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# TICA Rooftop Package Air Conditioning Unit





# Product Overview

## Product Overview

Rooftop units are central air conditioners that feature cold (hot) source and air treatment. They are composed of compression and condensation section and air treatment section. The compression and condensation section is usually installed outdoors or on the roof, which cools the room by air or water. The air treatment section can be installed together with the compression and condensation section, or indoors. The air treatment section combines the air supply, refrigeration, heating, dehumidification, humidification, muffling, air purification, and electrical control in one cabinet, to ensure air is delivered as required. The rooftop unit uses the heat exchanger in the cooling system to exchange heat and moisture with air. Therefore, it avoids the loss arising from the secondary heat exchange which is typical of a conventional central air conditioner that comes with a water system. As a result, energy is reduced to deliver the same cooling capacity to one location.

## Application Scope

Rooftop units are ideal for heating or cooling large spaces like gymnasiums, exhibition centers, theaters, conference rooms, malls, and waiting rooms. With the air treatment section and other functional sections as well as an advanced control system, they are also fit for medicine, electronics, food, machinery, and textile industries.

## Features

- 1.Multi-circuit design:** The parallel connection of dual-compressor and the multi-system design increase partial load efficiency;
- 2.Multiple protection design:** system current protection, high and low pressure switches, discharge temperature and anti-freeze protection;
- 3.Economizer:** The fresh air valve and return air valve use either switching value or analog value to realize the best fresh/return air ratio and provide free cooling or heating in transitional seasons.



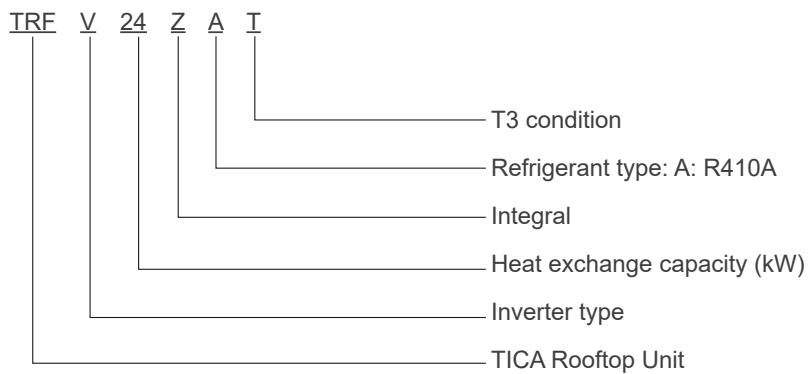


## Advantages

- ▼ Short connection pipes, no performance degradation or oil return;
- ▼ No pumps, cooling towers or fan coils required, no risk of water leakage;
- ▼ Highly reliable scroll compressor for extreme conditions;
- ▼ No indoor supply fan or motor, keeping the room quiet;
- ▼ Adjustable pulley design;
- ▼ Installed on the roof, no equipment room is required, saving installation space;
- ▼ Fresh air can be easily introduced to improve indoor air quality;
- ▼ Wide operating range - Cooling: from 10°C to 52°C;
- ▼ Nylon filter as standard, G4 filter is optional;
- ▼ Can be customised with an anti-corrosion treatment;
- ▼ RS485 as standard;
- ▼ Pressure sensor as standard.



## Nomenclature



# Specifications

## Inverter Type T1

Models		TRFV12ZA	TRFV15ZA	TRFV18ZA	TRFV24ZA	TRFV30ZA	TRFV 35ZA	TRFV45ZA	TRFV50ZA	
Cooling capacity	kW	12	15.2	17.5	24	30.3	35.6	44.5	50	
Heating capacity	kW	13.2	16.6	18.4	26.5	33.3	37.7	48.7	54.3	
Energy control	%	30~100%	30~100%	30~100%	30~100%	30~100%	30~100%	30~100%	30~100%	
Power supply		380V 3Ph~50HZ								
Cooling mode Power input	kW	4.1	5.3	5.5	8.8	11.3	12.3	17	19.5	
Heating mode Power input	kW	3.8	4.8	5.1	8.2	10.4	11.3	15.6	18	
Cooling Current	A	7.4	9.7	10.2	16.1	21.2	23.3	31.7	35.6	
Heating Current	A	6.9	9.2	9.7	15.1	20.1	22.2	29.9	33.5	
Throttling mode		EXV								
Refrigerant circuit		1	1	1	1	1	1	1	1	
Refrigerant		R410A								
Compressor	Type	Inverter Hermetic scroll								
	Qty	1	1	1	1	1	1	2	2	
Condenser	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type		Axial/Direct							
	Axial fan Power input	kW	0.25	0.37	0.37	0.55	0.75	0.75	1.1	1.5
	Air volume	m <sup>3</sup> /h	4600	7800	7800	9000	12600	12600	16500	21000
	Cooling mode range	°C	20~48°C							
	Heating mode range	°C	-10~21°C							
	Ambient	°C	35							
Evaporator	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type		DIDW centrifugal							
	Fan power input	kW	0.32	0.37	0.45	1.1	1.5	2.2	3	3
	Air volume	m <sup>3</sup> /h	2100	2600	3400	4100	5200	6300	7600	8500
	Drive type		Direct				Belt			
	Design indoor temperature	°C	27/19							
	ESP	Pa	100	100	100	200	200	250	250	250
Filter		Aluminum net G3								
Noise	dB(A)	67	67	68	71	72	72	73	73	
Refrigerant charge		kg	3.1	3.1	4.3	2x3.1	2x3.1	2x4.3	4.3+7.5	4.3+8.5
Sizes	Length	mm	1498	1498	1498	2028	2028	2028	2278	2278
	Width	mm	1100	1100	1100	1245	1245	1245	1470	1470
	Height	mm	1095	1095	1095	1170	1170	1170	1167	1167
Weight		kg	240	260	290	420	480	500	750	770

# Specifications

## Inverter Type T1

Models		TRFV 60ZA	TRFV72ZA	TRFV 90ZA	TRFV105ZA	TRFV120ZA	TRFV150ZA	TRFV230ZA	TRFV300ZA	
Cooling capacity	kW	60	70	90	105	120	149	228	298	
Heating capacity	kW	64	75.4	96.2	113.2	128.3	159.2	242	318	
Energy control	%	30~100%	15~100%	15~100%	15~100%	15~100%	10~100%	8~100%	5~100%	
Power supply		380V 3Ph~50HZ								
Cooling mode Power input	kW	22.8	26.7	32.9	39.7	45.1	55.1	88.5	106.7	
Heating mode Power input	kW	21	24.8	30.4	36.7	41.7	51.5	82.9	100	
Cooling Current	A	39.9	48.3	61	70.6	82.4	100.2	165	192.3	
Heating Current	A	37.5	45.4	57.3	66.3	77.4	95.1	155.6	184.3	
Throttling mode		EXV								
Refrigerant circuit		1	2	2	2	2	3	4	6	
Refrigerant		R410A								
Compressor	Type	Inverter Hermetic scroll								
	Qty	2	2	2	2	2	3	4	6	
Condenser	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	2	2	2	2	4	4	
	Fan type		Axial/Direct							
	Axial fan Power input	kW	1.5	2.2	2X1.1	2X1.5	2X1.5	2x2.2	4*1.5	4x2.2
	Air volume	m <sup>3</sup> /h	21000	27000	33000	42000	42000	54000	84000	108000
	Cooling mode range	°C	20~48°C							
	Heating mode range	°C	-10~21°C							
Ambient	°C	35								
Evaporator	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type		DIDW centrifugal							
	Fan power input	kW	4	4	5.5	5.5	7.5	11	15	18.5
	Air volume	m <sup>3</sup> /h	10900	12500	16000	19500	21000	26000	41000	54000
	Drive type		Belt							
	Design indoor temperature	°C	27/19							
	ESP	Pa	300	300	300	300	400	400	500	500
Filter		Aluminum net G3								
Noise	dB(A)	73	75	74	75	75	79	81	82	
Refrigerant charge		kg	2x7.5	2x8.5	2x10.5	15+8.5	4x7.5	2x17	3x14	4x14
Sizes	Length	mm	2308	2308	2878	2878	3626	3626	4690	5660
	Width	mm	1650	1650	2140	2270	2200	2200	2330	2330
	Height	mm	1478	1478	1964	1964	2047	2047	2055	2427
Weight		kg	830	860	1160	1350	1710	1850	2560	2860

# Specifications

## Inverter Type T3

Models		TRFV16ZAT	TRFV22ZAT	TRFV27ZAT	TRFV32ZAT	TRFV40ZAT	TRFV45ZAT	TRFV54ZAT	TRFV63ZAT	
Cooling capacity	kW	15.8	21.6	27.2	32.1	40	45	54	63	
Heating capacity	kW	18.4	26.5	33.3	37.7	48.7	54.3	64	75.4	
Energy control	%	30~100%	30~100%	30~100%	30~100%	30~100%	30~100%	30~100%	15~100%	
Power supply		380V 3Ph~50Hz								
Cooling mode Power input	kW	7.3	10.3	12.8	15.3	19.5	21.9	26.3	30.6	
Heating mode Power input	kW	5.1	8.2	10.4	11.3	15.6	18	21	24.8	
Starting Current	A	63	63	74	76	168	186	175	199	
Throttling mode		EXV								
Refrigerant circuit		1	1	1	1	1	1	1	2	
Refrigerant		R410A								
Compressor	Type	Inverter Hermetic scroll								
	Qty	1	1	1	1	1	1	1	2	
Condenser	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type	Axial/Direct								
	Axial fan Power input	kW	0.37	0.55	0.75	0.75	1.1	1.5	1.5	2.2
	Air volume	m <sup>3</sup> /h	7800	9000	12600	12600	16500	21000	21000	27000
	Cooling mode range	°C	20~56							
	Heating mode range	°C	-10~21							
	Standard ambient	°C	35/24							
Evaporator	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type	-	DIDW centrifugal							
	Fan power input	kW	0.45	1.1	1.5	2.2	3	3	4	4
	Air volume	m <sup>3</sup> /h	3400	4100	5200	6300	7600	8500	10900	12500
	Drive type	-	Direct	Belt						
	Design indoor temperature	°C	27/19.5							
	ESP	Pa	100	200	200	250	250	250	300	300
Filter	-	Aluminum net								
Noise	dB(A)	68	71	72	72	73	73	73	75	
Refrigerant charge	kg	4.3	2x3.1	2x3.1	2x4.3	4.3+7.5	4.3+8.5	2x7.5	2x8.5	
Sizes	Length	mm	1498	2028	2028	2028	2278	2278	2308	2308
	Width	mm	1100	1245	1245	1245	1470	1470	1650	1650
	Height	mm	1095	1170	1170	1170	1167	1167	1478	1478
Weight	kg	290	420	480	500	750	770	830	860	

Remarks: Damper install on site

# Specifications

## Inverter Type T3

Models		TRFV81ZAT	TRFV94ZAT	TRFV108ZAT	TRFV134ZAT	TRFV167ZAT	TRFV200ZAT	TRFV270ZAT	
Cooling capacity	kW	81	94	108	134	167	203	268	
Heating capacity	kW	96.2	113.2	128.3	159.2	198.4	241	318	
Energy control	%	15~100%	15~100%	15~100%	10~100%	10~100%	8~100%	5~100%	
Power supply		380V 3Ph~50Hz							
Cooling mode Power input	kW	39.5	45.8	52.6	65.3	81.4	89.8	129.8	
Heating mode Power input	kW	30.4	36.7	41.7	51.5	64.8	82.9	100	
Starting Current	A	197	266	305.08	378.74	472.12	520.84	752.84	
Throttling mode		EXV							
Refrigerant circuit		2	2	2	3	3	4	6	
Refrigerant		R410A							
Compressor	Type	Inverter Hermetic scroll							
	Qty	2	2	2	3	3	4	6	
Condenser	Type	Copper tube-Hydrophilic fin							
	Qty	2	2	2	2	4	4	4	
	Fan type	Axial/Direct							
	Axial fan Power input	kW	2X1.1	2X1.5	2X1.5	2x2.2	4X1.1	4X1.5	4x2.2
	Air volume	m <sup>3</sup> /h	33000	42000	42000	54000	66000	84000	108000
	Cooling mode range	°C	20~56						
	Heating mode range	°C	-10~21						
	Standard ambient	°C	35/24						
Evaporator	Type	Copper tube-Hydrophilic fin							
	Qty	1	1	1	1	1	1	1	
	Fan type	-	DIDW centrifugal						
	Fan power input	kW	5.5	5.5	7.5	11	15	15	18.5
	Air volume	m <sup>3</sup> /h	16000	19500	21000	26000	32000	41000	54000
	Drive type	-	Belt						
	Design indoor temperature	°C	27/19.5						
	ESP	Pa	300	300	400	400	500	500	500
Filter	-	Aluminum net							
Noise	dB(A)	74	75	75	79	80	81	82	
Refrigerant charge	kg	3x7.5	17+8.5	2X14.5	2x17	3X14.5	3x17	4x17	
Sizes	Length	mm	2878	2878	3626	3626	4690	4690	5660
	Width	mm	2140	2270	2330	2330	2330	2330	2330
	Height	mm	1964	1964	2047	2047	2055	2055	2427
Weight	kg	1160	1350	1710	1850	2180	2560	2860	

Remarks: Damper install on site

# Specifications

## Fixed Frequency Type T1

Fixed-T1 RTP Models		TRF12ZA	TRF15ZA	TRF18ZA	TRF24ZA	TRF30ZA	TRF35ZA	TRF45ZA	TRF50ZA	TRF60ZA	
Cooling capacity	kW	12	15.2	17.5	24	30.3	35.6	44.5	50	60	
Heating capacity	kW	13.2	16.6	18.4	26.5	33.3	37.7	48.7	54.3	64	
Power supply		380V 3Ph~50Hz									
Cooling mode Power input	kW	4.1	5.3	5.5	8.8	11.3	12.3	17	19.5	22.8	
Heating mode Power input	kW	3.8	4.8	5.1	8.2	10.4	11.3	15.6	18	21	
Starting Current	A	48	62	63	63	74	76	168	186	175	
Throttling mode		Thermal Expansion Valve									
Refrigerant circuit		1	1	1	1	1	1	1	2	2	
Refrigerant		R410a									
Compressor	Type	Fixed Hermetic Scroll									
	Qty	1	1	1	1	1	1	1	2	2	
Condenser	Type	Copper tube-Hydrophilic fin									
	Qty	1	1	1	1	1	1	1	1	1	
	Fan type	Axial/Direct									
	Axial fan Power input	kW	0.25	0.37	0.37	0.55	0.75	0.75	1.1	1.5	1.5
	Air volume	m <sup>3</sup> /h	4600	7800	7800	9000	12600	12600	16500	21000	21000
	Cooling mode range	°C	20~48°C								
	Heating mode range	°C	-10~21°C								
	Standard ambient	°C	35/24								
Evaporator	Type	Copper tube-Hydrophilic fin									
	Qty	1	1	1	1	1	1	1	1	1	
	Fan type	DIDW Centrifugal									
	Fan power input	kW	0.32	0.37	0.45	1.1	1.5	2.2	3	3	4
	Air volume	m <sup>3</sup> /h	2100	2600	3400	4100	5200	6300	7600	8500	10900
	Drive type	-	Direct			Belt					
	Design indoor temperature	°C	27/19								
	ESP	Pa	100	100	100	200	200	250	250	250	300
	Filter	-	Aluminum net G3								
Noise	dB(A)	67	67	68	71	72	72	73	73	73	
Refrigerant Charge	kg	3.1	3.1	4.3	2x3.1	2x3.1	2x4.3	4.3+7.5	4.3+8.5	2x7.5	
Sizes	Length	mm	1410	1410	1410	1978	1978	1978	2268	2268	2298
	Width	mm	1100	1100	1100	1175	1175	1175	1440	1440	1650
	Height	mm	1095	1095	1095	1095	1095	1095	1167	1167	1400
Weight	kg	240	260	290	420	480	500	750	770	830	

Remarks: Damper install on site



# Specifications

## Fixed Frequency Type T1

Fixed-T1 RTP Models		TRF72ZA	TRF90ZA	TRF105ZA	TRF120ZA	TRF140ZA	TRF150ZA	TRF190ZA	TRF230ZA	TRF300ZA	
Cooling capacity	kW	70	90	105	120	140	149	186	226	298	
Heating capacity	kW	75.4	96.2	113.2	128.3	150	159.2	198.4	241	318	
Power supply		380V 3Ph~50Hz									
Cooling mode Power input	kW	26.7	32.9	39.7	45.1	55.7	55.1	69.9	88.5	106.7	
Heating mode Power input	kW	24.8	30.4	36.7	41.7	51.8	51.5	64.8	82.9	100	
Starting Current	A	199	197	266	218	252	323	232	330	415	
Throttling mode		Thermal Expansion Valve									
Refrigerant circuit		2	2	3	2	2	2	3	3	4	
Refrigerant		R410a									
Compressor	Type	Fixed Hermetic Scroll									
	Qty	2	2	3	2	2	2	3	3	4	
Condenser	Type	Copper tube-Hydrophilic fin									
	Qty	1	2	2	2	2	2	4	4	4	
	Fan type	Axial/Direct									
	Axial fan Power input	kW	2.2	2X1.1	2X1.5	2X1.5	2x2.2	2x2.2	4*1.1	4*1.5	4x2.2
	Air volume	m <sup>3</sup> /h	27000	33000	42000	42000	54000	54000	66000	84000	108000
	Cooling mode range	°C	20~48°C								
	Heating mode range	°C	-10~21°C								
	Standard ambient	°C	35/24								
Evaporator	Type	Copper tube-Hydrophilic fin									
	Qty	1	1	1	1	1	1	1	1	1	
	Fan type	DIDW Centrifugal									
	Fan power input	kW	4	5.5	5.5	7.5	11	11	15	15	18.5
	Air volume	m <sup>3</sup> /h	12500	16000	19500	21000	25000	26000	32000	41000	54000
	Drive type	-	Belt								
	Design indoor temperature	°C	27/19								
	ESP	Pa	300	300	300	400	400	400	500	500	500
	Filter	-	Aluminum net G3								
Noise	dB(A)	75	74	75	75	79	79	80	81	82	
Refrigerant Charge	kg	2x8.5	2x11.5	3x8.5	2x15	2x17	2x17	2x17+8.5	3x17	4x17	
Sizes	Length	mm	2298	2878	2878	3626	3626	3626	4690	4690	5660
	Width	mm	1650	2140	2270	2330	2330	2330	2330	2330	2330
	Height	mm	1400	1964	1964	2047	2047	2047	2055	2055	2427
Weight	kg	860	1160	1350	1710	1820	1850	2180	2560	2860	

Remarks: Damper install on site

# Specifications

## Fixed Frequency Type T3

Fixed RTP Models		TRF16ZAT	TRF22ZAT	TRF27ZAT	TRF32ZAT	TRF40ZAT	TRF45ZAT	TRF54ZAT	TRF63ZAT	
Cooling capacity	kW	15.8	21.6	27.2	32.1	40	45	54	63	
Heating capacity	kW	18.4	26.5	33.3	37.7	48.7	54.3	64	75.4	
Power supply		380V 3Ph~50Hz								
Cooling mode Power input	kW	7.3	10.3	12.8	15.3	19.5	21.9	26.3	30.6	
Heating mode Power input	kW	5.1	8.2	10.4	11.3	15.6	18	21	24.8	
Starting Current	A	63	63	74	76	168	186	175	199	
Throttling mode		Thermal Expansion Valve								
Refrigerant circuit		1	1	1	1	2	2	2	2	
Refrigerant		R410A								
Compressor	Type	Fixed Hermetic Scroll								
	Qty	1	1	1	1	2	2	2	2	
Condenser	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type	Axial/Direct								
	Axial fan Power input	kW	0.37	0.55	0.75	0.75	1.1	1.5	1.5	2.2
	Air volume	m <sup>3</sup> /h	7800	9000	12600	12600	16500	21000	21000	27000
	Cooling mode range	°C	20~56							
	Heating mode range	°C	-10~21							
	Standard ambient	°C	35/24							
Evaporator	Type	Copper tube-Hydrophilic fin								
	Qty	1	1	1	1	1	1	1	1	
	Fan type	DIDW Centrifugal								
	Fan power input	kW	0.45	1.1	1.5	2.2	3	3	4	4
	Air volume	m <sup>3</sup> /h	3400	4100	5200	6300	7600	8500	10900	12500
	Drive type	-	Direct	Belt						
	Design indoor temperature	°C	27/19							
	ESP	Pa	100	200	200	250	250	250	300	300
Filter	-	Aluminum net G3								
Noise	dB(A)	68	71	72	72	73	73	73	75	
Refrigerant Charge	kg	4.3	6	6.2	8.6	4.3+6	4.3+8.5	2x7.5	2x8.5	
Sizes	Length	mm	1498	2028	2028	2028	2278	2278	2308	2308
	Width	mm	1100	1245	1245	1245	1470	1470	1650	1650
	Height	mm	1095	1170	1170	1170	1167	1167	1478	1478
Weight	kg	290	420	480	500	750	770	830	860	

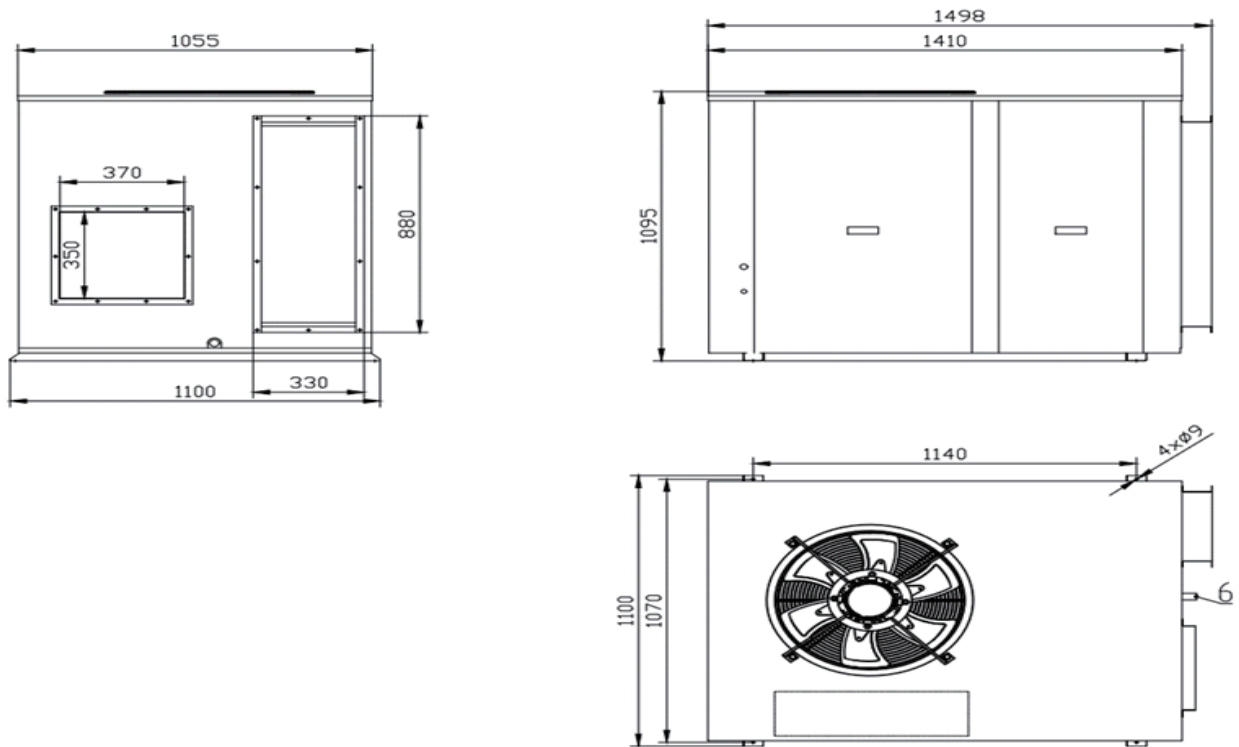
# Specifications

## Fixed Frequency Type T3

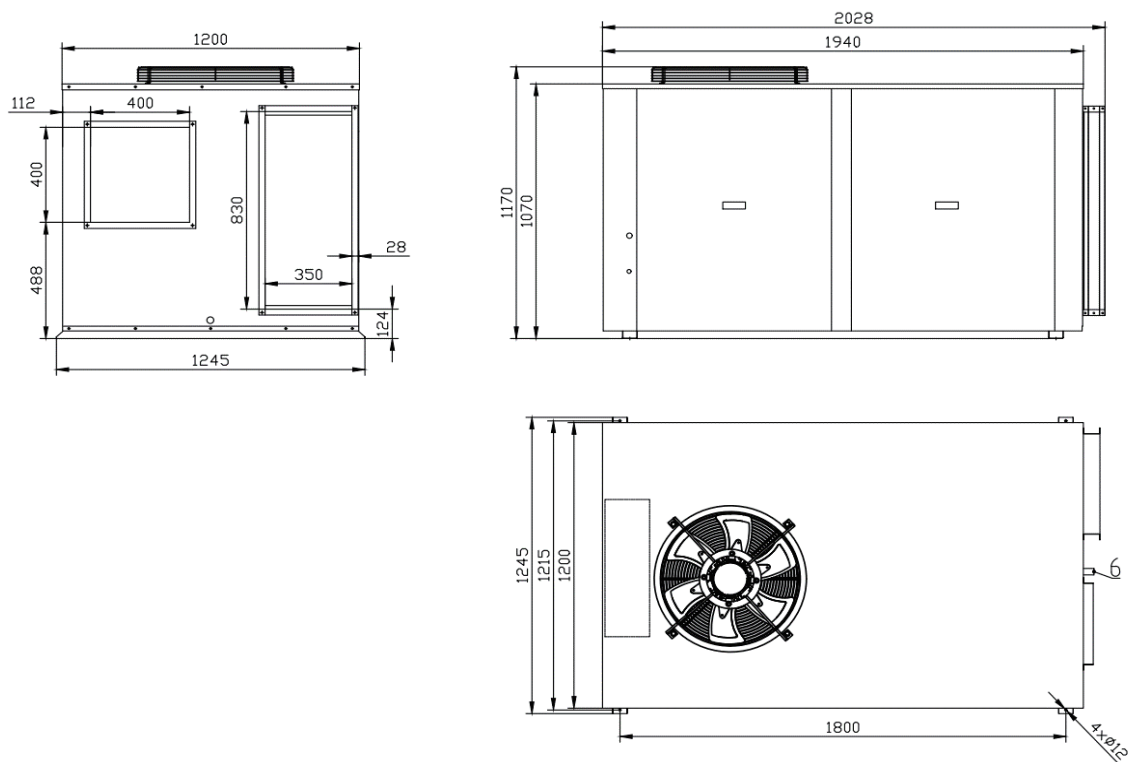
Fixed RTP Models		TRF81ZAT	TRF94ZAT	TRF108ZAT	TRF134ZAT	TRF167ZAT	TRF200ZAT	TRF270ZAT	
Cooling capacity	kW	81	95	110	140	167	203	278	
Heating capacity	kW	96.2	113.2	128.3	159.2	198.4	241	318	
Power supply		380V 3Ph~50Hz							
Cooling mode Power input	kW	39.5	45.8	52.6	65.3	81.4	89.8	129.8	
Heating mode Power input	kW	30.4	36.7	41.7	51.5	64.8	82.9	100	
Starting Current	A	197	266	218	323	232	330	415	
Throttling mode		Thermal Expansion Valve							
Refrigerant circuit		2	2	2	2	3	3	4	
Refrigerant		R410A							
Compressor	Type	Fixed Hermetic Scroll							
	Qty	2	2	2	2	3	3	4	
Condenser	Type	Copper tube-Hydrophilic fin							
	Qty	2	2	2	2	4	4	4	
	Fan type	Axial/Direct							
	Axial fan Power input	kW	2X1.1	2X1.5	2X1.5	2x2.2	4X1.1	4X1.5	4x2.2
	Air volume	m <sup>3</sup> /h	33000	42000	42000	54000	66000	84000	108000
	Cooling mode range	°C	20~56						
	Heating mode range	°C	-10~21						
	Standard ambient	°C	35/24						
Evaporator	Type	Copper tube-Hydrophilic fin							
	Qty	1	1	1	1	1	1	1	
	Fan type		DIDW Centrifugal						
	Fan power input	kW	5.5	5.5	7.5	11	15	15	18.5
	Air volume	m <sup>3</sup> /h	16000	19500	21000	26000	32000	41000	54000
	Drive type	-	Belt						
	Design indoor temperature	°C	27/19						
	ESP	Pa	300	300	400	400	500	500	500
Filter	-	Aluminum net G3							
Noise	dB(A)	74	75	75	79	80	81	82	
Refrigerant Charge	kg	3x7.5	17+8.5	2X14.5	2x17	3X14.5	3x17	4x17	
Sizes	Length	mm	2878	2878	3626	3626	4690	4690	5660
	Width	mm	2140	2270	2330	2330	2330	2330	2330
	Height	mm	1964	1964	2047	2047	2055	2055	2427
Weight	kg	1160	1350	1710	1850	2180	2560	2860	

# External dimensions

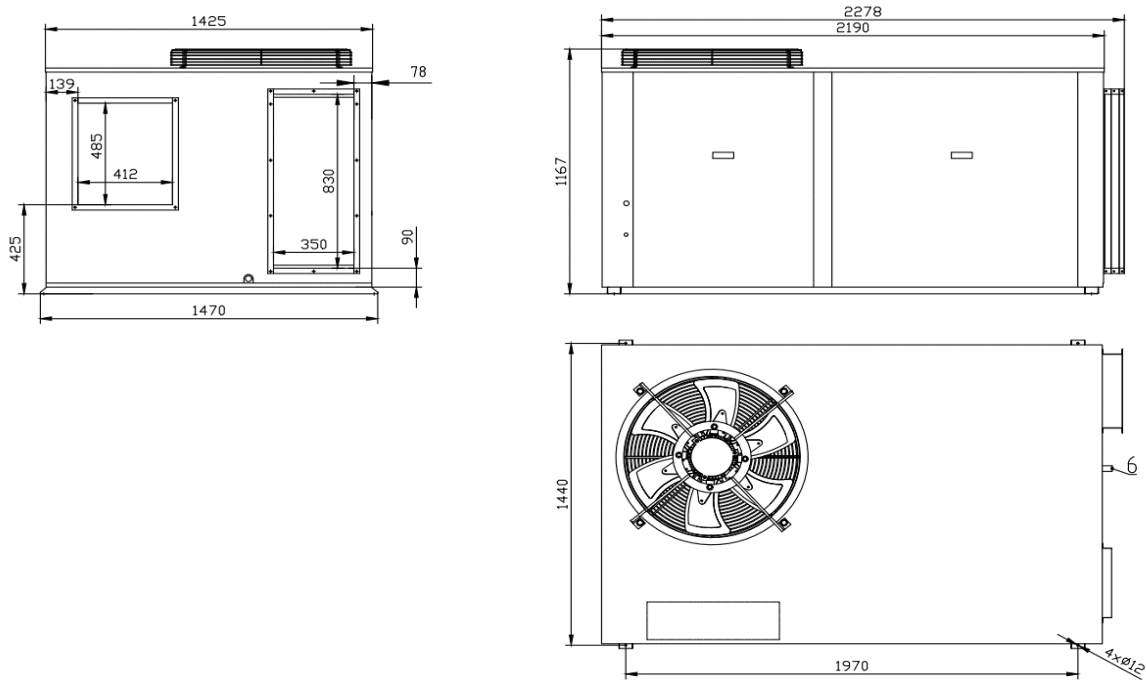
## External dimensions of TRF/TRFV 12/15/18ZA & 16ZAT



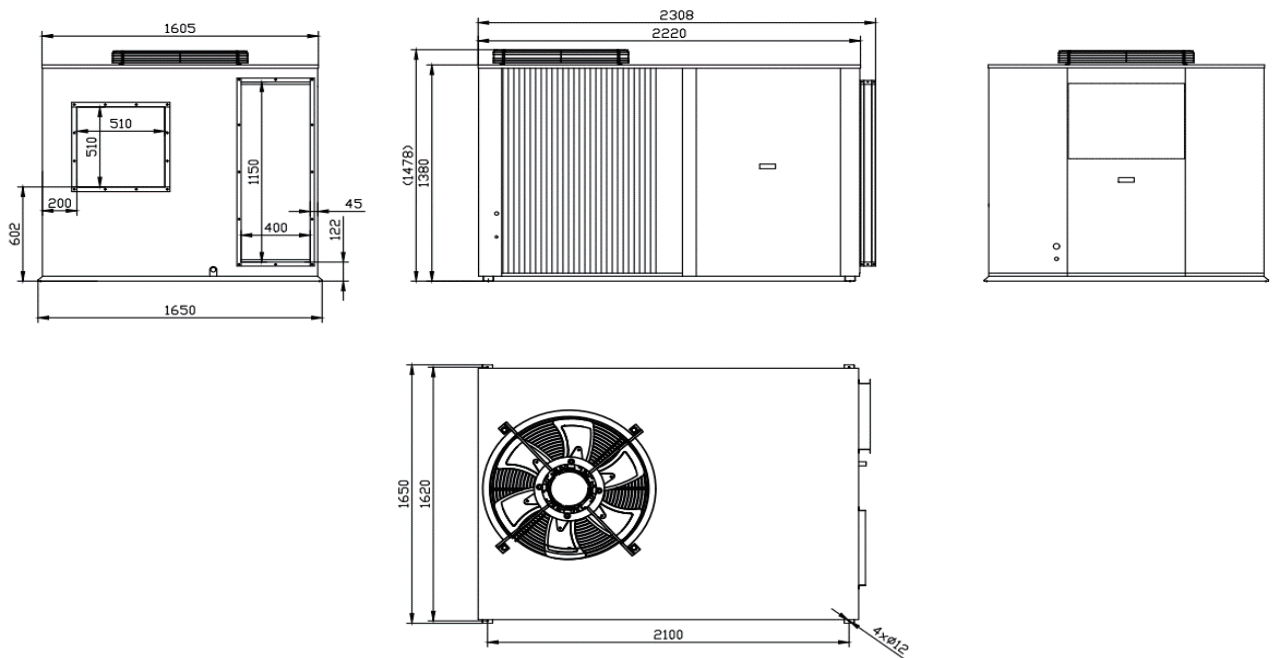
## External dimensions of TRF/TRFV 24/30/35ZA & 22/27/32ZAT



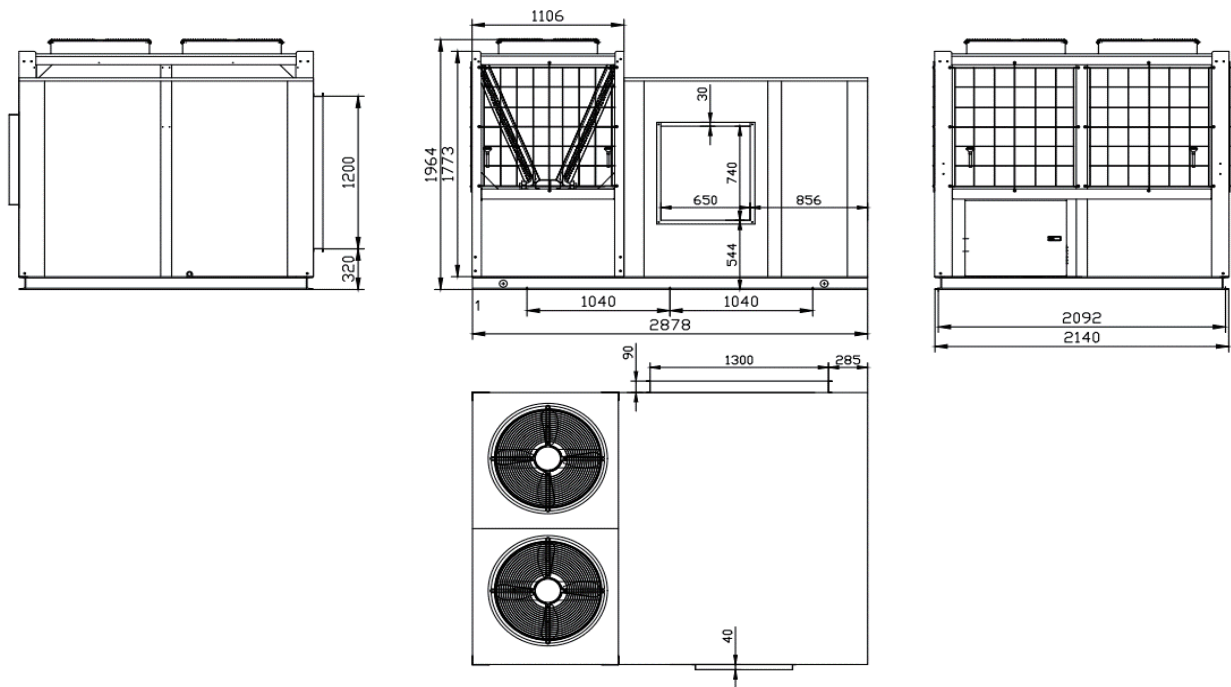
## External dimensions of TRF/TRFV 45/50ZA & 40/45ZAT



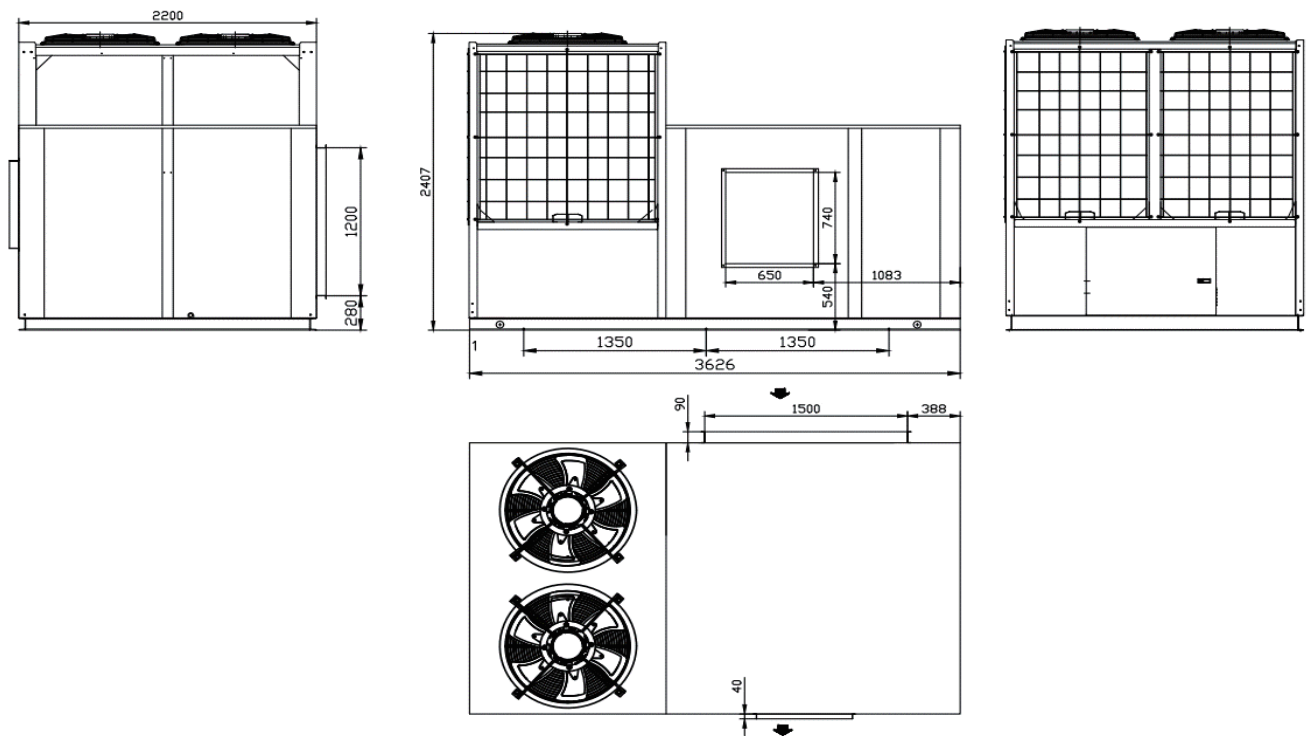
## External dimensions of TRF/TRFV 60/72ZA & 54/63ZAT



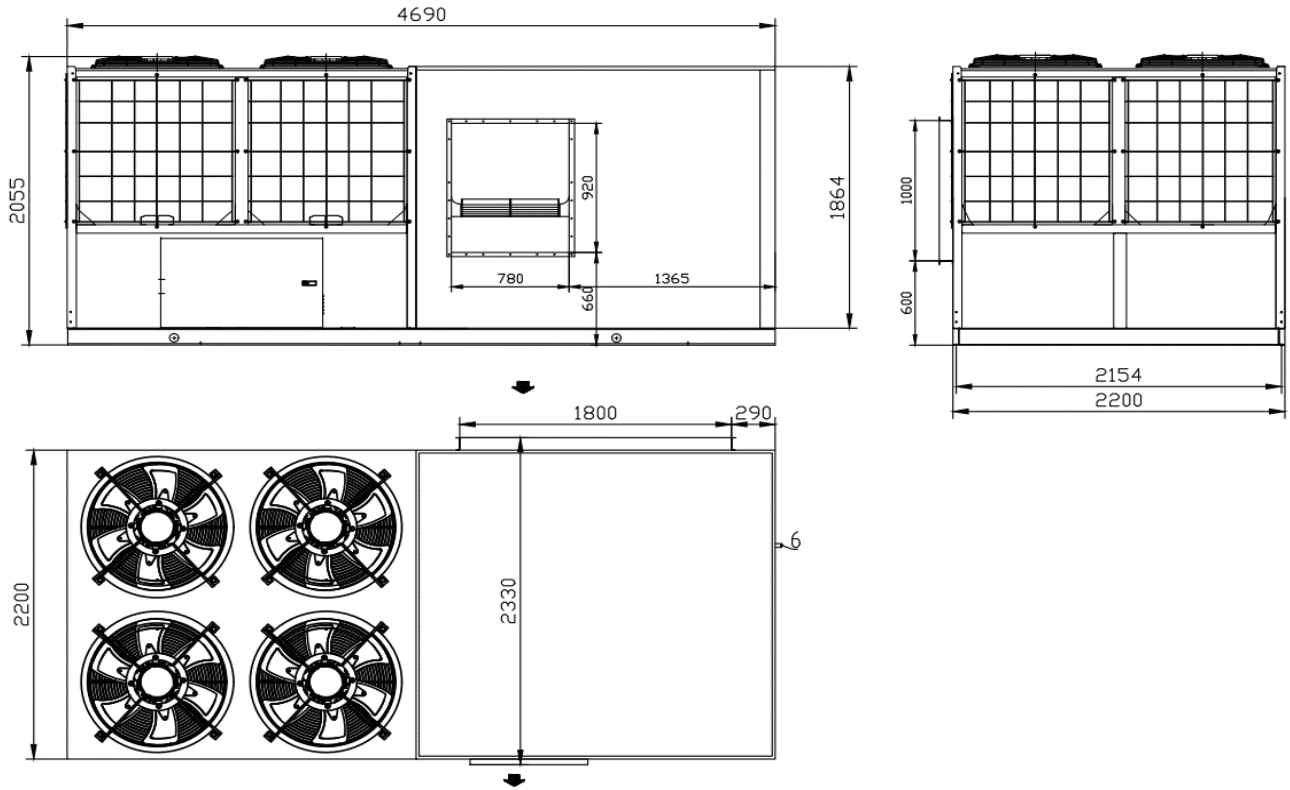
## External dimensions of TRF/TRFV 90/105ZA & 94ZAT



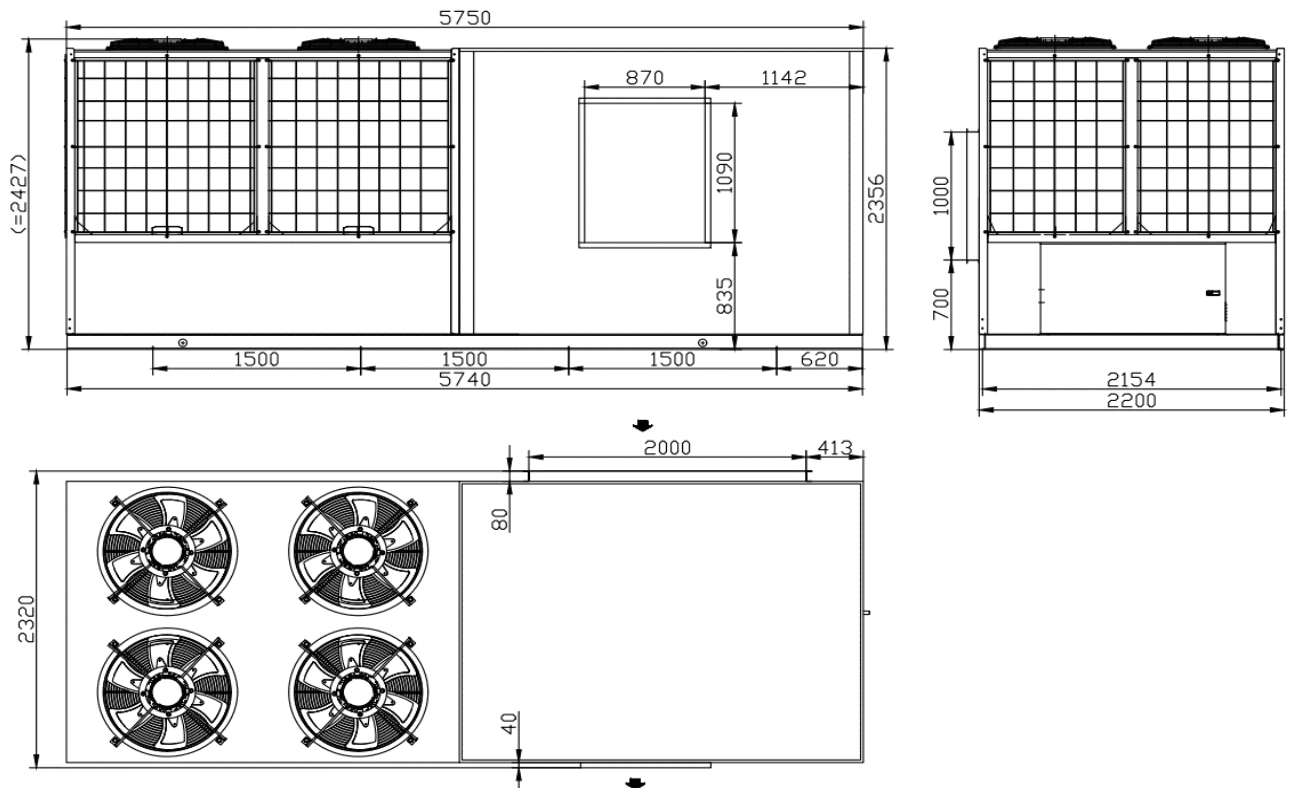
## External dimensions of TRF/TRFV 120/150ZA & 108/134ZAT



## External dimensions of TRF/TRFV 230ZA & 167/200ZAT



## External dimensions of TRF/TRFV 300ZA & 270ZAT





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Note: Due to constant improvement and innovation of TICA's products, the product models, specifications and parameters contained in this document are subject to change without prior notice.