroll compressor technology available, in order to achieve the highest performance possible. **The Trane Voyager™ rooftop has among the best COP in its class.** All performances are Eurovent certified which provides the assurance of accurate performance and common comparison criteria

ReliaTel™ Micro Controls

- The Micro provides unit control for heating, cooling and ventilating utilizing input from sensors that measure outdoor and indoor temperature.
- The Micro improves quality and reliability through the use of timetested microprocessor controls and logic.
 - prevents the unit from short cycling, considerably improving compressor life.
 - ensures that the compressor will run for a specific amount of time which allows oil to return for better lubrication, enhancing the reliability of the compressor.
 - reduces the number of components required to operate the unit, thereby reducing possibilities for component failure.
- The Micro requires no special tools to run the unit through its paces. Simply place a jumper between Test 1 and Test 2 terminals on the Low Voltage Terminal Board and the unit will walk through its operational steps automatically. The unit automatically returns control to the zone sensor after stepping through the test mode a single time, even if the jumper is left on the unit.
- As long as the unit has power and the LED is lit, the Micro is operational. The light indicates that the Micro is functioning properly.

Figure 1 – High performance Scrollcompressor



- The Micro features expanded diagnostic capabilities when utilized with Trane's Integrated Comfort™ Systems.
- The Micro in the Voyager units has builtin anti-short-cycle timers, time delay relays and minimum "on" time controls. These controls are functions of the Micro and are factory tested to assure proper operation.
- The Micro softens electrical "spikes" by staging on fans, compressors and heaters.
- The Intelligent Fallback or Adaptive Control is a benefit to the building occupant. If a component goes astray, the unit will continue to operate at predetermined temperature set points.
- Intelligent Anticipation is a standard feature of the Micro. It functions constantly as the Micro and zone sensor work together in harmony to provide tighter comfort control than conventional electro-mechanical thermostats.

Drum And Tube Heat Exchanger

- The drum and tube heat exchanger is designed for increased efficiency and reliability and has utilized improved technology incorporated in the large rooftop commercial units for almost 20 years.
- The heat exchanger is manufactured using aluminized steel with stainless steel components for maximum durability. The drum and tube design has been tested and passed over 150,000 cycles.
- The negative pressure gas valve will not allow gas flow unless the combustion blower is operating. This is one of our unique safety features.
- The forced combustion blower supplies a gas-air mixture through a single stainless steel burner screen into a sealed drum where ignition takes place. It is more reliable to operate and maintain than a multiple burner system.
- The hot surface ignitor is a gas ignition device which doubles as a safety device utilizing a continuous test to prove the flame.

Weather Tight Top and Cabinet

- Voyager units incorporate the Trane-Tite-Top (T₃). Each part of the top (three pieces) overlaps in such a way that water cannot leak into the unit. These overlapped edges are gasketed and sealed to ensure superior water integrity.
- Quick- Access panels reduce the number of possible water entry points.
- For added water integrity, Voyager has a raised 30 mm lip around the supply and return of the downflow units to prevent water from blowing into the ductwork.

Features and Benefits

Quality And Reliability

- The fan and idler arm assembly designs have been tested to over 300,000 cycles each.
- All of Voyager's designs were rigorously rain tested at the factory to ensure water integrity.
- We perform a 100% coil leak test at the factory. The evaporator and condenser coils are leak tested at 1.4 MPa and pressure tested to 3.1 MPa.
- Every unit and its options receive a 100% unit run test before leaving the production line to make sure it lives up to Trane requirements.

Ease Of Installation

Voyager units provide many time and money saving features.

Conversionless Units

- The dedicated design units (either downflow or horizontal) require no panel removal or alteration time to convert in the field.
- Horizontal units come complete with duct flanges so the contractor doesn't have to field fabricate them.

Improved Airflow

- U-shaped airflow allows for improved static capabilities.

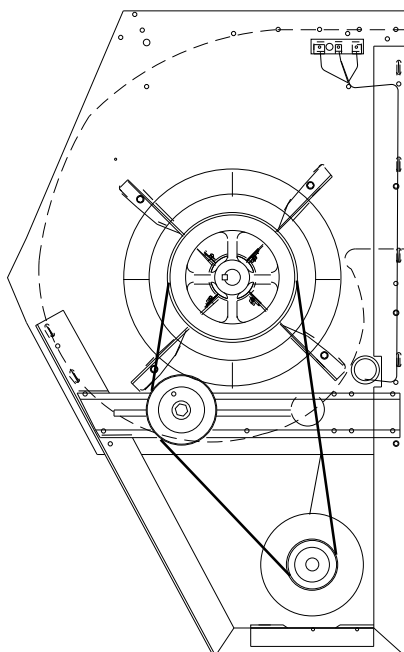
Single Side Access

- No more than three screws must be removed to access components.

Trane's Idler Arm Assembly

- On most units, our idler pulley provides quick-adjustment for belt or motor sheaves. No longer does one have to adjust the motor to tighten the belt or change the motor sheave setting.

Figure 2 – Idler arm assembly



Variable Speed Direct Drive Supply Fan

Efficient, flexible and low maintenance direct driven fan.

High efficiency fan

Direct transmission, variable speed drives delivers energy saving through 3 aspects:

- Higher fan nominal efficiency: The pulley no longer penalizes the airflow stream at the an inlet, resulting in less turbulence and higher fan static efficiency.
- Direct coupling drive efficiency: The direct coupling concept avoids losses by belt friction. Classic belt drive is depletes part of the motor power caused by improper belt tension, pulley misalignment. The direct driven fan improves motor consumption by about 15% to 20% compared to belt driven fan.
- Reduction of power input with fan speed modulation at part load or in ventilation mode. Substantial energy savings can be achieved by reducing fan speed by only 20%, resulting in 20% less airflow and 50% less absorbed power. On a typical application, the result is an annual energy saving of 30% of the total rooftop consumption.
- Power factor of the fan motor is corrected and inrush current is very low thanks to progressive fan ramp up start (by default: 1 minute ramp up time).

Reduced maintenance costs with:

- Almost no maintenance direct coupling compared to belt drive.
- Easy commissioning with adjustment of nominal airflow and ramp up time for progressive textile duct inflation.

Serviceability

Voyager's Simpler Design

The Voyager design uses up to 42% fewer parts than previous units. Since it is simpler in design, it is easier to diagnose.



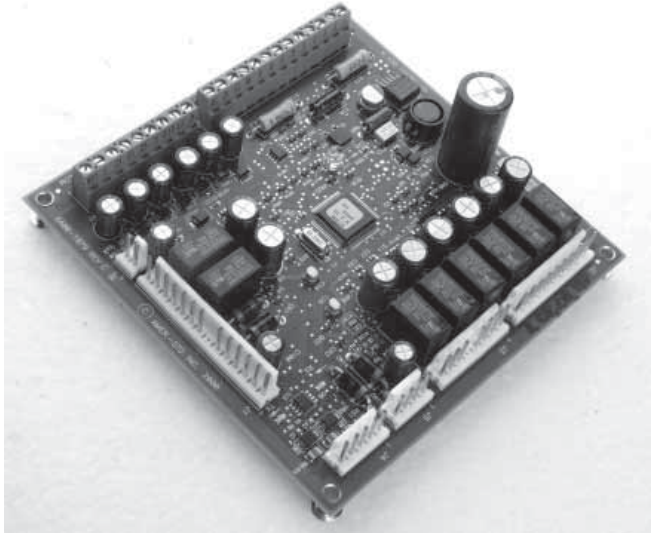
ReliTel

- ReliTel requires no special tools to run the Voyager unit through its paces. Simply press the Test button located on the right side of the control panel and the unit will walk through its operational steps automatically.
- As long as the unit has power and the LED is lit, ReliTel is operational. The light indicates that the Micro is functioning properly.
- ReliTel features expanded diagnostic capabilities when utilized with Trane's Integrated Comfort™ Systems.

Features and Benefits

- One Zone Sensor option has central control panel lights which indicate the mode the unit is in and possible diagnostic information (dirty filters for example).

Figure 3 – RTRM (ReliaTel™ Refrigeration Module)



Standardized Components

- Components are placed in the same location for all Voyager units.

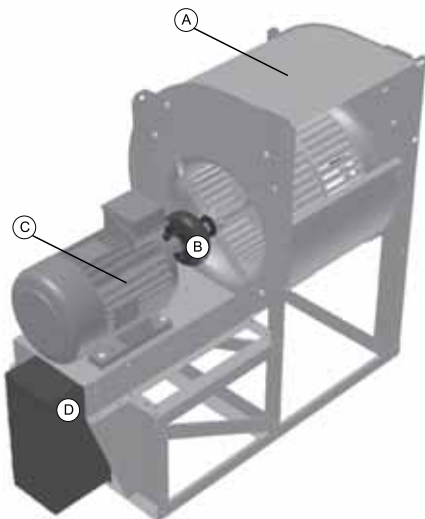
Easy Access Low Voltage Terminal Board

- The thermostat wires must be connected to the terminals located on the main board.

Single Point Power

- A single electrical connection powers the unit.

Figure 4 – Variable speed direct drive supply fan



An Answer to Market Needs

Capacity Modulation

- Voyager features dual Scroll compressor units. The dual compressor models are outstanding for humidity control, light load cooling conditions and system back-up applications.

Low Ambient Cooling

- All Voyager units have cooling capabilities down to -18°C as standard.

Flexible Applications

- Thanks to its high static pressure capabilities, the Voyager can replace an older machine with old ductwork and, in some cases, improve the comfort through better air distribution.

Figure 5 – RTOM (ReliaTel™ Option Module)

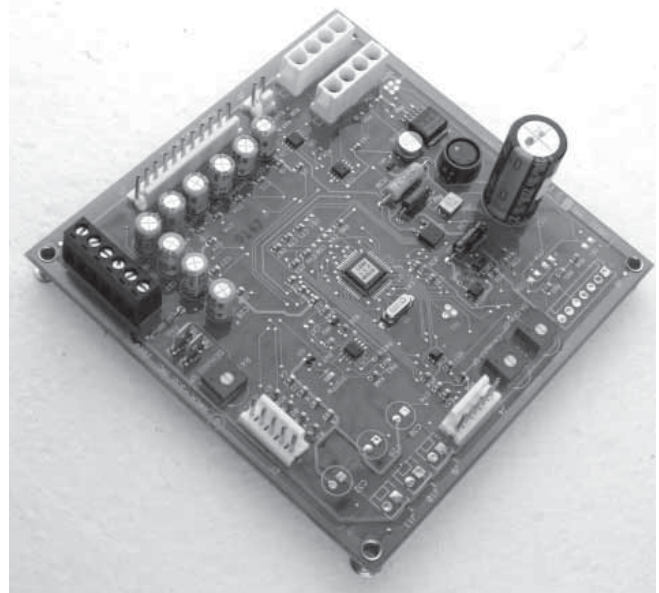
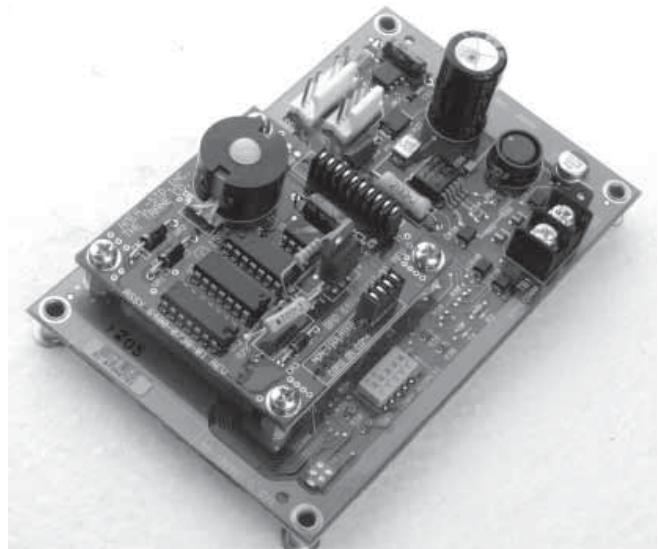


Figure 6 – Trane Communication Interface (TCI-R)



Features and Benefits

Indoor Air Quality

- Filters - all rooftops are shipped with throwaway filters to be used during the first days of operation (usually the job site is not completely clean, and high efficiency filters would get dirty in a few hours - this would be a waste of money) or G4/EU4 filters for regular operation. Panels in the indoor air section have a fire-resistant (MO) aluminum foil-faced insulation. There is no more insulation particules carried in the air. It can be cleaned which is particularly interesting for restaurant applications.
- All our drain pans are sloped. We thus avoid water stagnation that engenders corrosion and micro-organism life such as mold and fungi.

TD5 service and diagnostic user display

- The TD-5 display allows you to view data and make operational changes on Voyager rooftop equipped with Reliabel control v3.4 or above.
- TD-5 is a 5" (127mm diagonal) high resolution color touch screen display
- TD-5 provides in 26 languages:
 - 15 different reports (3 custom, 12 standard),
 - 12 different graphs (4 custom, 8 standard)
 - View and reset Historic of last 100 detailed alarms.
- Graph data can be exported to an excel file through USB memory stick.

Figure 7



Downflow And Horizontal Economizers

- Economizers come with a comparative enthalpy control.

Trane Communication Interface or TCI-R is available factory installed. This module when applied with the Micro easily interfaces with Trane's Integrated Comfort TM System.

Trane Modbus Communication Interface (PIC) is an accessory that interfaces with the third party Modbus protocol communicating systems.

Lon® Communication Interface (LCI)

This is an electronic board mounted on the main control panel. It is needed to allow communication on a LonTalk® Network at the unit level.

Numerous options and accessories are available, such as:

- Adjustable roof curb
- Economizer
- Electric heater
- Hot water coil
- Black epoxy fin coating
- CO₂ sensor
- Fused disconnect switch
- Smoke detector
- Firestat
- Supply fan soft starter

On dual fuel units (DKD/DKH) Reliabel automatically selects the best source of heat. In low ambient operation, when mechanical heating is not delivering enough performance, the compressor switches off and the gas burner delivers the needed heat in an optimized conditions. This result in an optimized energy consumption, and higher compressor life cycle.

The unit is equipped in standard with phase reversing protection preventing reverse rotation operation on compressors and other unit motors.



Options and Accessories

Table 1

	TKD	TKH	WKDWKH	YKD	YKH	DKD	DKH	Application	Description	Incompatible with
FRESH AIR OPTIONS										
0-25% manual fresh air hood	A	A	A	A	A	A	A	Fresh air needed in the building, up to 25% of the nominal airflow.	Manually sets a permanent amount of fresh air in the unit, between 0-25% of the nominal airflow.	Economizer, 0-50% motorized hood, CO ₂ sensor, remote potentiometer.
0-50% motorized fresh air hood	O	O	O	O	O	O	O	Fresh air needed in the building, up to 50% of nominal airflow.	A motorized fresh air damper introduces a permanent amount of fresh air into the unit, between 0-50% of the nominal airflow. The damper position is set by a potentiometer located in the hood. Closes in unoccupied mode when supply fan stops.	0-25% manual hood, economizer.
Economizer comparative enthalpy control	O	O	O	O	O	O	O	Fresh air needed in the building, up to 50% of nominal airflow, and intelligent energy saving.	The economizer is composed of 2 sets of temperature and humidity sensors that measure ambient and room enthalpy, and of a fresh air damper connected to a return air damper. The permanent fresh air function is identical to that of the 0-50% motorized hood. The free-cooling function modulates between the permanent set value (between 0-50%) and 100% of the nominal airflow using the fresh air enthalpy to cool down the building.	0-25% manual hood, 0-50% motorized hood.
Energy Recovery Module	O	O	O	O	O	O	O	"When unit has to operate with a fresh air rate higher than 15% in extreme outdoor temperature (winter and summer). It is important to recover heat from exhaust air and transfer it to the fresh air. Result is a reduction of the installed heating/cooling capacity."	"A energy recovery module is installed on the fresh air side of the unit. 2 technologies for 2 levels of efficiency (Plate heat exchanger efficiency 50-60%, Heat recovery wheel efficiency 60-85%) Free cooling function is integrated (100% fresh air with by-passed exchanger). Heat recovery wheel has an hygroscopic treatment allowing partial transfer of moisture in parallel to sensible heat. "	"0-25% manual hood. 0-50% motorized fresh air damper"
Remote potentiometer	A	A	A	A	A	A	A	To remotely set the permanent fresh air intake.	Connected to the potentiometer of the 0-50% motorized hood or of the economizer, can modify remotely the permanent fresh air amount brought into the unit between 0-50% of the nominal airflow.	0-25% manual fresh air hood, not recommended with CO ₂ sensor.
CO ₂ sensor	O	O	O	O	O	O	O	Hygienic control of the air.	Works with the 0-50% motorized hood or the economizer and brings fresh air (modulating between the permanent fresh air setpoint and 50% of the nominal airflow) whenever the CO ₂ concentration in the room meets or exceeds the adjustable threshold. The sensor itself has to be mounted in a relevant place in the room or in the ductwork.	0-25% manual hood, not recommended with remote potentiometer.
Exhaust fans	O	-	O	-	O	-	O	"To minimize overpressure in the building caused by the introduction of fresh air, when the economizer fresh air damper set at 40-50% OA (permanent value), and/or when the pressure drop in the return duct is between the building overpressure accepted by the customer (12-25 Pa) and 200 Pa (maximum fan static pressure)."	"When the exhaust fans are off, the gravity dampers open with increased building pressure to relieve the air pressure. When the exhaust fans are on, around 50% of airflow can be exhausted, depending on the pressure drop of the return. They turn on whenever the position of the economizer fresh air dampers meet or exceed the power exhaust setpoint (when the supply fan is on)."	0-50% motorized fresh air damper
HEATING DEVICES										
Hot water coil	O	-	O	-	-	-	-	Need of heating or additional heating on cooling only units or heat pump units. Hot water loop available on site.	Avoids the power consumption of an electric heater by using the hot water loop available to heat the building.	Electric heaters, gas fired units.
Electric heaters	O	O	O	O	-	-	-	Need of heating or additional heating on cooling only units or heat pump units. Very useful with a heat pump unit to keep a good comfort level during the defrost cycle.	On a heat pump unit, in heating mode, turns on when the compressors job does not raise the temperature fast enough. On a heat pump, in heating mode, during the outdoor coil defrost cycle, the electric heater turns on to avoid blowing cold air in the building.	Hot water coil, gas fired units.

A = Accessory (to be mounted on site)
 O = Option (factory mounted and tested)
 Other options or configurations are available. Please contact your local sales office for more information.

Options and Accessories

Table 1 (Continued)

	TKD	TKH	WKD	WKH	YKD	YKH	DKD	DKH	Application	Description	Incompatible with
VENTILATION											
EU4 filters	0	0	0	0	0	0	0	0	To filter the air.	Washable media, treat the return and fresh air, 90% gravimetric efficiency.	
EU4+EU7 filters	0	0	0	0	0	0	0	0	To filter the air.	50mm+50mm Galvanized steel frame filters. Washable media for EU4 pre-filter; EU7 provides 85% opacimetric efficiency.	
Clogged filter detector	0	0	0	0	0	0	0	0	To facilitate maintenance of the filters.	When the pressure drop of the filter exceeds the selectable value, this differential pressostat report an alarm via a dry contact to the micro-control.	
Textile duct soft starter	0	0	0	0	0	0	0	0	To achieve a progressive supply fan start and progressive inflation of textile duct.	Located in the main control panel. Starting time can be adjusted from an actual range of 0 to 40 seconds (factory-set value: 40 s). If Direct driven fan option is selected, the VFD start with a 60s ramp up as factory setting	
Direct drive fan	0	-	0	-	0	-	0	-	Direct coupling delivers better fan efficiency, speed variation and reduced maintenance (No more belt)	Located in the fan section the VFD can drive fan with a fixed reference or a 2 speed logic. By default this option includes 1 minute textile duct soft start.	
SAFETY											
Fused disconnect switch	0	0	0	0	0	0	0	0	To manually disconnect the unit from the power supply line and protect it from internal short circuits	Cuts the 3 phases of the power supply, the fuses blow up in case of short circuit into the unit. With electric heaters option, the unit is already fused.	
Fire thermostat	A	A	A	A	A	A	A	A	To stop the unit when temperature of the air stream rises abnormally.	A kit of 2 manual reset thermostats are delivered. The first one, to be placed in the return duct, stops the unit and put the unit in general fault when the airstream rises above 57°C, the second, to be placed in the supply duct, reacts above 115°C. Temperature threshold cannot be changed.	
Smoke detector	0	0	0	0	0	0	0	0	To detect smoke in the building.	Closes the return air damper if an economizer is installed, stops the indoor fan, switches off the electric heater if installed and energized, and put the unit in general fault. This option provide a post ventilation period of 30 secondes in the case of high temperature cut out.	
High temperature safety thermostat	-	-	-	-	0	0	0	0	For the French ERP regulation only : additional security thermostat for gas-fired units.	This manual reset thermostat switches off the burner and the supply fan, and put the unit in general fault if the supply temperature rises above 120°C.	
"Three-Phase Monitoring Relay Phase revresal + Phase loss"	S	S	S	S	S	S	S	S	"This device monitors three-phase power supply in order to protect unit motors. It prevent risk of starting unit in reverse roation and phase loss that could cause motor burn out."	"The relay disables the unit control when one of the following failures occurs on power supply: phase reversal, phase loss. No fault reporting is not delayed."	
"Three-Phase Monitoring Relay Phase revresal + Phase loss + Phase imbalance"	0	0	0	0	0	0	0	0	"This device monitors three-phase power supply in order to protect unit motors. This option is recommended when there are risks of power supply imbalance or when power factor correction capacitors are used. "	The relay disables the unit control when one of the following failures occurs on power supply: phase reversal, phase loss, phase imbalance (adjustable setting). The recommended setting is as follows: 5% imbalance on 3-phase voltage. Duration of imbalance should be set at 5 seconds.	
ROOFCURBS											
Standard roofcurb	A	-	A	-	A	-	A	-	Connection between a flat roof and the rooftop.	Supports the rooftop and ensures watertightness roof/roofcurb/rooftop, and easy connection of the ductwork .	Adjustable roofcurb.
Adjustable roofcurb	A	-	A	-	A	-	A	-	Connection between a sloped roof and the rooftop.	Supports the rooftop and ensures watertightness roof/roofcurb/rooftop, and easy connection of the ductwork, correcting up to 8% slope.	Standard roofcurb.

A = Accessory (to be mounted on site)

O = Option (factory mounted and tested)

Other options or configurations are available. Please contact your local sales office for more information.



Options and Accessories

Table 1 (Continued)

	TKD	TKH	WKD	WKH	YKD	YKH	DKD	DKH	Application	Description	Incompatible with
CONTROL											
"ReliaTel™ Options Module (RTOM)"	0	0	0	0	0	0	0	0	Required for some optional ReliaTel™ devices (froststat, clogged filter switch, fan failure switch, discharge air sensor (DAS) used for supply air tempering and ICS input data, smoke detector, external on/off switch).	Communication interface between the ReliaTel™ Refrigeration Module (RTRM) and some options.	
TCI-R	0	0	0	0	0	0	0	0	To communicate with Trane Integrated Comfort Systems, such as the Tracer Summit™, the Tracker™ or a Varitrac™ system (CCP2).	Communication interface between a Trane ICS device and a Voyager™.	THS/P 03, and other communication interfaces
LCI-R	0	0	0	0	0	0	0	0	To communicate on a LonTalk® network at the unit level.	Communication interface between a LonTalk® management system and a Voyager™.	THS/P 03, and other communication interfaces
BCI-R	0	0	0	0	0	0	0	0	To communicate on a BACnet® MS/TP network at the unit level.	Communication interface between a BACnet management system and a Voyager™.	THS/P 03, and other communication interfaces
PIC	0	0	0	0	0	0	0	0	To communicate on a Modbus network at the unit level.	Communication interface between Modbus management system and a Voyager™.	THS/P 03, and other communication interfaces
THS03	A	A	A	A	A	A	A	A	Control of 1 cooling-only, heat pump or gas-fired rooftop.	Electronic thermostat, 2 stages cooling, 1 stage compressor heating, 2 stages auxiliary heating. No CTI card needed, communicates in the same language as the rooftop micro-control and uses 100% of its advanced control features	All communication interfaces
THP03	A	A	A	A	A	A	A	A	Control of 1 cooling-only, heat pump or gas-fired rooftop.	Electronic programmable thermostat, 2 stages cooling, 1 stage compressor heating, 2 stages auxiliary heating, LCD screen. Communicates in the same language as the rooftop micro-control and uses 100% of its advanced control features.	All communication interfaces
Remote sensor box for THS/THP03	A	A	A	A	A	A	A	A	Need of remote or additional sensors with THS/THP03	Senses the temperature and sends the information to the THS/P 03.	
Antifreeze thermostat	0	0	0	0	0	0	0	0	Additional device to prevent the indoor coil from icing. Very useful when a large amount of cold air is blown into the unit during the cooling mode.	A sensor is placed on the indoor coil and stops the compressors for the period of time needed, as soon as the coil approaches the freezing point (in cooling mode).	
Remote fault relay	0	0	0	0	0	0	0	0	To send alarms signals to a local BMS.	Uses the compressor/heating/fan/power supply alarm output signals from the micro-control and reports them into one dry contact.	
TD-5	A	A	A	A	A	A	A	A	Plug and play diagnostic touch screen display. Read Only device connected to ReliaTel boards.	5 inch touch screen display. Monitor all unit parameters, input, output, graph and record parameter trend. Provide alarm historic reporting and possibility to reset alarms	
MISCELLANEOUS											
Oversized drive / motor	0	0	0	0	0	0	0	0	High static pressure needs.	Increases the fans speed via oversized pulleys/belts and/or oversized motors.	
Black epoxy coating on condenser	0	0	0	0	0	0	0	0	Sea side application.	The black epoxy coating slows down the corrosion process on the aluminum fins.	
Black epoxy coating on condenser and evaporator	0	0	0	0	0	0	0	0	Sea side application when a fresh air device is used.	The black epoxy coating slows down the corrosion process on the aluminum fins.	

A = Accessory (to be mounted on site)

O = Option (factory mounted and tested)

Other options or configurations are available. Please contact your local sales office for more information.

Selection Procedure

To obtain product selection, please contact your local Trane sales office with the following information:

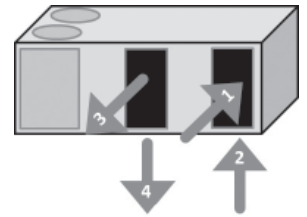


Table 2 – Mandatory informations to select a rooftop

System type	Cooling Only <input type="checkbox"/>	Heat pump <input type="checkbox"/>	
Airflow information			
Configuration of return duct	1 - Horizontal flow <input type="checkbox"/>	2 - Downflow <input type="checkbox"/>	Other
Configuration of supply duct	3 - Horizontal flow <input type="checkbox"/>	4 - Downflow <input type="checkbox"/>	Other
Unit airflow	..... m3/h		
Fresh air rate	..... m3/h % of nominal airflow		
External static pressure on return duct	..... Pa		
External static pressure on supply duct	..... Pa		
Cooling mode design conditions			
Unit cooling capacity	..... kW		
Indoor air Dry Bulb	..... °C		
Indoor air wet Bulb / Relative Humidity	..... °C %		
Outdoor air Dry Bulb	..... °C		
Heating mode design conditions			
Heating capacity	..... kW		
Auxiliary heat type	Electric Heat <input type="checkbox"/>	Gas Heat <input type="checkbox"/>	Hot Water coil <input type="checkbox"/>
Gas type	Natural gas G20 <input type="checkbox"/>	Natural gas G25 <input type="checkbox"/>	Propane gas G31 <input type="checkbox"/>
Auxiliary heating capacity	..... kW		
Indoor air Dry Bulb	..... °C		
Outdoor air Dry Bulb	..... °C		
Outdoor air wet Bulb / Relative Humidity	..... °C %		
			(only for Heat pump)
Options			
Air filter class	.....	
Variable speed drive	With <input type="checkbox"/>	Without <input type="checkbox"/>	
Economizer type	Without <input type="checkbox"/>	Manual fresh air <input type="checkbox"/>	Comparative enthalpy economizer <input type="checkbox"/>
Energy recovery on exhaust / fresh air	Without <input type="checkbox"/>	Rotary heat wheel <input type="checkbox"/>	Plate heat exchanger <input type="checkbox"/>
Fresh air control	Constant <input type="checkbox"/>	Remote reference <input type="checkbox"/>	CO ₂ sensor controlled <input type="checkbox"/>
Unit control	Local control without scheduling <input type="checkbox"/>	Local control with scheduling <input type="checkbox"/>	Multi-unit centralized control <input type="checkbox"/>
Remote control communication interface	LON <input type="checkbox"/>	Modbus <input type="checkbox"/>	Bacnet <input type="checkbox"/>
Smoke detector	With <input type="checkbox"/>	Without <input type="checkbox"/>	Remote relay interface control <input type="checkbox"/>
Fire detector	With <input type="checkbox"/>	Without <input type="checkbox"/>	
Disconnect switch	With <input type="checkbox"/>	Without <input type="checkbox"/>	
Dirty filter switch	With <input type="checkbox"/>	Without <input type="checkbox"/>	
Fan fail switch	With <input type="checkbox"/>	Without <input type="checkbox"/>	
Outdoor coil corrosion protection	Without <input type="checkbox"/>	Epoxy coating <input type="checkbox"/>	
Indoor coil corrosion protection	Without <input type="checkbox"/>	Epoxy coating <input type="checkbox"/>	
Roofcurb	None <input type="checkbox"/>	Flat <input type="checkbox"/>	Adjustable pitch <input type="checkbox"/>

General Data

Table 3 – General data TKD/TKH, YKD/YKH

		TKD / TKH YKD / YKH 155 R410A	TKD / TKH YKD / YKH 175 R410A	TKD / TKH YKD / YKH 200 R410A	TKD / TKH YKD / YKH 250 R410A	TKD/H 265 R410A	TKD/H 290 R410A	TKD/H 340 R410A
Eurovent Performances (1)								
Net Cooling Capacity	(kW)	44.2	50.6	56.5	67.9	73.6	85.4	94.9
Total Power input in cooling	(kW)	14.7	16.8	18.2	21.8	25.4	29.3	34.9
EER		3.01	3.01	3.11	3.11	2.90	2.91	2.72
Eurovent Efficiency class Cooling		A	A	A	A	B	B	C
Main Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Outdoor sound power level env.	(dBA)	84	84	86	86	86	88	89
Indoor sound power level in duct	(dBA)	74	77	77	82	83	83	85
Outdoor sound pressure level env. (6)	(dBA)	52	52	54	54	54	56	57
Unit amps								
Unit max amps (3)	(A)	39,0	45,8	51,5	54,5	62,5	75,7	83,3
Unit start-up amps	(A)	163	168	175	177	187	209	251
Unit power factor (1)		0,75	0,72	0,74	0,77	0,79	0,79	0,8
Short circuit current	(kA)	10	10	10	10	10	10	10
Electric Heater (TKD / TKH)								
Heating Capacity	(kW)	25	25	37.5	37.5	37.5	37.5	37.5
Capacity steps	(kW)	12.5 / 12.5	12.5 / 12.5	25 / 12.5	25 / 12.5	25 / 12.5	25 / 12.5	25 / 12.5
Max Amps (2)	(A)	36	36	54	54	54	54	54
Gas burner (YKD / YKH)								
Heating Models		G350	G350	G350	G350	N/A	N/A	N/A
Heating Input (G20)	(kW)	77	77	77	77	-	-	-
Heating Output	(kW)	69,3	69,3	69,3	69,3	-	-	-
Steady State Efficiency	(%)	90	90	90	90	-	-	-
No. Burners	#	1	1	1	1	-	-	-
No. Stages	#	2	2	2	2	-	-	-
Gas Connection Pipe Size		3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	-	-	-
Compressor								
Number	#	2	2	2	2	2	2	2
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		5T / 9T	6T / 10T	9T / 9T	10T / 10T	12T / 12T	13T / 13T	15T / 15T
Max Amps(2)	(A)	18.5 / 11.2	20 / 13.9	18.5 / 18.5	20 / 20	23 / 23	25.2 / 25.2	29 / 29
Locked rotor Amps (2)	(A)	142 / 82	142 / 87	142 / 142	142 / 142	147 / 147	158 / 158	197 / 197
Outdoor Coil								
Type		Wavy	Wavy	Wavy	Wavy	Wavy	Wavy	Wavy
Tube Size OD	(mm)	9.52	9.52	9.52	9.52	9.52	9.52	9.52
Face Area	(m ²)	2.23	2.62	3.00	3.39	3.39	4.26	4.26
Rows / Fin series	# / FPF	2 / 192	2 / 192	2 / 192	2 / 192	2 / 192	2 / 192	2 / 192
Indoor Coil								
Type		Wavy	Wavy	Wavy	Wavy	Wavy	Wavy	Wavy
Tube Size OD	(mm)	9.52	9.52	9.52	9.52	9.52	9.52	9.52
Face Area	(m ²)	1.63	1.63	2.42	2.42	2.42	2.42	2.42
Rows / Fin series	# / FPF	3 / 180	3 / 180	2 / 180	3 / 168	3 / 168	4 / 168	4 / 168
Refrigerant Control		Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve
Drain Connection No./Size	(mm)	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT
Outdoor Fan								
Nominal Airflow	(m ³ /h)	17300	18000	26700	27300	27300	39500	39500
Type		Axial	Axial	Axial	Axial	Axial	Axial	Axial
Diameter	(mm)	630	630	710	710	710	710	710
Drive type		Direct	Direct	Direct	Direct	Direct	Direct	Direct
Number	#	2	2	2	2	2	3	3
Motor HP	(kW)	0.6	0.6	1.1	1.1	1.1	1.1	1.1
Motor Max Amps(1)	(A)	1.2	1.2	2.5	2.5	2.5	2.5	2.5
Motor RPM	(rpm)	900	900	900	900	900	900	900

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013

(2) Per motor under 400V

(3) For standard unit, with oversized drive, without electric heater options

(4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available

(6) At 10m from the unit in a free field

Electrical & refrigerant charge Data are subject to change without notice.

Please refer to unit nameplate data.

General Data

Table 3 – General data TKD/TKH, YKD/YKH (Continued)

		TKD / TKH YKD / YKH 155 R410A	TKD / TKH YKD / YKH 175 R410A	TKD / TKH YKD / YKH 200 R410A	TKD / TKH YKD / YKH 250 R410A	TKD/H 265 R410A	TKD/H 290 R410A	TKD/H 340 R410A
Indoor Fan								
Minimum Airflow	(m3/h)	6800	7880	8970	11280	11520	12960	14400
Nominal Airflow	(m3/h)	8500	9850	11210	14100	14400	16200	18000
Maximum Airflow	(m3/h)	10200	11820	13450	16920	17280	19440	21600
Static pressure available (4)	(Pa)	150	75	175	75	75	450	450
Maximum static pressure available (5)	(Pa)	350	375	450	375	375	500	500
Type		FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Number	#	1	1	1	1	1	1	1
Diameter / Width	(in / in)	15" / 15"	15" / 15"	18" / 18"	18" / 18"	18" / 18"	18" / 18"	18" / 18"
Belt driven fan version								
Motor HP (Standard/Oversized)	(kW)	1.8 / 3.0	3.0 / 4.6	3.0 / 4.6	4.6 / -	4.6 / 5.5	7.5 / 9	7.5 / 9
Motor Max Amps(Standard/Oversized)	(A)	4 / 6.4	6.4 / 9	6.4 / 9	9 / 9	9 / 11	15 / 17.3	15 / 17.3
Motor Locked rotor Amps (Standard/Oversized)	(A)	36.4 / 57	57 / 71.9	57 / 71.9	71.9 / -	69 / 95	128 / 149	128 / 149
Motor RPM (Standard/Oversized)	(rpm)	1450 / 2870	2870 / 2900	2870 / 2900	2900 / -	2900 / 2900	2900 / 2900	2900 / 2900
Direct driven fan version								
Number	#	1	1	1	1	1	1	1
Motor HP (Standard/Oversized)	(kW)	2.2 / 5.5	2.2 / 5.5	4 / 5.5	7.5 / 5.5	7.5 / 5.5	7.5 / 15	7.5 / 15
Motor Max Amps(Standard/Oversized)	(A)	5.4 / 8.5	5.4 / 9.8	9.4 / 12.4	11.3 / 13.3	11.3 / 13.5	16.4 / 23.3	16.6 / 22.9
Motor RPM (Standard/Oversized)	(rpm)	957 / 1455	957 / 1455	963 / 963	1455 / 963	1455 / 963	970 / 1457	970 / 1457
Energy Recovery Module (5)								
Plate Heat exchanger version								
Heat recovery efficiency at 10% / 50% fresh air	(%)	51% / 50%	51% / 50%	56% / 54%	56% / 53%	57% / 54%	57% / 54%	57% / 53%
Air pressure drop at 10% / 50% fresh air	(Pa)	2Pa / 43Pa	2Pa / 56Pa	3Pa / 70Pa	6Pa / 105Pa	2Pa / 63Pa	3Pa / 77Pa	4Pa / 93Pa
Exhaust fan kW at 10% / 50% fresh air	(kW)	0.1kW / 0.4kW	0.1kW / 0.7kW	0.2kW / 0.5kW	0.2kW / 0.9kW	0.3kW / 0.7kW	0.3kW / 0.9kW	0.3kW / 1.1kW
Length (Downflow / Horizontal flow)	(mm)	2440 / 2288	2440 / 2288	2745 / 2745	2745 / 2745	2745 / 3050	2745 / 3050	2745 / 3050
Width (Downflow / Horizontal flow)	(mm)	1838 / 1838	1838 / 1838	2143 / 2143	2143 / 2143	2295 / 2143	2295 / 2143	2295 / 2143
Height (Downflow / Horizontal flow)	(mm)	1553 / 1350	1553 / 1350	1553 / 1503	1553 / 1503	1705 / 1503	1705 / 1503	1705 / 1503
Weight (Downflow / Horizontal flow)	(kg)	592 / 543	592 / 543	786 / 779	786 / 779	862 / 889	862 / 889	862 / 889
Rotary Wheel Heat exchanger version								
Heat recovery efficiency at 10% / 50% fresh air	(%)	84% / 69%	84% / 65%	85% / 68%	84% / 65%	81% / 70%	80% / 67%	80% / 67%
Air pressure drop at 10% / 50% fresh air	(Pa)	13Pa / 109Pa	17Pa / 130Pa	14Pa / 109Pa	19Pa / 144Pa	9Pa / 87Pa	11Pa / 101Pa	13Pa / 115Pa
Exhaust fan kW at 10% / 50% fresh air	(kW)	0.2kW / 0.5kW	0.2kW / 0.6kW	0.2kW / 0.6kW	0.2kW / 0.8kW	0.2kW / 0.9kW	0.3kW / 0.9kW	0.3kW / 1.1kW
Length (Downflow / Horizontal flow)	(mm)	2593 / 1778	2593 / 1778	2745 / 2745	2745 / 2745	2898 / 2898	2898 / 2898	2898 / 2898
Width (Downflow / Horizontal flow)	(mm)	1838 / 1563	1838 / 1563	2143 / 2143	2143 / 2143	1990 / 2143	1990 / 2143	1990 / 2143
Height (Downflow / Horizontal flow)	(mm)	1553 / 2293	1553 / 2293	1705 / 1655	1705 / 1655	2010 / 1960	2010 / 1960	2010 / 1960
Weight (Downflow / Horizontal flow)	(kg)	686 / 710	686 / 710	846 / 906	846 / 906	973 / 1095	973 / 1095	973 / 1095
Filters								
Type Furnished		2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway
(No.) Size Recommended								
TKH / YKH *	#	2x (500x500x50) +4x (500x625x50)	2x (500x500x50) +4x (500x625x50)	8x (500x625x50)	8x (500x625x50)	8x (500x625x50)	8x (500x625x50)	8x (500x625x50)
TKD / YKD *	#	2x (500x500x50) +4x (500x625x50)	2x (500x500x50) +4x (500x625x50)	4x (500x500x50) +4x (500x625x50)	4x (500x500x50) +4x (500x625x50)	4x (500x500x50) +4x (500x625x50)	4x (500x500x50) +4x (500x625x50)	4x (500x500x50) +4x (500x625x50)
Operating limits								
Minimum operating outdoor air temp.	°C	-18	-18	-18	-18	-18	-18	-18
Maximum operating outdoor air temp.	°C	50	50	50	50	50	50	50
Minimum intake air temp. on the indoor coil	°C	18	18	18	18	18	18	18
Physical data - Operating (3)								
Length	(mm)	2726	2726	3107	3107	3107	3987	3987
Width	(mm)	1811	1811	2167	2167	2154	2154	2154
Height	(mm)	1313	1313	1704	1704	1704	1704	1704
Operating weight TKD/TKH	(kg)	598	631	768	789	869	1140	1148
YKD/YKH	(kg)	673	706	847	869			
Shipping weight TKD/TKH	(kg)	652	666	819	864	934	1205	1213
YKD/YKH	(kg)	693	726	902	948			

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013
 (2) Per motor under 400V
 (3) For standard unit, with oversized drive, without electric heater options
 (4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available
 (6) At 10m from the unit in a free field
Electrical & refrigerant charge Data are subject to change without notice. Please refer to unit nameplate data.

General Data

Table 3 – General data TKD/TKH, YKD/YKH (Continued)

		TKD / TKH YKD / YKH 155 R410A	TKD / TKH YKD / YKH 175 R410A	TKD / TKH YKD / YKH 200 R410A	TKD / TKH YKD / YKH 250 R410A	TKD/H 265 R410A	TKD/H 290 R410A	TKD/H 340 R410A
Unit construction								
Sheet metal / Thickness	Type / mm	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2
Paint	Type / RAL	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002
Insulation / Thickness	Type / mm	M0 / 25	M0 / 25	M0 / 25	M0 / 25	M0 / 25	M0 / 25	M0 / 25
System Data								
Refrigerant circuit	#	2	2	2	2	2	2	2
Capacity steps	%	60 / 40	60 / 40	50 / 50	50 / 50	50 / 50	50 / 50	50 / 50
Refrigerant Charge (3)								
Circuit A (YKD / YKH)	(kg)	3.8	4.2	6.4	7.6	7.6	9.2	9.2
Circuit B (YKD / YKH)	(kg)	6.3	6.9	6.4	7.6	7.6	9.2	9.2

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013

(2) Per motor under 400V

(3) For standard unit, with oversized drive, without electric heater options

(4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available

(6) At 10m from the unit in a free field

Electrical & refrigerant charge Data are subject to change without notice.

Please refer to unit nameplate data.

General Data

Table 4 – General data WKD/WKH, DKD/DKH

		WKD / WKH DKD / DKH 125 R410A	WKD / WKH DKD / DKH 155 R410A	WKD / WKH DKD / DKH 200 R410A	WKD / WKH DKD / DKH 265 R410A	WKD / WKH DKD / DKH 290 R410A	WKD / WKH DKD / DKH 340 R410A
Eurovent Performances (1)							
Net Cooling Capacity	(kW)	37.7	45.9	64.5	71.4	78.8	88.8
Total Power input in cooling	(kW)	11.4	15.1	20.9	25.8	28.4	33.4
EER		3.30	3.04	3.09	2.77	2.77	2.65
Eurovent Efficiency class Cooling		A	A	A	C	C	C
Main Power supply	V/Ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
Net Heating Capacity	(kW)	35.5	46.5	57.8	66.0	77.5	86.7
Total Power input in Heating	(kW)	10.1	13.5	17.5	20.2	23.2	27.0
COP		3.53	3.45	3.30	3.26	3.34	3.21
Eurovent Efficiency class Heating		A	A	B	B	B	B
Outdoor sound power level env.	(dBA)	84	84	86	86	87	88
Indoor sound power level in duct	(dBA)	79	74	81	83	83	85
Outdoor sound pressure level env. (6)	(dBA)	52	52	54	54	55	56
Unit amps							
Unit max amps (3)	(A)	37.1	39.7	54.5	62.5	73.0	80.6
Unit start-up amps	(A)	110	123	177	187	206	249
Unit power factor (1)		0.67	0.72	0.76	0.80	0.80	0.80
Short circuit current	(kA)	10	10	10	10	10	10
Electric Heater (WKD / WKH)							
Heating Capacity	(kW)	25	25	37.5	37.5	37.5	37.5
Capacity steps	(kW)	12.5 / 12.5	12.5 / 12.5	25 / 12.5	25 / 12.5	25 / 12.5	25 / 12.5
Max Amps (2)	(A)	36	36	54	54	54	54
Gas burner (DKD / DKH)							
Heating Models		G250	G350	G350	G350	G400	G400
Heating Input (G20)	(kW)	53	77	77	77	85	85
Heating Output	(kW)	48,2	69,3	69,3	69,3	77,4	77,4
Steady State Efficiency	(%)	91	90	90	90	91	91
No. Burners	#	1	1	1	1	1	1
No. Stages	#	2	2	2	2	2	2
Gas Connection Pipe Size		3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT	3/4" NPT
Compressor							
Number	#	2	2	2	2	2	2
Type		Scroll	Scroll	Scroll	Scroll	Scroll	Scroll
Model		6T / 6T	7.5T / 7.5T	10T / 10T	12T / 12T	13T / 13T	15T / 15T
Max Amps (2)	(A)	13.9 / 13.9	15.2 / 15.2	20 / 20	23 / 23	25.2 / 25.2	29 / 29
Locked rotor Amps (2)	(A)	87 / 87	98 / 98	142 / 142	147 / 147	158 / 158	197 / 197
Outdoor Coil							
Type		Wavy	Wavy	Wavy	Wavy	Wavy	Wavy
Tube Size OD	(mm)	9.52	9.52	9.52	9.52	9.52	9.52
Face Area	(m ²)	2.23	2.62	3.39	3.39	4.26	4.26
Rows / Fin series	# / FPF	2 / 192	2 / 192	2 / 192	2 / 192	2 / 192	2 / 192
Refrigerant Control		Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve
Indoor Coil							
Type		Wavy	Wavy	Wavy	Wavy	Wavy	Wavy
Tube Size OD	(mm)	9.52	9.52	9.52	9.52	9.52	9.52
Face Area (WKD / WKH)	(m ²)	1.63	1.63	2.42	2.42	2.42	2.42
Rows / Fin series	# / FPF	3 / 180	3 / 180	3 / 168	3 / 168	4 / 168	4 / 168
Refrigerant Control		Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve	Exp.Valve
Drain Connection No./Size	(mm)	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT	1 / 3/4" NPT
Outdoor Fan							
Nominal Airflow	(m ³ /h)	17400	18000	27300	25400	34000	34000
Type		Axial	Axial	Axial	Axial	Axial	Axial
Diameter	(mm)	630	630	710	710	630	630
Drive type		Direct	Direct	Direct	Direct	Direct	Direct
Number	#	2	2	2	2	4	4
Motor HP	(kW)	0.6	0.6	1.1	1.1	0.6	0.6
Motor Max Amps(1)	(A)	1.2	1.2	2.5	2.5	1.2	1.2
Motor RPM	(rpm)	900	900	900	900	900	900

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013

(2) Per motor under 400V

(3) For standard unit, with oversized drive, without electric heater options

(4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available

(6) At 10m from the unit in a free field

Electrical & refrigerant charge Data are subject to change without notice.

Please refer to unit nameplate data.



General Data

Table 4 – General data WKD/WKH, DKD/DKH (Continued)

		WKD / WKH DKD / DKH 125 R410A	WKD / WKH DKD / DKH 155 R410A	WKD / WKH DKD / DKH 200 R410A	WKD / WKH DKD / DKH 265 R410A	WKD / WKH DKD / DKH 290 R410A	WKD / WKH DKD / DKH 340 R410A
Indoor Fan							
Minimum Airflow	(m3/h)	5710	6800	8970	11520	12960	14400
Nominal Airflow	(m3/h)	7140	8500	11210	14400	16200	18000
Maximum Airflow	(m3/h)	8570	10200	13450	17280	19440	21600
Static pressure available (4)	(Pa)	200	175	200	75	450	450
Maximum static pressure available (5)	(Pa)	425	325	350	375	500	500
Type		FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal	FC Centrifugal
Number	#	1	1	1	1	1	1
Diameter / Width	(in / in)	15" / 15"	15" / 15"	18" / 18"	18" / 18"	18" / 18"	18" / 18"
Belt driven fan version							
Motor HP (Standard/Oversized)	(kW)	1.8 / 3.0	1.8 / 3.0	3.0 / 4.6	4.6 / 5.5	7.5 / 9	7.5 / 9
Motor Max Amps(Standard/Oversized)	(A)	4.0 / 6.4	4.0 / 6.4	6.4 / 9.0	9.0 / 10.5	14.7 / 17.3	14.7 / 17.3
Motor Locked rotor Amps (Standard/Oversized)	(A)	36.4 / 57	36.4 / 57	57 / 71.9	69 / 95	128 / 149	128 / 149
Motor RPM (Standard/Oversized)	(rpm)	1450 / 2870	1450 / 2870	2870 / 2900	2900 / 2900	2900 / 2900	2900 / 2900
Direct driven fan version							
Motor HP (Standard/Oversized)	(kW)	2.2 / 5.5	2.2 / 5.5	4 / 5.5	7.5 / 5.5	7.5 / 15	7.5 / 15
Motor Max Amps(Standard/Oversized)	(A)	5.5 / 7.9	5.4 / 8.5	9.4 / 12.4	11.3 / 13.5	16.4 / 23.3	16.6 / 22.9
Motor RPM (Standard/Oversized)	(rpm)	957 / 1455	957 / 1455	963 / 963	1455 / 963	970 / 1457	970 / 1457
Energy Recovery Module (5)							
Plate Heat exchanger version							
Heat recovery efficiency at 10% / 50% fresh air	(%)	51% / 50%	51% / 50%	56% / 54%	57% / 54%	57% / 54%	57% / 53%
Air pressure drop at 10% / 50% fresh air	(Pa)	1Pa / 32Pa	2Pa / 43Pa	3Pa / 70Pa	2Pa / 63Pa	3Pa / 77Pa	4Pa / 93Pa
Exhaust fan kW at 10% / 50% fresh air	(kW)	0.1kW / 0.3kW	0.1kW / 0.4kW	0.2kW / 0.5kW	0.3kW / 0.7kW	0.3kW / 0.9kW	0.3kW / 1.1kW
Length (Downflow / Horizontal flow)	(mm)	2440 / 2288	2440 / 2288	2745 / 2745	2745 / 3050	2745 / 3050	2745 / 3050
Width (Downflow / Horizontal flow)	(mm)	1838 / 1838	1838 / 1838	2143 / 2143	2295 / 2143	2295 / 2143	2295 / 2143
Height (Downflow / Horizontal flow)	(mm)	1553 / 1350	1553 / 1350	1553 / 1503	1705 / 1503	1705 / 1503	1705 / 1503
Weight (Downflow / Horizontal flow)	(kg)	592 / 543	592 / 543	786 / 779	862 / 889	862 / 889	862 / 889
Rotary Wheel Heat exchanger version							
Heat recovery efficiency at 10% / 50% fresh air	(%)	86% / 70%	84% / 69%	85% / 68%	81% / 70%	80% / 67%	80% / 67%
Air pressure drop at 10% / 50% fresh air	(Pa)	10Pa / 88Pa	13Pa / 109Pa	14Pa / 109Pa	9Pa / 87Pa	11Pa / 101Pa	13Pa / 115Pa
Exhaust fan kW at 10% / 50% fresh air	(kW)	0.2kW / 0.4kW	0.2kW / 0.5kW	0.2kW / 0.6kW	0.2kW / 0.9kW	0.3kW / 0.9kW	0.3kW / 1.1kW
Length (Downflow / Horizontal flow)	(mm)	2593 / 1778	2593 / 1778	2745 / 2745	2898 / 2898	2898 / 2898	2898 / 2898
Width (Downflow / Horizontal flow)	(mm)	1838 / 1563	1838 / 1563	2143 / 2143	1990 / 2143	1990 / 2143	1990 / 2143
Height (Downflow / Horizontal flow)	(mm)	1553 / 2293	1553 / 2293	1705 / 1655	2010 / 1960	2010 / 1960	2010 / 1960
Weight (Downflow / Horizontal flow)	(kg)	686 / 710	686 / 710	846 / 906	973 / 1095	973 / 1095	973 / 1095
Filters							
Type Furnished		2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway	2" Throwaway
(No.) Size Recommended							
WKH / DKH *	#	2x(500x500x50)	2x(500x500x50)	8x(500x625x50)	8x(500x625x50)	8x(500x625x50)	8x(500x625x50)
	+	+4x(500x625x50)	+4x(500x625x50)				
WKD / DKD *	#	2x(500x500x50)	2x(500x500x50)	4x(500x500x50)	4x(500x500x50)	4x(500x500x50)	4x(500x500x50)
	+	+4x(500x625x50)	+4x(500x625x50)	+4x(500x625x50)	+4x(500x625x50)	+4x(500x625x50)	+4x(500x625x50)
Operating limits							
Minimum operating outdoor air temp. (Cooling)	°C	-18	-18	-18	-18	-18	-18
Minimum operating outdoor air temp. (Heating)	°C	-15	-15	-15	-15	-15	-15
Maximum operating outdoor air temp. (Cooling)	°C	50	50	50	50	48	48
Maximum operating outdoor air temp. (Heating)	°C	18	18	18	18	18	18
Minimum intake air temp. on the indoor coil (Cooling)	°C	18	18	18	18	18	18
Minimum intake air temp. on the indoor coil (Heating)	°C	10	10	10	10	10	10

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013

(2) Per motor under 400V

(3) For standard unit, with oversized drive, without electric heater options

(4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available

(6) At 10m from the unit in a free field

Electrical & refrigerant charge Data are subject to change without notice. Please refer to unit nameplate data.

General Data

Table 4 – General data WKD/WKH, DKD/DKH (Continued)

		WKD / WKH DKD / DKH 125 R410A	WKD / WKH DKD / DKH 155 R410A	WKD / WKH DKD / DKH 200 R410A	WKD / WKH DKD / DKH 265 R410A	WKD / WKH DKD / DKH 290 R410A	WKD / WKH DKD / DKH 340 R410A
Physical data - Operating (3)							
Length	(mm)	2726	2726	3107	3107	3987	3987
Width	(mm)	1811	1811	2167	2154	2154	2154
Height	(mm)	1313	1313	1704	1704	1440	1440
Operating weight	WKD/WKH	(kg)	637	654	819	889	1183
	DKD/DKH	(kg)	707	729	898	968	1268
Shipping weight	WKD/WKH	(kg)	685	707	890	954	1248
	DKD/DKH	(kg)	755	782	969	1033	1333
Unit construction							
Sheet metal / Thickness	Type / mm	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2	GalvaSteel / 1.2
Paint	Type / RAL	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002	Polyester / 9002
Insulation / Thickness	Type / mm	M0 / 25	M0 / 25	M0 / 25	M0 / 25	M0 / 25	M0 / 25
System Data							
Refrigerant circuit	#	2	2	2	2	2	2
Capacity steps (Cooling)	%	50 / 50	50 / 50	50 / 50	50 / 50	50 / 50	50 / 50
Capacity steps (Heating)	%	100	100	100	50 / 50	50 / 50	50 / 50
Refrigerant Charge (3)							
Circuit A (WKD / WKH)	(kg)	5.6	6.1	9.1	9.2	11.5	11.6
Circuit B (WKD / WKH)	(kg)	5.6	6.1	9.1	9.2	11.5	11.6

(1) At Eurovent rating conditions : Indoor return Air (27°C DB / 19°C WB) - Ambient 35°C according to EN14511:2013

(2) Per motor under 400V

(3) For standard unit, with oversized drive, without electric heater options

(4) At the nominal airflow with standard drive

(5) At the nominal airflow with oversized drive when available

(6) At 10m from the unit in a free field

Electrical & refrigerant charge Data are subject to change without notice. Please refer to unit nameplate data.



Sound Levels

Data given at 250Pa & 35°C ambient for nominal airflow rate
 Sound Power Référence = 10E--12 Watt

Table 5 – Overall Outdoor Sound Power level (Env.)

		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
TKD/H - YKD/H	155	64.2 dBA	67.8 dBA	71.0 dBA	77.2 dBA	79.6 dBA	78.8 dBA	72.7 dBA	68.7 dBA	84 dBA
TKD/H - YKD/H	175	64.2 dBA	67.8 dBA	71.0 dBA	77.1 dBA	79.5 dBA	78.9 dBA	72.3 dBA	68.7 dBA	84 dBA
TKD/H - YKD/H	200	73.2 dBA	72.3 dBA	77.0 dBA	80.7 dBA	81.6 dBA	78.2 dBA	71.3 dBA	55.4 dBA	86 dBA
TKD/H - YKD/H	250	73.2 dBA	72.3 dBA	77.0 dBA	80.7 dBA	81.5 dBA	78.4 dBA	71.3 dBA	55.4 dBA	86 dBA
TKD/H - YKD/H	265	73.2 dBA	72.3 dBA	77.0 dBA	80.7 dBA	81.6 dBA	78.5 dBA	71.2 dBA	55.4 dBA	86 dBA
TKD/H - YKD/H	290	74.5 dBA	73.6 dBA	78.7 dBA	82.4 dBA	83.6 dBA	79.7 dBA	72.7 dBA	60.3 dBA	88 dBA
TKD/H - YKD/H	340	74.5 dBA	73.6 dBA	78.8 dBA	83.4 dBA	84.0 dBA	81.4 dBA	75.3 dBA	60.3 dBA	89 dBA
WKD/H - DKD/H	125	64.2 dBA	67.8 dBA	71.0 dBA	77.3 dBA	79.4 dBA	78.8 dBA	72.5 dBA	68.7 dBA	84 dBA
WKD/H - DKD/H	155	64.2 dBA	67.8 dBA	71.0 dBA	76.9 dBA	79.6 dBA	78.7 dBA	71.5 dBA	68.7 dBA	84 dBA
WKD/H - DKD/H	200	73.2 dBA	72.3 dBA	77.0 dBA	80.7 dBA	81.5 dBA	78.4 dBA	71.3 dBA	55.4 dBA	86 dBA
WKD/H - DKD/H	265	73.2 dBA	72.3 dBA	77.0 dBA	80.7 dBA	81.6 dBA	78.5 dBA	71.2 dBA	55.4 dBA	86 dBA
WKD/H - DKD/H	290	63.5 dBA	69.8 dBA	74.0 dBA	79.9 dBA	83.0 dBA	81.5 dBA	74.7 dBA	71.9 dBA	87 dBA
WKD/H - DKD/H	340	63.5 dBA	69.8 dBA	74.0 dBA	81.6 dBA	83.5 dBA	82.7 dBA	76.5 dBA	71.9 dBA	88 dBA

Table 6 – SUPPLY Indoor Sound Power level (In duct)

		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
TKD/H - YKD/H	155	61.4 dBA	61.3 dBA	60.9 dBA	62.1 dBA	62.9 dBA	63.6 dBA	63.8 dBA	57.2 dBA	71 dBA
TKD/H - YKD/H	175	63.1 dBA	66.5 dBA	65.5 dBA	69.2 dBA	68.6 dBA	67.7 dBA	66.5 dBA	57.9 dBA	76 dBA
TKD/H - YKD/H	200	63.1 dBA	66.5 dBA	65.5 dBA	69.2 dBA	68.6 dBA	67.7 dBA	66.5 dBA	57.9 dBA	76 dBA
TKD/H - YKD/H	250	67.5 dBA	70.9 dBA	69.9 dBA	74.6 dBA	73.9 dBA	74.1 dBA	72.9 dBA	64.3 dBA	81 dBA
TKD/H - YKD/H	265	69.4 dBA	72.8 dBA	71.8 dBA	75.5 dBA	74.9 dBA	74.0 dBA	72.8 dBA	64.2 dBA	82 dBA
TKD/H - YKD/H	290	50.0 dBA	67.2 dBA	71.4 dBA	76.1 dBA	77.8 dBA	72.7 dBA	69.9 dBA	63.9 dBA	82 dBA
TKD/H - YKD/H	340	52.4 dBA	68.0 dBA	74.4 dBA	76.9 dBA	80.1 dBA	74.6 dBA	71.7 dBA	65.7 dBA	84 dBA
WKD/H - DKD/H	125	66.4 dBA	66.3 dBA	65.9 dBA	67.1 dBA	67.9 dBA	68.6 dBA	68.8 dBA	62.2 dBA	76 dBA
WKD/H - DKD/H	155	61.4 dBA	61.3 dBA	60.9 dBA	62.1 dBA	62.9 dBA	63.6 dBA	63.8 dBA	57.2 dBA	71 dBA
WKD/H - DKD/H	200	67.1 dBA	70.5 dBA	69.5 dBA	73.2 dBA	72.6 dBA	71.7 dBA	70.5 dBA	61.9 dBA	80 dBA
WKD/H - DKD/H	265	69.4 dBA	72.8 dBA	71.8 dBA	75.5 dBA	74.9 dBA	74.0 dBA	72.8 dBA	64.2 dBA	82 dBA
WKD/H - DKD/H	290	50.0 dBA	67.2 dBA	71.4 dBA	76.1 dBA	77.8 dBA	72.7 dBA	69.9 dBA	63.9 dBA	82 dBA
WKD/H - DKD/H	340	52.4 dBA	68.0 dBA	74.4 dBA	76.9 dBA	80.1 dBA	74.6 dBA	71.7 dBA	65.7 dBA	84 dBA

Table 7 – RETURN Indoor Sound Power level (In duct)

		63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz	
TKD/H - YKD/H	155	63.4 dBA	60.8 dBA	56.9 dBA	63.6 dBA	66.4 dBA	61.1 dBA	56.3 dBA	48.2 dBA	71 dBA
TKD/H - YKD/H	175	56.1 dBA	61.0 dBA	57.0 dBA	62.2 dBA	68.1 dBA	63.7 dBA	58.5 dBA	51.4 dBA	71 dBA
TKD/H - YKD/H	200	56.1 dBA	61.0 dBA	57.0 dBA	62.2 dBA	68.1 dBA	63.7 dBA	58.5 dBA	51.4 dBA	71 dBA
TKD/H - YKD/H	250	60.5 dBA	65.4 dBA	61.4 dBA	67.6 dBA	73.4 dBA	75.1 dBA	64.9 dBA	57.8 dBA	78 dBA
TKD/H - YKD/H	265	62.4 dBA	67.3 dBA	63.3 dBA	68.5 dBA	74.4 dBA	70.0 dBA	64.8 dBA	57.7 dBA	78 dBA
TKD/H - YKD/H	290	47.8 dBA	63.5 dBA	67.6 dBA	72.3 dBA	74.3 dBA	69.7 dBA	66.9 dBA	60.9 dBA	78 dBA
TKD/H - YKD/H	340	50.1 dBA	64.6 dBA	70.6 dBA	73.2 dBA	76.3 dBA	71.6 dBA	68.7 dBA	62.7 dBA	80 dBA
WKD/H - DKD/H	125	68.4 dBA	65.8 dBA	61.9 dBA	68.6 dBA	71.4 dBA	66.1 dBA	61.3 dBA	53.2 dBA	76 dBA
WKD/H - DKD/H	155	63.4 dBA	60.8 dBA	56.9 dBA	63.6 dBA	66.4 dBA	61.1 dBA	56.3 dBA	48.2 dBA	71 dBA
WKD/H - DKD/H	200	60.1 dBA	65.0 dBA	61.0 dBA	66.2 dBA	72.1 dBA	67.7 dBA	62.5 dBA	55.4 dBA	75 dBA
WKD/H - DKD/H	265	62.4 dBA	67.3 dBA	63.3 dBA	68.5 dBA	74.4 dBA	70.0 dBA	64.8 dBA	57.7 dBA	78 dBA
WKD/H - DKD/H	290	47.8 dBA	63.5 dBA	67.6 dBA	72.3 dBA	74.3 dBA	69.7 dBA	66.9 dBA	60.9 dBA	78 dBA
WKD/H - DKD/H	340	50.1 dBA	64.6 dBA	70.6 dBA	73.2 dBA	76.3 dBA	71.6 dBA	68.7 dBA	62.7 dBA	80 dBA

Electrical Data

Table 8 – Electrical characteristics

Unit	Control Max Amps	Compressor 1 / 2 Max Amps Start Amps		Indoor Fan Belt Drive		Indoor Fan Direct Drive		Exhaust fan Max Amps	Outdoor Fan		Electric Heat Max Amps
				Standard drive Max Amps	Oversized drive Max Amps	Standard drive Max Amps	Oversized drive Max Amps		Qty	Max Amps	
TK* / YK* 155	0.5	18.5 / 11.2	142 / 82	4	6.4	5.4	8.5	3.0	2	1.2	36
TK* / YK* 175	0.5	20.0 / 13.9	142 / 87	6.4	9	5.4	9.8	3.0	2	1.2	36
TK* / YK* 200	0.5	18.5 / 18.5	142 / 142	6.4	9	9.4	12.4	3.0	2	2.5	54
TK* / YK* 250	0.5	20.0 / 20.0	142 / 142	9	9	11.3	13.3	3.0	2	2.5	54
TK* 265	0.5	23.0 / 23.0	147 / 147	9	11	11.3	13.5	3.0	2	2.5	54
TK* 290	0.5	25.2 / 25.2	158 / 158	15	17.3	16.4	23.3	3.0	3	2.5	54
TK* 340	0.5	29.0 / 29.0	197 / 197	15	17.3	16.6	22.9	3.0	3	2.5	54
WK* / DK* 125	0.5	13.9 / 13.9	87 / 87	4	6.4	5.5	7.9	3.0	2	1.2	36
WK* / DK* 155	0.5	15.2 / 15.2	98 / 98	4	6.4	5.4	8.5	3.0	2	1.2	36
WK* / DK* 200	0.5	20.0 / 20.0	142 / 142	6.4	9	9.4	12.4	3.0	2	2.5	54
WK* / DK* 265	0.5	23.0 / 23.0	147 / 147	9	11	11.3	13.5	3.0	2	2.5	54
WK* / DK* 290	0.5	25.2 / 25.2	158 / 158	15	17.3	16.4	23.3	3.0	4	1.2	54
WK* / DK* 340	0.5	29.0 / 29.0	197 / 197	15	17.3	16.6	22.9	3.0	4	1.2	54

Data for nominal voltage 400V/3/50

Data are subject to change without notice. Please refer to unit nameplate data.

Maximum length

Table 9 – Zone sensor wire size

	Wire size (mm ²)	Maximum wire length (m)
THS/THP 03		
	0.33	45
	0.5	76
	0.75	115
	1.3	185
	2	300
Conventional thermostat		
	0.33	10
	0.5	15
	0.75	23
	1.3	37
	2	60
CO₂ sensor wire size		
	0.25	50
	0.5	100
	1	200

Dimensions and Weights

Dimensions, Weights and Clearances

Overall unit dimensions, shipping weights and operating weights are given in the General Data tables.

Table 10 – Minimum recommended clearances

UNIT	Minimum clearance				
	1	2	3	4	5
TK* / YK* 155	1900	1800	1220	1000	1300
TK* / YK* 175	1900	1800	1220	1000	1300
TK* / YK* 200	1900	1800	1220	1000	1300
TK* / YK* 250	1900	1800	1220	1000	1300
TK* 265	1900	1800	1220	1000	1300
TK* 290	1900	1800	1220	1000	1300
TK* 340	1900	1800	1220	1000	1300
WK* / DK* 125	1900	1800	1220	1000	1300
WK* / DK* 155	1900	1800	1220	1000	1300
WK* / DK* 200	1900	1800	1220	1000	1300
WK* / DK* 265	1900	1800	1220	1000	1300
WK* / DK* 290	1900	1800	1220	1000	1300
WK* / DK* 340	1900	1800	1220	1000	1300

Weights of Factory-installed Accessories

Table 11 – Factory-installed Accessories Net Weights (kg)

UNIT	Pitched Roof Curb	Pitched Roof Curb	Economizer	Manual Outside Air Damper	Motorized Outside Air Damper	Electric heater	Hot water coil	Power exhaust fan	Direct drive fan
WKD/DKD 125	93	220	30	15	27	14	85	49	31
WKD/DKD/TKD/YKD 155	93	220	30	15	27	14	85	49	31
TKD/YKD 175	93	220	30	15	27	14	85	49	24
WKD/DKD/TKD/YKD 200	107	260	37	15	34	18	110	49	48
TKD/YKD 250	107	260	37	15	34	18	110	49	53
WKD/DKD/TKD 265	107	260	37	15	34	18	110	49	53
WKD/DKD/TKD 290	107	260	37	15	34	18	110	49	80
WKD/DKD/TKD 340	107	260	37	15	34	18	110	49	80
WKH/DKH 125	—	—	30	15	27	14	—	—	—
WKH/DKH/TKH/YKH 155	—	—	30	15	27	14	—	—	—
TKH/YKH 175	—	—	30	15	27	14	—	—	—
WKH/DKH/TKH/YKH 200	—	—	37	15	34	18	—	—	—
TKH/YKH 250	—	—	37	15	34	18	—	—	—
WKH/DKH/TKH 265	—	—	37	15	34	18	—	—	—
WKH/DKH/TKH 290	—	—	37	15	34	18	—	—	—
WKH/DKH/TKH 340	—	—	37	15	34	18	—	—	—

Notes :

Net weight should be added to unit weight when ordering factory installed accessories.

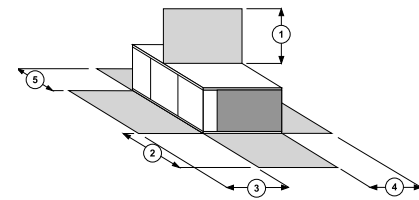
To estimate shipping weight add 2.3 kg to net weight.

Filters

Table 12 – Filter arrangement

UNIT	G2 Filter Qty - Size	G4 Filter Qty - Size	G4+F7 Filter	
			G4 Filter Qty - Size	F7 Filter Qty - Size
TKD / YKD 155 - 175 & WKD / DKD 125 - 155	2x (500x500x50)	2x (498x498x40)	1x (398x498x44)	2x (500x500x50)
	+4x (500x625x50)	+4x (500x625x50)	+1x (498x498x40)	+4x (500x625x50)
			+2x (500x625x50)	
TKH / YKH 155 - 175 & WKH / DKH 125 - 155	2x (500x500x50)	2x (498x498x40)	4x (398x498x44)	2x (500x500x50)
	+4x (500x625x50)	+4x (500x625x50)	+2x (500x625x50)	+4x (500x625x50)
			+2x (400x625x50)	
YKD 200 - 250 & TKD / WKD / DKD 200 - 340	4x (500x500x50)	4x (498x498x40)	4x (498x498x40)	4x (500x500x50)
	+4x (500x625x50)	+4x (500x625x50)	+4x (500x625x50)	+4x (500x625x50)
			+4x (400x625x50)	
YKH 200 - 250 & TKH / WKH / DKH 200 - 340	8x (500x625x50)	8x (500x625x50)	6x (400x625x50)	8x (500x625x50)
			+2x (500x625x50)	

Figure 8



Equipment Protection/Operation Timings and Features

Increased reliability

Fewer components (moving electromechanical parts); less likelihood of equipment down time or failure. Standard

Proportional Integral (PI) Control

Proportional - sets corrective action proportional to deviation from setpoint. Integral - fine-tunes the rate of corrective action proportional to the error (results in superior temperature control). Standard

Built In "TEST" Mode

Aids in quick verification of system and control operation; exercises both hardware and software (no special tools required). Standard

On Board Diagnostics

Assists with equipment troubleshooting if a problem should occur. Standard

Low Ambient Start Timer (LAST) Function

Bypasses low pressure control when a compressor starts, eliminating nuisance compressor lockouts. Standard

Anti Short Cycle Timer (ASCT) Function

Provides a three minute minimum "ON" time and a three minute minimum "OFF" time for compressors; enhances compressor reliability by ensuring proper oil return. Standard

Time Delay Relay (TDR) Function

Provides an incremental staging delay between compressors; minimizes equipment current inrush and consumption by keeping compressors from starting simultaneously. Standard

Built In Fan Delay Relay (FDR)

Provides custom indoor fan timing sequences for the different types of equipment, enhancing efficiency and reliability. Standard

Built in Evaporator Defrost Control

Provides low ambient cooling down to -18°C. Standard

Intelligent Fallback

Built-in Default Control provides adaptive operation, which allows the equipment to continue to operate, and provide comfort in the event of certain input failures. Also, allows temporary operation without a thermostat. Standard

Emergency Stop Terminals on Low Voltage Terminal Board

Provides a convenient point to disable the equipment completely and immediately. Standard

Lower Installation Cost

When using a Trane THS03 or THP03, control voltage wiring may be run up to five times further than any electromechanical system with no increase in wire section. Example: Electromechanical System - 22 m

using 0.5 mm² wire. Microcontrol System (THS/P 03) 110 m 0.5 mm² wire. Standard

Alternating Lead/Lag

During periods of part load operation, each compressor cycles alternately as circuit number one, equalizing compressor wear and run time. Enable by cutting the wire at RTRM junction number J3-8.

Demand defrost - Heat pump

Defrost only if needed; not based on time like most other systems. Adapts to changing weather conditions and lowers operating costs. Standard

Heat pump Soft Start

Provides a smooth transition into heating after defrost, minimizing noise and compressor stress associated with switch over. Standard

Heat pump Smart Recovery and Smart Staging

Inhibits auxiliary heat operation if the space is recovering adequately (0.1°C /min) with the heat pump alone, providing considerable savings in operating costs. Standard

TD5 service and diagnostic user display

- The TD-5 display allows you to view data and make operational changes on Voyager rooftop equipped with Reliatel control v3.4 or above.
- TD-5 is an 5" (127mm diagonal) high resolution color touch screen display
- TD-5 provides in 26 languages:
 - 15 different reports (3 custom, 12 standard),
 - 12 different graphs (4 custom, 8 standard)
 - View and reset Historic of last 100 detailed alarms.
- Graph data can be exported to an excel file through USB memory stick.

Figure 9



Controls

Economizer Preferred Cooling

Provides fully integrated operation. Will not turn on a compressor with the economizer, if the space is recovering adequately with the economizer alone (0.1°C./minute). Allows the equipment to be utilized in more varied applications. Standard with economizer

Features lost when using a conventional thermostat

- When a Conventional Thermostat is applied, equipment operation differs significantly. The basic equipment protection features remain intact, and the following features end benefits are lost :
- Proportional Integral (PI) control is lost, equipment is controlled by a thermostat or generic building automation system device.
- Intelligent Fall Back is lost, if a failure occurs in the device controlling the equipment, operation will cease.
- Heat Pump Smart Recovery and Smart Staging is not available. Heat Pump operation becomes more costly unless the generic control applied can accomplish this.

Field-installed Control Options

Zone sensors

Zone sensors are the building occupants' comfort control devices. They replace the conventional electromechanical thermostats. Zones sensors are to be used with the Voyager™ II units with the Micro control. These sensors are available in the following options:

- THP03: Sensor, programmable setpoint and operation mode according to a schedule
- TZS01: Sensor only, used when connected with CCP2 or Tracker™
- TZS02: Sensor and setpoint adjustable thumbwheel
- THS03: Sensor, setpoint and operation mode, unit Led indication (mode and alarms)

Figure 10 – From left to right: TZS01, TZS02, THS03 THP03



Room thermostats

Trane Communication Interface TCI-R

This microprocessor interface allows the unit to communicate to Trane's Integrated Comfort™ system (CCP2).

LonMark® Communication Interface LCI-R

This microprocessor interface allows the unit to communicate to Trane's Integrated Comfort™ system (Tracer SC, Tracker™) or other open building automation systems

Figure 11 – THS03 room thermostat



Figure 12 – THP03 room thermostat



Table 13 – Characteristics of Programmable and Conventional Thermostats

	Conventional Thermostat	THS03	THP03
Programmable	•	-	•
Electronic	•	-	•
Control type design	Electro-mechanical		Reliatel
For cooling-only units (TS*/TK*)	•	•	•
For heat pump units (WS*/WK*)	•	•	•
For gas-fired units (YS*/YK*)	•	•	•
Number of cooling stages	2	3	3
Auxiliary heating stages (electric heater, hot water coil)	2	2 / 1 Modulating	
Liquid crystal display	•	-	•

- Available
- Not Available

Tracker™ multi rooftops centralized control

- Intuitive, menu-driven user interface
- 2 wires cable communication with units (LonMark®)
- 365-day scheduling and 10 schedules
- Capability of including all equipment and devices in one schedule
- Temporary schedule override
- Easy-to-administer security system with two levels of access
- Automatic daylight savings time changeover
- Error and alarm messaging
- Setpoint viewing and editing
- Trend data collection
- Report generation
- Optimal start

Features exclusive to the PC software (optional)

- RJ45 - Ethernet connection
- Backup and restore capability
- Standard graphics and HTML graphical interface
- Binary output programming capability
- Operator-defined custom alarms capability
- Printer support

Connection to controllers over shared Ethernet/IP connection

- E-mail forwarding of alarms and messages
 - Standard timed override (after hours) usage report
 - Standard daily, monthly, and yearly energy reports
- Note: The Tracker PC software is not needed to set up and operate a typical building.

Figure 13 – Tracker interface




Mechanical Specifications

General

Units shall be dedicated downflow or horizontal airflow. Operating range shall be between 50°C and -18°C cooling as standard for all units. All units shall be factory assembled, internally wired, fully charged with refrigerant, and 100 percent run-tested before leaving the factory. Wiring internal to the unit shall be colored and numbered for simplified identification.

Unit shall be available with a main refrigeration circuit in cooling only and reversible version. Auxiliary heat type shall be selectable: Hot water heat, Gas heater and electrical heater in both refrigeration circuit versions.

Performance

The unit shall be certified and registered on the Eurovent certification under RT program (<http://www.eurovent-certification.com>). Unit net EER shall be class B (>2.80) or higher in cooling mode except for reversible unit of 79kW and 88kW Eurovent cooling capacity. Reversible Unit net COP shall be class B (>3.20) or higher in Heating mode.

Casing

Unit casing shall be constructed of zinc coated, heavy-gauge, galvanized steel. All exterior components shall be mounted in a weather resistant steel cabinet and painted with a polyester white RAL 9002 powder paint. Where top cover seams exist, they shall be double hemmed and gasket sealed to prevent water leakage. Cabinet construction shall allow access for all maintenance on two sides of the unit. Service panels shall have handles and shall be removable while providing a water and air tight seal. The indoor air section shall be completely insulated with fire resistant, permanent, odorless glass fiber material, aluminum foil faced. The base of the unit shall have provisions for crane lifting.

Service Access ¼ locks: Standard

Electrical Control box access panel Filter access panel and supply fan access panel shall be locked by ¼ turn locks as standard for ease of unit service.

Filters

Unit shall be provided on standard with 50 mm, throwaway EU3 filters. 50 mm EU4 filters shall be optional.

Compressors

All units shall have scroll type compressors. Compressor shall be direct-drive, hermetic with self-lubrication. Motor shall be suction gas-cooled and shall have a voltage utilization range of plus or minus 10 percent of unit nameplate voltage. Internal temperature and current sensitive motor overloads shall be included for maximum protection. Each compressor shall be protected by external discharge temperature thermostat, winding temperature thermostat and reverse rotation/phase loss protection. Each compressor shall have crankcase heaters installed, properly sized to minimize the amount of liquid refrigerant present in the oil sump during off cycles. All scroll compressors shall be protected with phase monitoring protection.

Refrigerant Circuits

The unit shall be operating with R410A HFC-based refrigerant. Each refrigerant circuit shall have independent thermostatic expansion devices, service pressure ports and refrigerant line filter driers factory-installed as standard. An area shall be provided for replacement suction line driers. Refrigeration circuit shall be protected against refrigerant leak by a low pressure switch. Service valves shall be provided as standard and located on low pressure and high pressure side of the refrigeration piping.

Evaporator and Condenser Coils

Condenser coils shall have 3/8" (10 mm) copper tubes mechanically bonded to lanced aluminum plate fins. Evaporator coils shall be 3/8" (13 mm) internally finned copper tubes mechanically bonded to high performance aluminum plate fins. All coils shall be leak tested at the factory to ensure pressure integrity. All coils shall be leak tested to 2.1 MPa and pressure tested to 4.5 MPa. All evaporator coils shall be of intermingled configuration. Sloped condensate drain pans are standard. Indoor coil shall be protected as optional by an ant frost thermostat.

Outdoor Fans

The outdoor fans shall be direct drive, statically and dynamically balanced, draw-through in the vertical discharge position. The fan motors shall be permanently lubricated and shall have built-in thermal overload protection.

Indoor Fan

Units shall have belt driven, forward curved centrifugal fans with variable diameter motor sheaves. All motors shall be protected from overload.

Controls

Unit shall be completely factory wired with necessary controls and terminal block for power wiring. Units shall provide an external location for mounting fused disconnect device. Unit controller shall be provided for all 24 volt control functions. The resident control algorithms shall make all heating, cooling and/or ventilating decisions in response to electronic signals from sensors measuring indoor and outdoor temperature. The control algorithm maintains accurate temperature control, minimizes drift from set point and provides better building comfort. Unit controller shall provide anti-short cycle timing and time delay between compressors to provide a higher level of machine protection. Heat pump unit shall manage defrost cycles based on demand defrost logic.

Unit shall be powered by 400V/3/50Hz supply (without neutral) on a single point of power connection.

Mechanical Specifications

Operation and diagnostic display

The unit shall be equipped with a 5" high resolution color touch screen LCD display. The display allows you to view data and make operational changes on the rooftop.

Display shall provide in 26 languages:

- 15 different reports (3 custom, 12 standard),
- 12 different graphs (4 custom, 8 standard)
- View and reset historic of last 100 detailed alarms.

Graph data shall be exported to an excel file through USB memory stick.

Ventilation Override

Shall allow a binary input from the fire/life safety panel to cause the unit to override standard operation and assume one of two factory preset ventilation sequences, exhaust or pressurization. The two sequences shall be selectable based on a binary select input.

Phase Monitoring Relay: Standard

Unit shall detect phase loss, phase reversal from main power supply. In case of fault, the unit shall stop.

Through-The-Base Electrical Provision: Standard

An electrical service entrance shall be standard which allows access to route all high and low voltage electrical wiring inside the curb, through the bottom (vertically) and through the side (Horizontally) of the outdoor section of the unit and into the control box area.

Disconnect Switch: Optional

A factory installed disconnect switch with external handle shall be mounted inside the unit control box.

Options and Accessories

Manual Fresh Air Damper

A manually controllable outside air damper shall be adjustable for up to 25 percent outside air. Manual damper is set at desired position at unit start up.

Motorized Fresh Air damper

This option shall be factory mounted. Outdoor air rate shall be adjustable from 0 to 50 percent. Once set, outdoor air dampers shall open to set position when indoor fan starts. The damper shall close to the full closed position when indoor fan shuts down.

Economizer - Downflow

Economizer shall be factory installed. The assembly includes: fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness, and differential enthalpy control. It shall be provided with barometric relief damper. Barometric relief damper shall deliver a space pressure equalization and be gravity closing to prohibit entrance of outside air during the equipment "off" cycle.

Economizer - Horizontal flow

Economizer shall be factory installed. The assembly includes: fully modulating 0-100 percent motor and dampers, minimum position setting, preset linkage, wiring harness, and differential enthalpy control.

Power Exhaust Fan

Power exhaust shall be optional with the downflow economizer. It shall be available as a factory installed option on all units size. It shall assist the barometric relief damper in maintaining building pressurization.

Remote Potentiometer

A remote potentiometer shall be available to remotely adjust the unit fresh air damper minimum position.

CO₂ Sensor

This accessory shall be compatible with motorized Fresh air damper and economizer options. It shall measure CO₂ concentration in order to increase or decrease the fresh air amount in the building.

Direct driven Variable Frequency fan: Optional

VFDs shall be factory installed and tested to provide supply fan motor speed modulation. The VFD shall receive speed reference from the unit controller based upon supply zone heating/cooling demand and shall cause the drive to accelerate or decelerate as required to maintain the zone temperature setpoint. The fan coupling shall be direct type with the motor shaft. Units shall have a soft rubber direct coupling between centrifugal fans and motor. Motor, fan and VFD shall be individually replaced in case of maintenance operation.

Fan Fail Switch

This option allows checks for supply fan pressure. The fan failure switch will stop all unit functions and report Service alarm on the zone sensor module or Building management system.

Clogged Filter Switch

This option allows for individual dirty filter indication. The switch will light the Service LED on the zone sensor and will allow continued unit operation.

Smoke Detector

This option shall trip off in case of presence of smoke in the supply side of the unit and shall close the return air damper, if any, and stop the unit.

Phase Monitoring Relay

The phase monitoring relay shall detect phase loss, phase reversal and phase imbalance from main power supply. In case of fault, the unit must stop.

Black Epoxy Fin Coating

An optional coil corrosion resistant coating shall protect indoor and outdoor aluminum fins.

Fire thermostats

Field installed manually resettable high temperature thermostats shall provide input to the unit controls to shut down the system if the temperature sensed at the return is 57°C or at the discharge 115°C.



Mechanical Specifications

Roof Curb - Downflow

The roof curb shall be designed to mate with the downflow unit and provide support and watertight installation when installed properly.

The roof curb design shall allow field fabricated rectangular supply/return ductwork to be connected directly to the curb.

Curb shall be shipped knocked down for field assembly.

Adjustable Roof Curb

This factory assembled accessory is adjustable on site and allows correction of the slope of the roof up to 5%.

Hot Water Coil

This option shall be factory mounted and placed in the discharge section. It shall be shipped with one 3-way valve, 0 to 100% modulating built-in control and freeze protection. If needed, on reversible unit, hot water coil shall be selected as first source of heat before mechanical heating.

Electric Heaters

Electric heat shall be available for factory installation within basic unit. Electric heater elements shall be constructed of heavy-duty nickel chromium elements we connected for 380 and 415 volt. Staging shall be achieved through the unit controller. Each heater package shall have automatically reset high limit control operating through heating element contactors. All heaters shall be individually fused from factory, where required.

Gas Heater

The heating section shall have a drum and tube heat exchanger(s) design using corrosion resistant steel components. A forced combustion blower shall supply premixed fuel to a single burner ignited by a pilotless hot surface ignition system. In order to provide reliable operation, a negative pressure gas valve shall be used that requires blower operation to initiate gas flow. On an initial call for heat, the combustion blower shall purge the heat exchanger(s) 45 seconds before ignition. After three unsuccessful ignition attempts, the entire heating system shall be locked out until manually reset at the thermostat. Units shall be suitable for use with natural gas or propane (field installed kit). All units shall have two stage heating.

Burner of 48kW and 70kW shall have a no emissions of CO (< 0.001%) and NOx emission below 30ppm (class 5 according to the requirements of Standard EN483). Burner of 77kW shall have a no emissions of CO (< 0.001%) and NOx emission below 50ppm (class 4 according to the requirements of Standard EN483)

Energy Recovery Module - General

Heat recovery should include direct driven exhaust fan. Fan speed should be adjusted by a separate frequency drive according to fresh air flow in order to maintain building pressurization.

Fresh air flow shall be filtered before entering in the heat exchanger in order to prevent clogging on the fresh air side.

When free cooling is needed, energy recovery should be by-passed to avoid heat exchange on the fresh flow entering into the building.

Energy Recovery Module - Plate heat exchanger version

Energy recovery module should have a total efficiency of 51% or higher at -5°C outdoor, 19°C indoor and 30% fresh air rate. Module shall be equipped with freeze monitoring pressure switch that initiate defrost cycle when exchanger is clogged by frost in winter application.

Energy Recovery Module - Heat wheel version

Energy recovery should have a total efficiency of 64% or higher at -5°C outdoor, 19°C indoor and 30% fresh air rate. Fresh air and exhaust air flow shall be filtered before entering in the heat exchanger in order to prevent exchanger clogging.

Thermostats and Zone Sensors

The thermostats and zone sensors shall be provided to interface with the ReliaTel® unit controls and shall be available in either manual, automatic programmable with night setback, with system malfunction lights or remote sensor options.

Communication Interface (TCI-R)

ReliaTel® Trane Communication Interface (TCI) shall be provided to interface with the Trane Integrated Comfort™ System and shall be available as a field or factory-installed. The TCI-R shall allow control and monitoring of the rooftop unit via a two wires communication link.

Trane Modbus Communication Interface (PIC)

Modbus Communication Interface (PIC) shall be provided to interface with the Trane Integrated Comfort™ System and shall be available field-installed. The PIC shall allow control and monitoring of the rooftop unit via a two wire communication link and Modbus protocol.

LonTalk® Communication Interface (LCI-R)

The field or factory-installed ReliaTel® LonTalk Communication Interface (LCI-R) will be provided to interface with the Trane Integrated Comfort™ System or LonTalk® capable third party building management networks. The LCI-R will allow control and monitoring of the rooftop unit via a two wires communication link.

Tracker® Multi rooftop centralized management control

Simple Building Control

The Tracker building automation system (BAS) is a heating, ventilating, and air conditioning (HVAC) energy management system for small- to medium-size buildings. It provides reliable, centralized control for HVAC equipment, managing it for optimal comfort and efficiency.

Mechanical Specifications

The Tracker BAS includes a controller with a liquid crystal display (LCD) touch screen. The Tracker BAS also includes optional Windows-based software that can be installed on a PC workstation. Connection between Tracker BAS and PC software is possible through modem, direct serial RS232 link or Ethernet IP communication.

The Tracker BAS is LonMark® compliant. It communicates with supported devices over a Trane Comm5 link. The Trane Comm5 link is a communication link that implements LonTalk and a LonTalk FTT-10A network. LonTalk is an open, industry-standard protocol.

The touch screen provide an easy-to-use visual interface. The interfaces enable an operator to set up and change HVAC operating parameters and collect and display building information.

The Tracker BAS offer these features:

- Intuitive LCD touch screen user interface
- 365-day scheduling and 10 schedules
- Capability of including all equipment and devices in one schedule
- Temporary schedule override
- Easy-to-administer security system with two levels of access
- Automatic daylight savings time changeover
- Error and alarm messaging
- Setpoint viewing and editing
- Auto configuration

When Trane Comm5 devices are used as a system and power is applied to the controller, the Tracker BAS automatically configures itself. It is no longer necessary to program the building management system. During auto configuration, the controller:

- Discovers all devices on the communication link
- Loads all devices into a non-erasable memory database
- Turns to On or Occupied all discovered HVAC equipment except the binary output relays of the Tracer MP503 I/O module, which remain de-energized (Off)

Reliabel® Unit controller Originated Data

- Unit operating mode
- Unit failure status
 - Cooling failure
 - Heating failure
 - Emergency service stop indication
 - Supply fan proving
 - Timed override activation
 - High temperature thermostat status
- Zone temperature
- Supply air temperature
- Cooling status (all stages)
- Stage activated or not
- Stage locked out by Reliabel
- HPC status for that stage
- Compressor disable inputs
- Heating status
- Number of stages activated
- High temperature limit status
- Economizer status
- Requested minimum position

- Damper position
- Dry bulb/enthalpy input status
- Outside air temperature
- Outside relative humidity
- Sensor Failure
 - Humidity sensor
 - Outdoor Air Temperature sensor
 - Supply Air Temperature sensor
 - Return Air Temperature sensor
 - Zone temperature sensor
 - Mode input
 - Cooling/heating setpoint from sensors
 - Unit mounted potentiometer
- Unit Configuration data
 - Gas or electric heat
 - Economizer present
- Local setpoint
- Local mode setting
- Clogged filter service indicator
- CO₂ setpoint
- CO₂ value

Building Management System communication Originated Data

- Command operating mode
- Host controllable functions:
 - Supply fan
 - Economizer
 - Cooling stages enabled
 - Heating stages enabled
 - Emergency shutdown
- Minimum damper position
- Heating setpoint
- Cooling setpoint
- Supply air tempering enable/disable
- Slave mode (CV only)
- Tracer/Local operation
- Daytime warm-up enable/disable
- Power exhaust setpoint



Trane optimizes the performance of homes and buildings around the world. A business of Ingersoll Rand, the leader in creating and sustaining safe, comfortable and energy efficient environments, Trane offers a broad portfolio of advanced controls and HVAC systems, comprehensive building services and parts. For more information visit www.Trane.com

Trane has a policy of continuous product and product data improvement and reserves the right to change design and specifications without notice.

© 2014 Trane All rights reserved
RT-PRC014H-E4 July 2014
Supersedes RT-PRC014-E4_0513

We are committed to using environmentally
conscious print practices that reduce waste.

