

## PLC (LCD display and central supervision interface)

### Features:

1. 4.3" size of LCD display monitor presents information more clearly.
2. Through touch panel user can operate the unit more easily.
3. The RS-485/RS-422 communication ports can support long distance supervision.



### Functions:

1. Security measure: Allow user or maintainer or manufacturer to have each own limit of authority to operate and set up each parameter through related password.
2. Accurate control: PLC can automatically control each element after the required data has been built, and let the temperature and humidity control more precisely.
3. Display contents: The LCD monitor can show the room temperature (even humidity), running situation of compressor (or even heater, humidifier, fan and so on), date and time as well as abnormal items.
4. Setting functions: User can set up desired temperature and its range, modify date and time, reserve running period (weekly), change the user password, and other functions.
5. Energy saving: When the compressors are totally unloading (shut off), the cooling water pump and cooling tower fan motor also stop a few seconds later; before the compressor requires to start, the pump and fan motor of condenser would start in advance.
6. Remote operation: By providing remote ON/OFF terminals, user can do any setting before monitor. After that, people can directly operate in remote and directly know the running status by abnormal and running dry terminals.
7. Communication interfaces: PLC has two communication ports. One is RS-232C, which is used to communicate with touch panel; the other one is RS-422/RS-485, which is used for long distance control.
8. Restart after power failure: If the power failure occurs during the normal running period, the unit will restart automatically after the power is recovered.
9. History alarm records: If any abnormal event happens, the PLC may record the alarm item, happening time and date in order that customer can check it conveniently in the future.

### Safety Devices:

While any one of the following abnormal phenomena occurs, the unit will proceed with power failure protection and the PLC will indicate alarm message. The abnormal phenomena include 'high pressure alarm', 'low pressure alarm', 'compressor overload'(option), 'compressor overheat'(option), 'power phase reversal', 'fan motor overload', 'detecting sensor failure', 'water flow switch alarm'(for water-cooled type), 'heater overload', 'fire alarm', 'humidifier water level alarm' and so on.

For a multi-system unit, even if the uncommon alarm (except like power phase reversal, fan motor overload, detecting sensor failure and so on) occurs in one system, other systems still can operate continuously.

### Optional functions:

After adding relative devices, some functions such as voltage, current, pressure and so on can be displayed on the LCD panel.

### Others:

If any other function desired is not listed above, please notify us in advance and it will be charged case by case.

## Water -Cooled Package Air -Cooled Package Down-Blasting Type

*(Constant Temperature and Constant Humidity Control)*



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## Features:

### 1 PLC micro-computer touch control

- Adopting PLC micro-computer temperature & humidity control owns sensitive control and can indicate and adjust temperature.
- Applied temperature control boundary: 20~27±1°C; humidity control boundary: 45%~55%±5%(RH).
- Three minutes protection design and abnormal protection indication can prolong compressor life.
- TC-15~ 50NAL(F) adopt two stages of micro-computer temperature control that can adjust according to real loading to save energy.
- TC-15~ 50NAL(F) adopt dual systems that have independent refrigerant circuit. They own the characteristics that compressor running can select start sequence to average compressor running time and prolong compressor life.

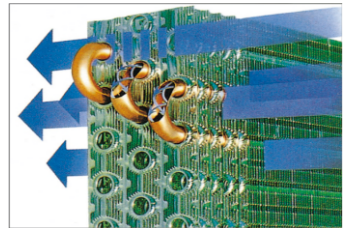
### 3 Typical fan design

Adopting the most progressive ringless fan rotor and streamline air discharge grill can get the high-efficiency air volume with static pressure. And the air will not produce the vortex phenomenon to minimize the friction sound of airflow.



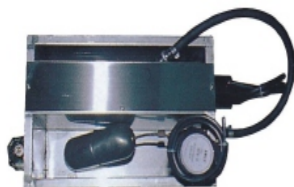
### 5 Great cooling capacity

The cooling capacity is great by using the new multi-fin and inner groove tube of the high efficiency heat exchanger.



### 7 Humidifier

Humidifier uses stainless steel case with corrosion resistance and has liquid level control switch and water supply float control switch.



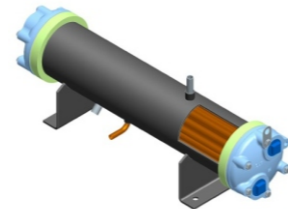
### 2 High efficiency compressor

Using the most advanced high efficiency scroll type compressor can operate, suck, compress, and exhaust in step to achieve low noise, low vibration, zero breakdown and energy saving effect. It can also make the system strong and cold and energy-saving.



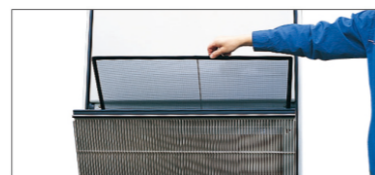
### 4 Anti-corrosive condenser design

Steel shell is treated by anti-corrosive coating and copper tube adopted by high efficiency Cu alloy possesses high anti-corrosive characteristics.



### 6 Excellent anti-dust and dehumidifying effect

High quality filter can remove dust completely and protect health as well as maintain easily. The dehumidifying effect is appropriate for island type climate and good for health.



### 8 Heater

Multi-stage stainless steel heater can provide various heating quantity according to the demand and have temperature switch with thermal fuse and use safely



## Specifications

Model	TC-3NAL	TC-5NAL	TC-5NALF	TC-8NAL	TC-8NALF	TC-10NAL	TC-10NALF
Power source	3ø 4W 380V 50Hz						
Cooling capacity (kW)	11.0	17.4	17.4	28.0	28.0	35.0	35.0
Condenser water (L/min)	39	60	60	100	100	128	128
Running current (A)	4.5	6.3	6.7	11.5	11.9	15.8	16.3
Total input (kW)	2.39	3.70	3.87	5.90	6.09	7.77	8.23
COP (w/w)	4.60	4.70	4.50	4.75	4.60	4.50	4.25
Maximum running current (A)	18.0	26.0	27.0	33.0	34.0	39.0	40.0
COMP.	Type	Rotary	Hermetic Scroll				
	Quantity	1					
Capacity step (%)	100,0						
Evaporator	Cross fin coil						
Condenser	Shell & tube type						
Fan type	Multi-blades	Dual suction multi-blades					
Output (kW)	0.105	0.40	0.40	0.75	0.75	0.75	0.75
Air volume (CMM)	32	40	40	72	72	90	90
External static pressure (pa)	0	0	50	0	50	0	50
Plenum chamber	Accessory						
Electrical heater	Optional						
Humidifier	Optional						
Thermostat	PLC display micon controller						
Starting type	Direct						
Safety devices	Coil anti-frozen protection, Compressor thermal protector, High & low pressure switch, Compressor 3 minutes protection, Fan motor overload switch, fusing plug, Reversal phase protection, Heater and Humidifier protector						
Condenser water pipe	PT 1B	PT 1 1/4B		PT 1 1/2B			
Draining pipe	PS 1B	PS 1B		PS 1B			
Refrigerant & Control	R-410A/Thermal expansion valve						
Heater	Capacity	2.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4
	kcal/hr	6,880	10,320	10,320	10,320	10,320	10,320
Humidifier	Capacity	1.0kw	1.0kw	1.0kw	2.0kw	2.0kw	3.0kw
	kg/hr	1.2	1.2	1.2	2.4	2.4	3.6
DIM.	Height (mm)	1,870	1,870	1,870	1,870	1,870	1,870
	Width (mm)	950	950	950	1,470	1,470	1,470
	Depth (mm)	510	510	510	510	510	510
Weight (kg)	175	215	215	313	313	340	340

#### Notes :

1. Cooling capacity is based on indoor air temperature 27°C DB/19.0°C WB, entering condenser water temperature 30°C and leaving condenser water temperature 35°C.
2. Applied temperature control boundary: 20~27±1°C; humidity control boundary: 45%~55%±5%(RH).
3. Maximum running current are based on when all compressors, heaters, humidifiers are started.
4. Owing to technological advances, the above specifications might be updated without early notice.
5. 1KW=860 kcal/hr; 1kcal/hr=3.968 Btu/hr.

# Water-Cooled Package

## (Constant Temperature & Humidity Control)

# R-410A

### ■ Specifications

Model	TC-15NAL	TC-15NALF	TC-20NAL	TC-20NALF	TC-30NALF	
Power source	3ø 4W 380V 50Hz					
Cooling capacity (kW)	52.5	52.5	70.0	70.0	105.0	
Condenser water (L/min)	190	190	257	257	380	
Running current (A)	22.2	23.0	31.5	32.5	48.3	
Total input (kW)	11.93	12.62	15.90	16.83	25.5	
COP (w/w)	4.40	4.16	4.40	4.16	4.12	
Maximum running current (A)	56.0	57.0	78.0	79.0	120.0	
COMP.	Type	Hermetic Scroll				
	Quantity	2				
Capacity step (%)	100,50,0					
Evaporator	Cross fin coil					
Condenser	Shell & tube type					
Fan type	Dual suction multi-blades					
Output (kW)	2.2	2.2	3.7	3.7	5.5	
Air volume (CMM)	135	135	180	180	270	
External static pressure (pa)	0	80	0	80	150	
Plenum chamber	Optional	—	Optional	—	—	
Electrical heater	Optional					
Humidifier	Optional					
Thermostat	PLC display micon controller					
Starting type	Sequence direct					
Safety devices	Coil anti-frozen protection ,Compressor thermal protector, High & low pressure switch , Compressor 3 minutes protection Fan motor overload switch , fusing plug, Reversal phase protection Heater and Humidifier protector					
Condenser water pipe	PT 2B		PT 2B		PT 2 1/2B	
Draining pipe	PS 1B		PS 1B		PS 1B	
Refrigerant	R-410A/Thermal expansion valve					
Heater	Capacity	4.5kw*4	4.5kw*4	6.0kw*4	6.0kw*4	9.0kw*4
	kcal/hr	15,840	15,840	20,640	20,640	30,960
Humidifier	Capacity	4.0kw	4.0kw	6.0kw	6.0kw	5.0kw*2
	kcal/hr	4.8	4.8	7.2	7.2	12
DIM.	Height (mm)	1,870+320(chamber)	1,870	1,870+320(chamber)	1,870	1,850
	Width (mm)	1,470	1,470	1,810	1,810	1,760
	Depth (mm)	720	720	795	795	1,050
Weight (kg)	500	500	615	615	1,010	

#### Notes:

- Cooling capacity is based on indoor air temperature 27°C DB/19.0°C WB, entering condenser water temperature 30°C and leaving condenser water temperature 35°C.
- Condenser water flow rate is based on entering condenser water temperature 32°C and leaving condenser water temperature 37°C for cooling tower use.
- Applied temperature control boundary: 20~27±1°C; humidity control boundary : 45%~55%±5%(RH).
- Maximum running current are based on when all compressors, heaters, humidifiers are started.
- Owing to technological advances, the above specifications might be updated without early notice.
- 1KW=860 kcal/hr; 1kcal/hr=3.968 Btu/hr.

### ■ Specifications

Model	TC-40NALF	TC-50NALF	
Power source	3ø 4W 380V 50Hz		
Cooling capacity (kW)	142.0	175.0	
Condenser water (L/min)	515	650	
Running current (A)	79.1	94.0	
Total input (kW)	35.06	43.6	
COP (w/w)	4.05	4.01	
Maximum running current (A)	173.0	188.0	
COMP.	Type	Hermetic Scroll	
	Quantity	3	
Capacity step (%)	100,66,33,0		
Evaporator	Cross fin coil		
Condenser	Shell & tube type		
Fan type	Dual suction multi-blades		
Output (kW)	7.5	11.0	
Air volume (CMM)	360	450	
External static pressure (pa)	200	200	
Plenum chamber	—	—	
Electrical heater	Optional		
Humidifier	Optional		
Thermostat	PLC display micon controller		
Starting type	Sequence direct		
Safety devices	Coil anti-frozen protection ,Compressor thermal protector, High & low pressure switch , Compressor 3 minutes protection Fan motor overload switch , fusing plug, Reversal phase protection Heater and Humidifier protector		
Condenser water pipe	PT 3B		
Draining pipe	PS 1 1/4B		
Refrigerant	R-410A/Thermal expansion valve		
Heater	Capacity	12.0kw*4	12.0kw*4
	kcal/hr	41,280	41,280
Humidifier	Capacity	6.0kw*2	6.0kw*2
	kcal/hr	14.4	14.4
DIM.	Height (mm)	1,876	
	Width (mm)	1,960	
	Depth (mm)	1,275	
Weight (kg)	1,210	1,280	

#### Notes:

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- Condenser water flow rate is based on entering condenser water temperature 32°C and leaving condenser water temperature 37°C for cooling tower use.
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- 1KW=860 kcal/hr; 1kcal/hr=3.968 Btu/hr.

# Water-Cooled Package (Constant Temperature & Humidity Control)

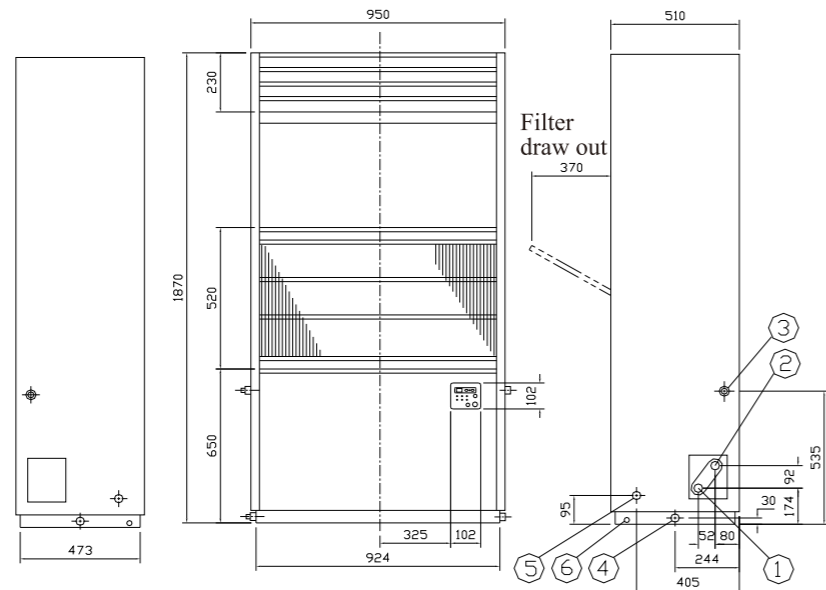


## ■ Dimensions(mm)

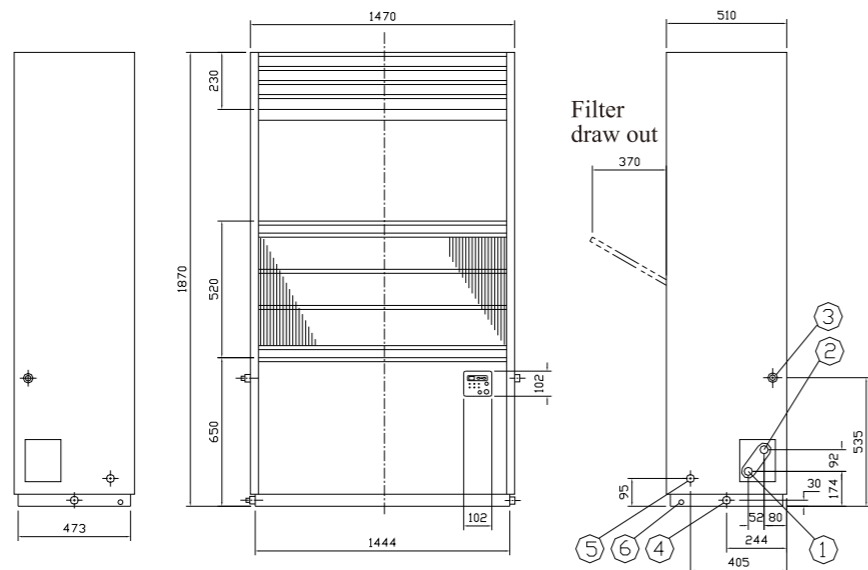
Symbols :

- ①. Condenser water inlet
- ②. Condenser water outlet
- ③. Upper draining pipe outlet
- ④. Lower draining pipe outlet
- ⑤. Power line inlet
- ⑥. Grounding terminal bolt

TC-3NAL  
TC-5NAL(F)



TC-8NAL(F)  
TC-10NAL(F)



## ■ Dimensions(mm)

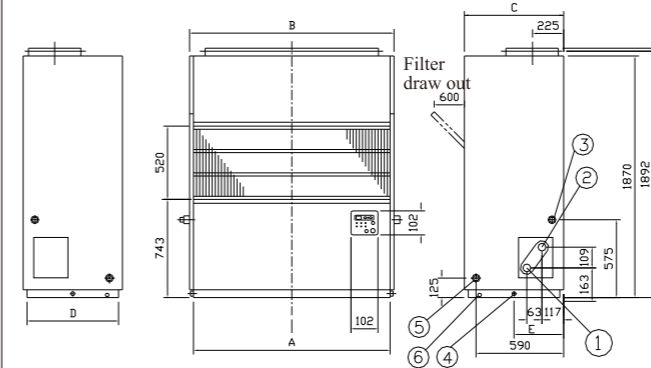
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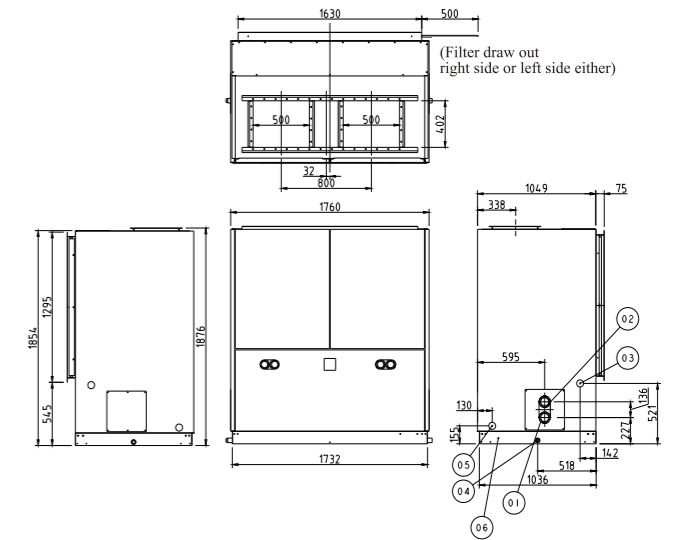


TC-15NAL(F)  
TC-20NAL(F)

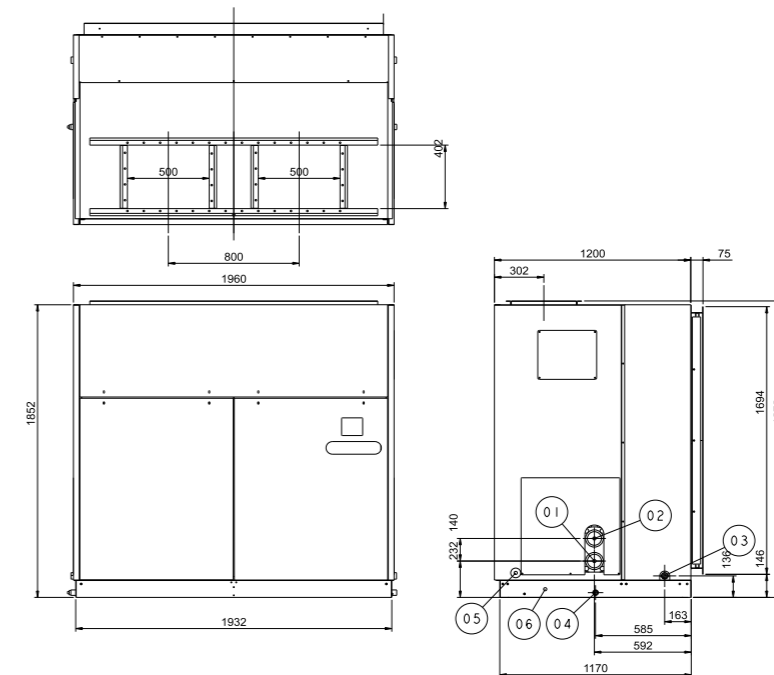
Model	dim.	A	B	C	D	E
TC-15NA(F)		1445	1470	720	678	350
TC-20NA(F)		1785	1810	795	753	388



TC-30NALF



TC-40,50NALF





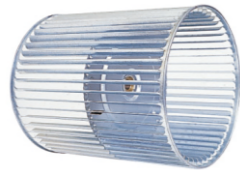
## Features:

### 1 PLC micro-computer touch control

- Adopting PLC micro-computer temperature & humidity control owns sensitive control and can indicate and adjust temperature.
- Applied temperature control boundary: 20~27±1°C; humidity control boundary: 45%~55%±5%(RH).
- Three minutes protection design and abnormal protection indication can prolong compressor life.
- TFP-15~30NAL(F) adopt two stages of micro-computer temperature control that can adjust according to real loading to save energy.
- TFP-15~30NAL(F) adopt dual systems that have independent refrigerant circuit. They own the characteristics that compressor running can select start sequence to average compressor running time and prolong compressor life.

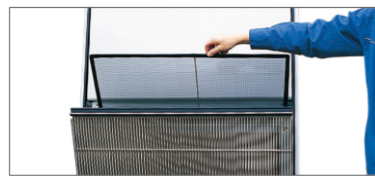
### 3 Typical fan design

Adopting the most progressive ringless fan rotor and streamline air discharge grill can get the high-efficiency air volume with static pressure. And the air will not produce the vortex phenomenon to minimize the friction sound of airflow.



### 5 Excellent anti-dust and dehumidifying effect

High quality filter can remove dust completely and protect health as well as maintain easily. The dehumidifying effect is appropriate for island type climate and good for health.



### 7 Humidifier

Humidifier uses stainless steel case with corrosion resistance and has liquid level control switch and water supply float control switch.

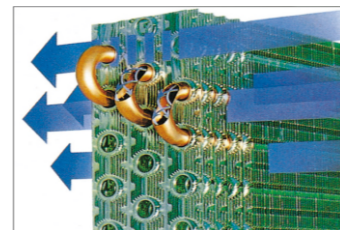
### 2 High efficiency compressor

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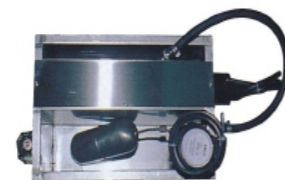
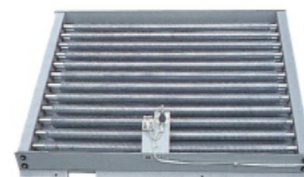
### 4 Great cooling capacity

The cooling capacity is great by using the new multi-fin and inner groove tube of the high efficiency heat exchanger.



### 6 Heater

Multi-stage stainless steel heater can provide various heating quantity according to the demand and have temperature switch with thermal fuse and use safely



## Specifications

		14.0	14.0	25.0	25.0	29.0	29.0	
Cooling capacity	(kW)	14.0	14.0	25.0	25.0	29.0	29.0	
Running current	(A)	7.4	7.7	12.6	13.3	16.5	17.3	
Power consumption	(kW)	4.14	4.27	6.66	7.10	8.79	9.21	
COP	(W/W)	3.38	3.28	3.75	3.52	3.30	3.15	
Maximum running current	(A)	27.0	28.0	34.0	35.0	40.0	41.0	
Indoor unit (single)	Model	TFP-5NAL	TFP-5NALF	TFP-8NAL	TFP-8NALF	TFP-10NALX	TFP-10NALF	
	Power source	3ø 4W 380V 50Hz						
	Evaporator	Cross fin coil						
	Fan	Type	Multi-blade					
		Output (kW)	0.4	0.4	0.75	0.75	0.75	0.75
		Air volume (CMM)	40	40	72	72	90	90
		EX. Static pressure (pa)	0	50	0	50	0	60
	Heater	Capacity	3.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4	3.0kw*4
		kcal/hr	10,320	10,320	10,320	10,320	10,320	10,320
	Humidifier	Capacity	1.0kw	1.0kw	2.0kw	2.0kw	3.0kw	3.0kw
		kg/hr	1.2	1.2	2.4	2.4	3.6	3.6
	Dim.	Height (mm)	1,870	1,870	1,870	1,870	1,870	1,870
		Width (mm)	950	950	1,470	1,470	1,470	1,470
		Depth (mm)	510	510	510	510	510	510
Weight (kg)		165	165	260	260	280	280	
Outdoor unit	Model	RP-5NAL		RP-8NAL		RP-10NAL		
	Power Source	3ø 4W 380 50Hz						
	Condenser	Cross fin coil						
	Comp.	Type	Hermetic Scroll					
		Quantity	1					
	Fan	Type	Propeller Fan					
		Output x Quantity (W)	84x2	84x2	355	355	355	355
	Dim.	Height (mm)	1,320	1,320	1,308	1,308	1,308	1,308
		Width (mm)	930	930	1,685	1,685	1,685	1,685
		Depth (mm)	370	370	630	630	630	630
Weight (kg)		130	130	210	210	230	230	
Power Providing pattern	Outdoor unit and indoor unit							
Thermostat	PLC display micon controller							
Refrigerant & Control	R-410A/Thermal expansion valve							
Safety devices	Coil anti-frozen protection , Compressor thermal protector, High & low pressure switch , Compressor 3 minutes protection Fan motor overload switch , fusing plug, Reversal phase protection Heater and Humidifier protector							
Piping	Gas side	ø 19.1	ø 19.1	ø 19.1x2	ø 19.1x2	ø 19.1x2	ø 19.1x2	
	Liquid side	ø 12.7	ø 12.7	ø 15.9x1	ø 15.9x1	ø 15.9x1	ø 15.9x1	
	Indoor unit draining	PS 1B						

- Notes:**
1. Cooling Capacity is based on indoor air temp. 27°C DB / 19°C WB , outdoor temp. 35°C DB/24°C WB.
  2. Cooling operation temperature limits: Indoor 21~32°C , Outdoor 10~43°C .
  3. Applied temperature control boundary: 20~27±1°C ; humidity control boundary : 45%~55%±5%(RH).
  4. Owing to technological advances, the above specifications might be updated without early notice.
  5. If the piping distance of refrigerant between indoor and outdoor unit is longer than 30m, additional design is required to protect the unit. Please notify our sales in advance.
  6. 1 KW=860 kcal/hr, 1 kcal/hr=3.968 Btu/hr.
  7. Maximum running current are based on when all compressors, heaters, humidifiers are started.

# Air-Cooled Package (Constant Temperature & Humidity Control)

# R-410A

## Specifications

Cooling capacity (kW)	50.0	50.0	58.0	58.0	
Running current (A)	26.5	27.3	33.5	35.0	
Power consumption (kW)	14.70	15.15	17.58	18.41	
COP (W/W)	3.40	3.30	3.30	3.15	
Maximum running current (A)	61.0	62.0	80.0	82.0	
Indoor unit (single)					
Model		TFP-15NAL	TFP-15NALF	TFP-20NAL	TFP-20NALF
Power source		3ø 4W 380V 50Hz			
Evaporator		Cross fin coil			
Fan	Type	Multi-blade			
	Output (kW)	2.2	2.2	3.7	3.7
	Air volume (CMM)	135	135	180	180
	EX. Static pressure (pa)	0	80	0	80
Heater	Capacity	4.5kw*4	4.5kw*4	6.0kw*4	6.0kw*4
	kcal/hr	15,840	15,840	20,640	20,640
Humidifier	Capacity	4.0kw	4.0kw	6.0kw	6.0kw
	kg/hr	4.8	4.8	7.2	7.2
Dim.	Height (mm)	1,870+320(chamber)	1,870	1,870+320(chamber)	1,870
	Width (mm)	1,810	1,810	1,810	1,810
	Depth (mm)	795	795	795	795
Weight (kg)	360	360	370	370	
Model		RP-8NAL x 2		RP-10NAL x 2	
Power Source		3ø 4W 380V 50Hz			
Condenser		Cross fin coil			
Comp.	Type	Hermetic Scroll			
	Quantity	2			
Fan	Type	Propeller Fan			
	Output x Quantity	355x 2	355x 2	355x 2	355x 2
Dim.	Height (mm)	1,308	1,308	1,308	1,308
	Width (mm)	1,685	1,685	1,685	1,685
	Depth (mm)	630	630	630	630
Weight (kg)	210x 2	210x 2	230x 2	230x 2	
Power Providing pattern		Outdoor unit and indoor unit			
Thermostat		PLC display micon controller			
Refrigerant & Control		R-410A/Thermal expansion valve			
Safety devices		Coil anti-frozen protection ,Compressor thermal protector, High & low pressure switch , Compressor 3 minutes protection Fan motor overload switch , fusing plug, Reversal phase protection Heater and Humidifier protector			
Piping	Gas side	ø 19.1x4		ø 19.1x4	
	Liquid side	ø 15.9x2		ø 15.9x2	
	Indoor unit draining	PS 1B			

- Notes:**
- Cooling Capacity is based on indoor air temp. 27°C DB / 19°C WB , outdoor temp. 35°C DB/24°C WB.
  - Cooling operation temperature limits: Indoor 21~32°C , Outdoor 10~43°C .
  - Applied temperature control boundary: 20~27±1°C ; humidity control boundary : 45%~55%±5%(RH).
  - Owing to technological advances, the above specifications might be updated without early notice.
  - If the piping distance of refrigerant between indoor and outdoor unit is longer than 30m, additional design is required to protect the unit. Please notify our sales in advance.
  - 1 KW=860 kcal/hr, 1 kcal/hr=3.968 Btu/hr.
  - Maximum running current are based on when all compressors, heaters, humidifiers are started.

## Specifications

Cooling capacity (kW)	88.0	
Running current (A)	59.0	
Power consumption (kW)	31.70	
COP (W/W)	2.78	
Maximum running current (A)	129.0	
Indoor unit (single)		
Model		TFP-30NALF
Power source		3ø 4W 380V 50Hz
Evaporator		Cross fin coil
Comp.	Type	Hermetic Scroll
	Quantity	1
Fan	Type	Multi-blade
	Output (kW)	5.5
	Air volume (CMM)	270
	EX. Static pressure (pa)	150
Heater	Capacity	9.0kw*4
	kcal/hr	30,960
Humidifier	Capacity	5.0kw*2
	kg/hr	12
Dim.	Height (mm)	1,876
	Width (mm)	1,760
	Depth (mm)	1,124
Weight (kg)	680	
Outdoor unit		
Model		RS-30NA
Power Source		3ø 4W 380 50Hz
Condenser		Cross fin coil
Fan	Type	Propeller Fan
	Output x Quantity (W )	790 x 2
Dim.	Height (mm)	1,417
	Width (mm)	2,000
	Depth (mm)	960
Weight (kg)	340	
Power Providing pattern		Outdoor unit and indoor unit
Thermostat		PLC display micon controller
Refrigerant & Control		R-410A/Thermal expansion valve
Safety devices		Coil anti-frozen protection ,Compressor thermal protector, High & low pressure switch , Compressor 3 minutes protection Fan motor overload switch , fusing plug, Reversal phase protection Heater and Humidifier protector
Piping	Gas side	ø 28.6 x 2
	Liquid side	ø 19.1 x 2
	Indoor unit draining	PS 1B

- Notes:**
- Cooling Capacity is based on indoor air temp. 27°C DB / 19°C WB , outdoor temp. 35°C DB/24°C WB.
  - Cooling operation temperature limits: Indoor 21~32°C , Outdoor 10~43°C .
  - Applied temperature control boundary: 20~27±1°C ; humidity control boundary : 45%~55%±5%(RH).
  - Owing to technological advances, the above specifications might be updated without early notice.
  - If the piping distance of refrigerant between indoor and outdoor unit is longer than 30m, additional design is required to protect the unit. Please notify our sales in advance.
  - 1 KW=860 kcal/hr, 1 kcal/hr=3.968 Btu/hr.
  - Maximum running current are based on when all compressors, heaters, humidifiers are started.



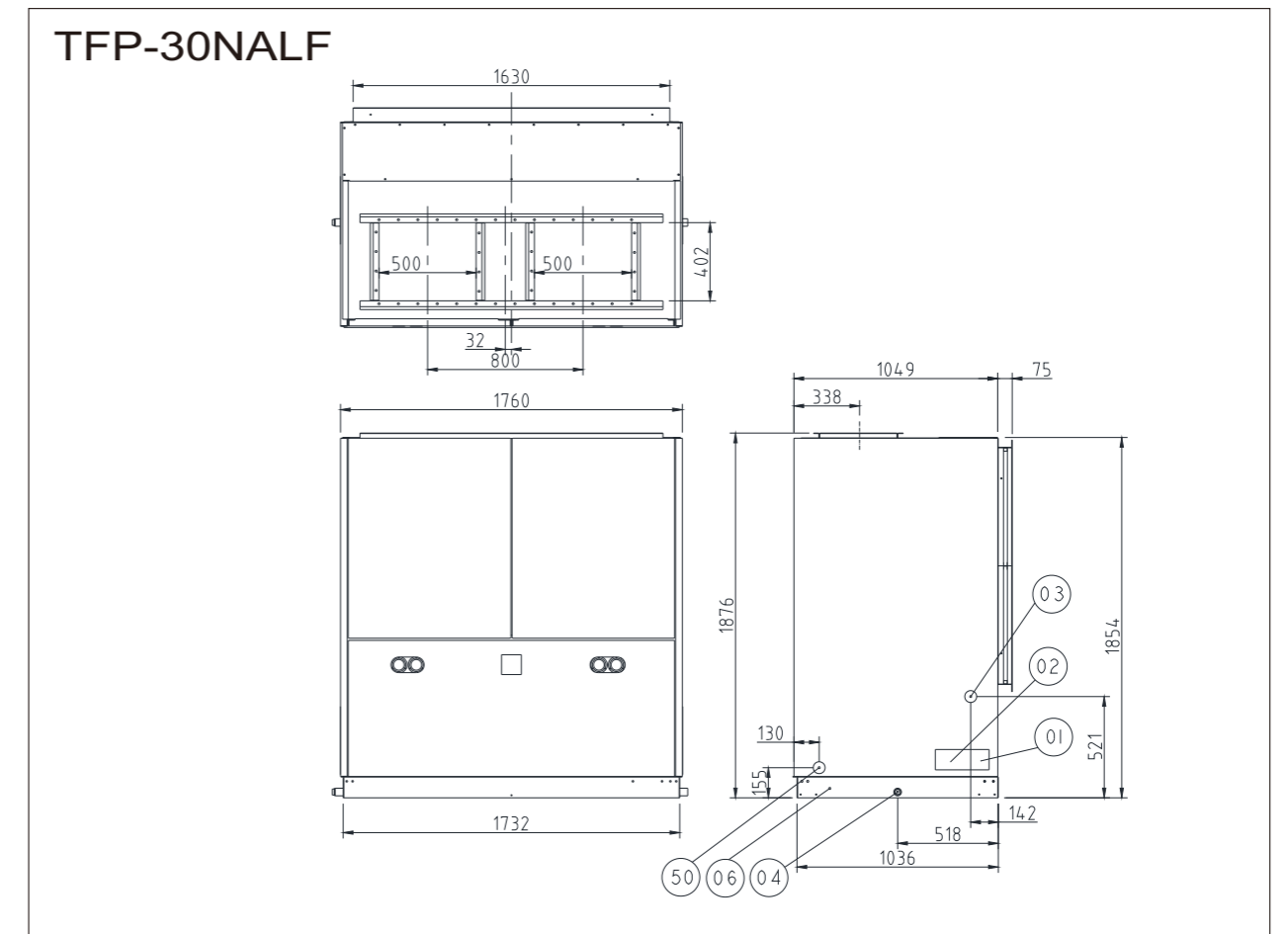
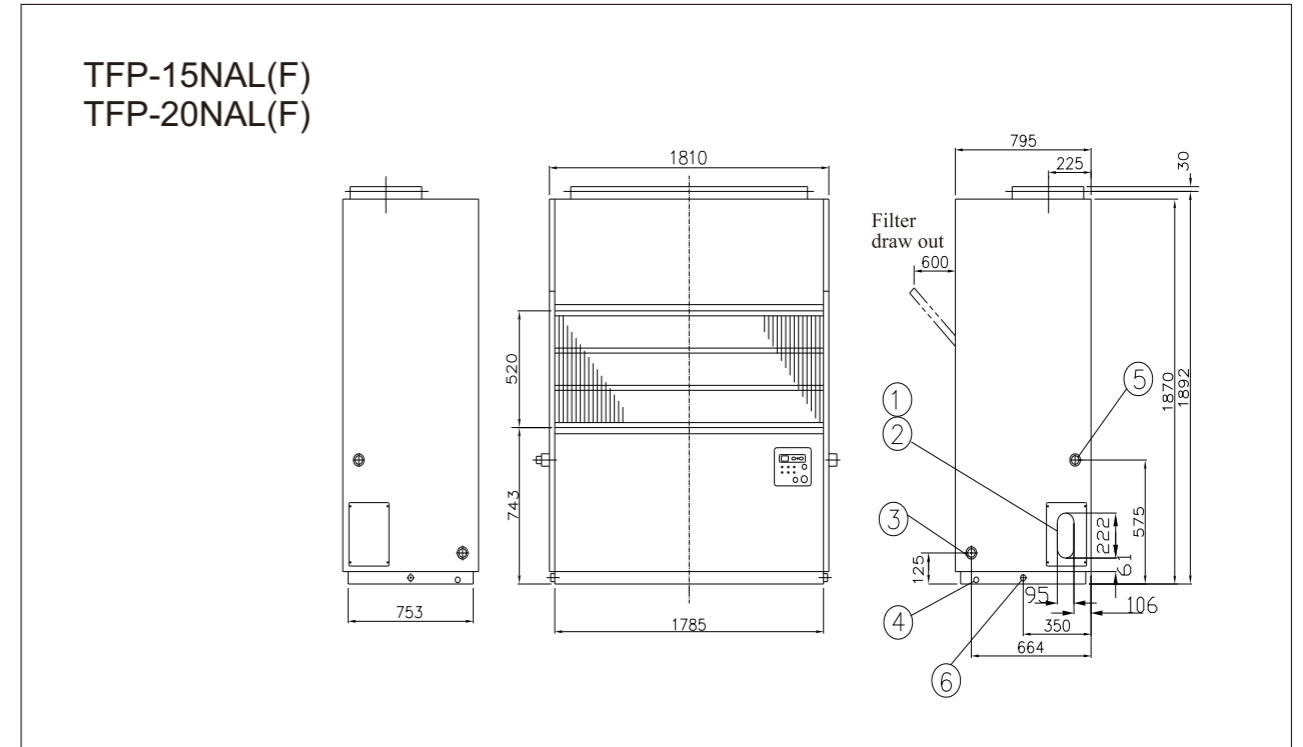
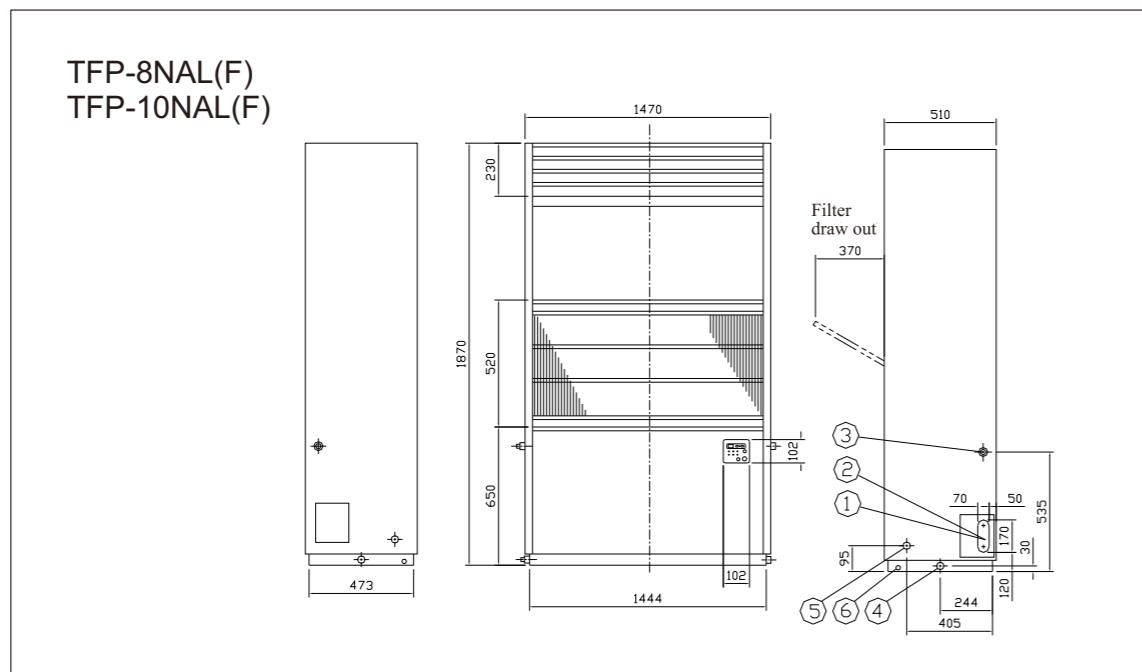
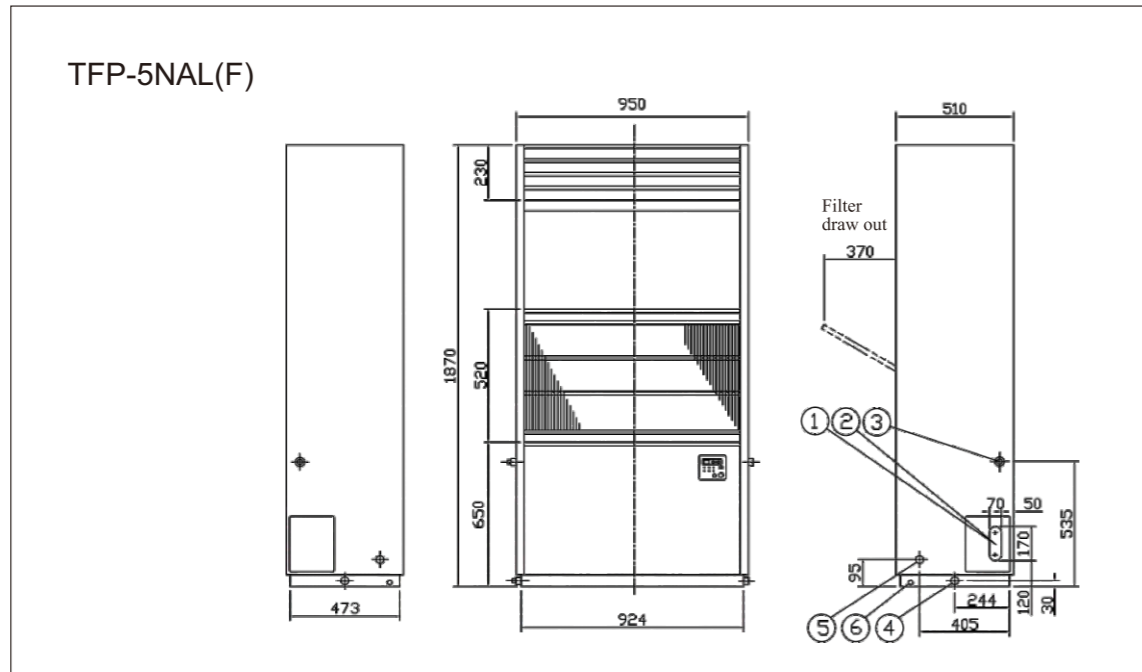
# Air-Cooled Package (Constant Temperature & Humidity Control)

# R-410A

## Indoor units dimensions(mm)

Symbols :

- ①.Liquid side pipe inlet
- ②.Gas side pipe inlet
- ③.Upper draining pipe
- ④.Lower draining pipe
- ⑤.Power line wiring inlet
- ⑥.Grounding terminal bolt

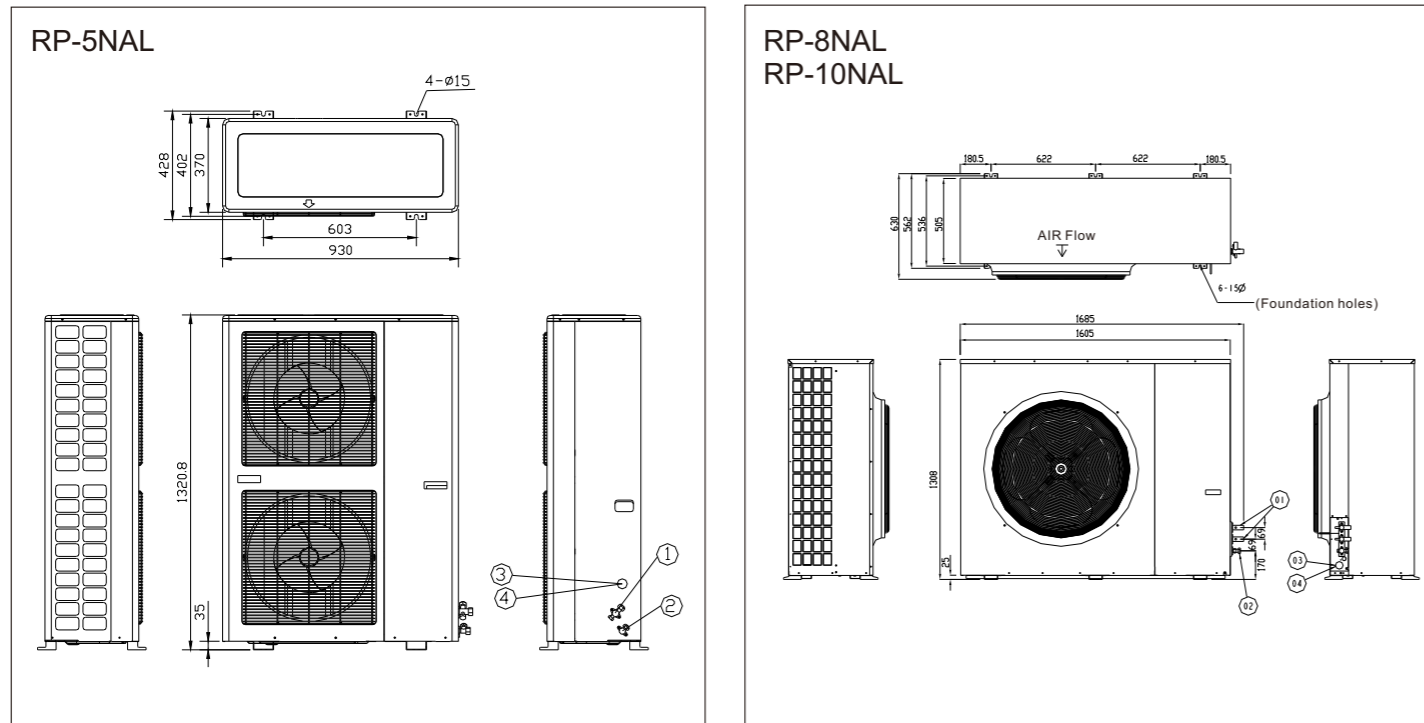


# Air-Cooled Package (Constant Temperature & Humidity Control)

# R-410A

## Outdoor units dimensions(mm)

- Symbols : ①.Gas side pipe connector  
②.Liquid side pipe connector  
③.Power line wiring inlet  
④.Grounding bolt terminal

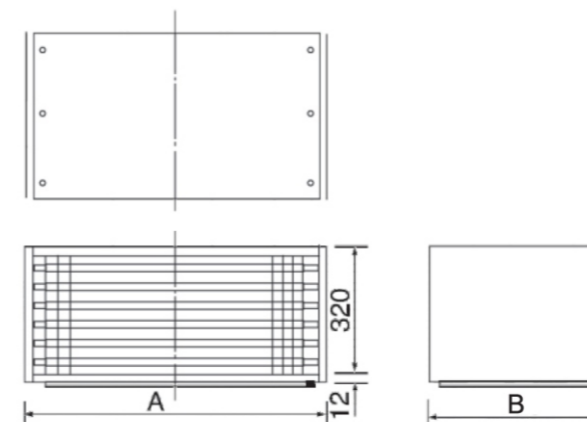
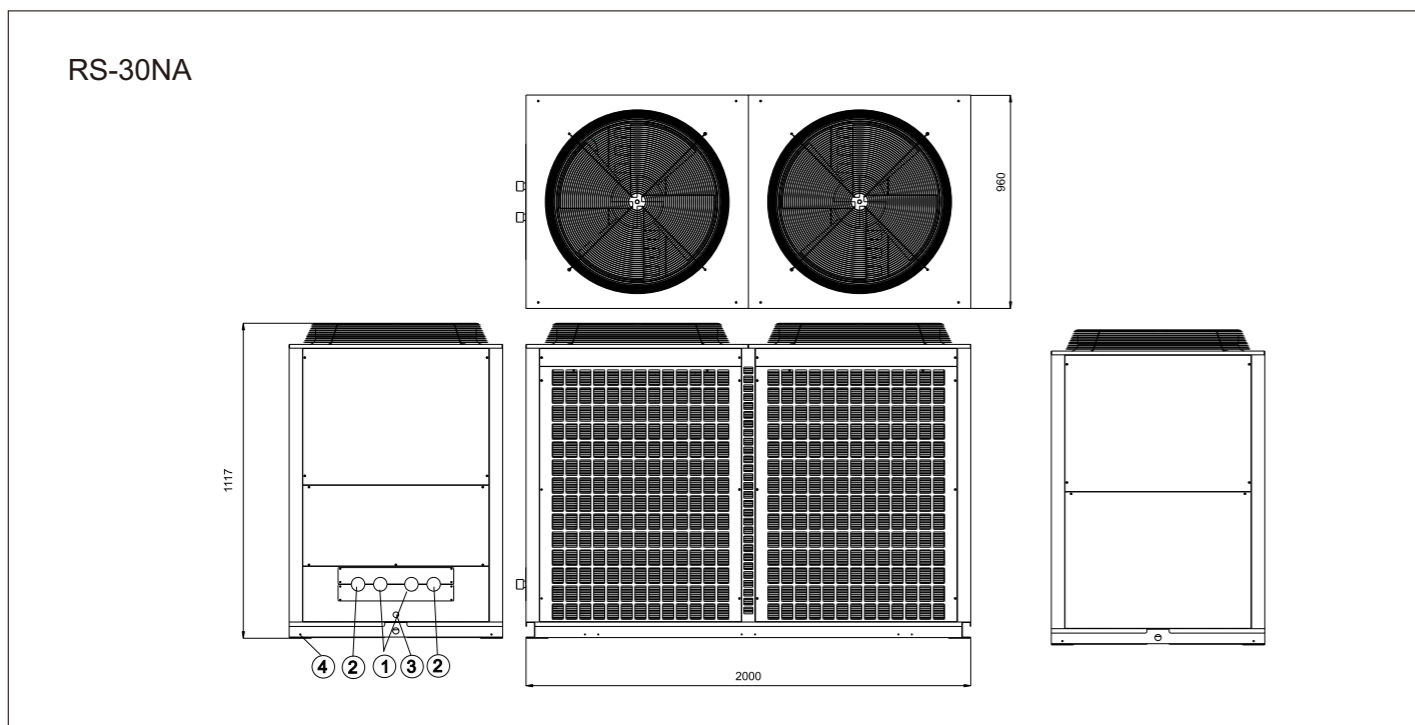


## Plenum Chamber (Optional for free blow type)



## Dimensions:

Model	Dimensions:			Fitting units
	Height	Width (A)	Depth (B)	
FA-15	342	1470	720	TC-15NAL
FA-20N	342	1810	795	TC-20NAL,TFP-15NAL,TFP-20NAL





# “Down-Blasting Type” Package (Constant Temperature & Humidity Control)

# R-410A

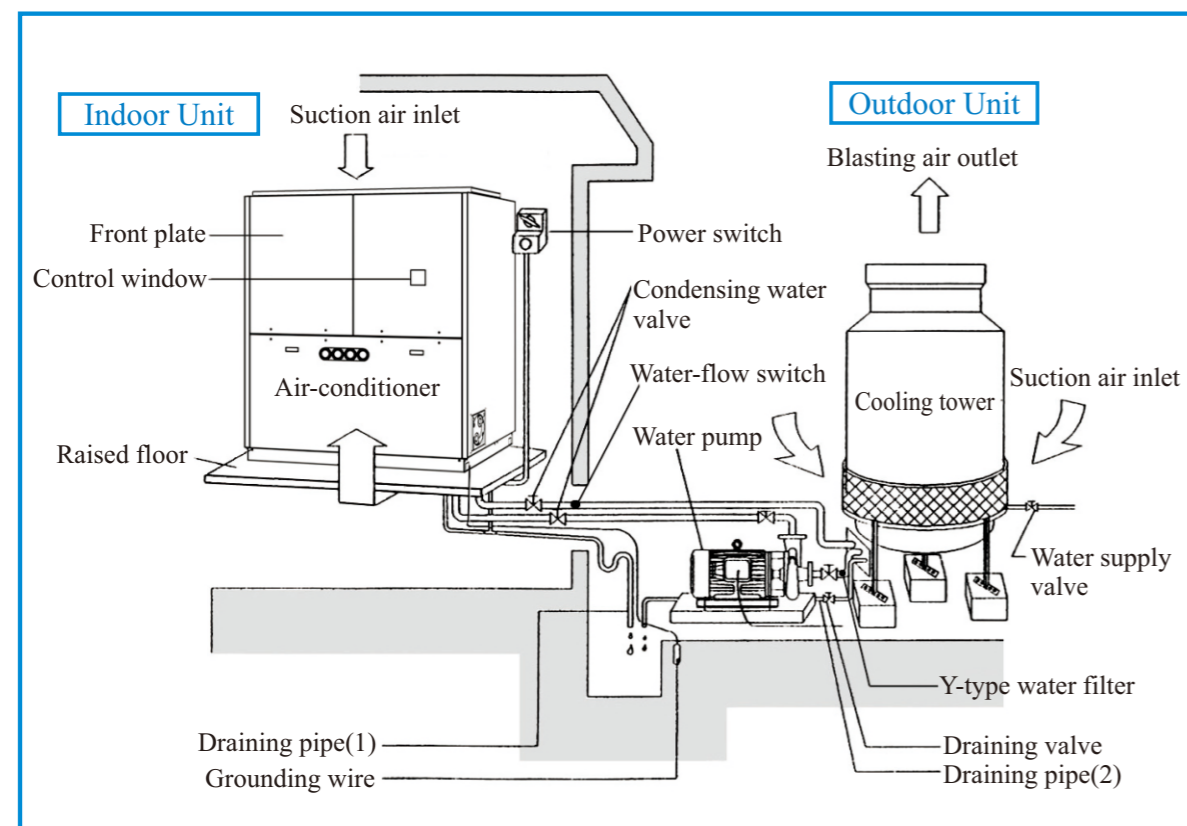
## Features:

- ▶ Designed for raised floor, with high S.H.F. and large air volume flow reat.
- ▶ Draining basins of evaporator and unit base are made of stainless material.
- ▶ Adopt LED-display controller to make operation easy and precise.
- ▶ Anti-frozen protection is set on the evaporator coil to avoid breakdown of system.
- ▶ Twin-compressor design and alternate starting sequence prolong the life of compressor.
- ▶ Air flow velocity passing through the evaporator is less than 2 m/s to avoid water being blown out.
- ▶ Constant temperature and humidity control.



Electronic thermostat	Three minutes protection	Abnormal indication	Humidifier (optional)	Electric heater (optional)	Twin system	Comp.sequence starting device	24 Hours timer setting	Temp.display

## Installation Illustration



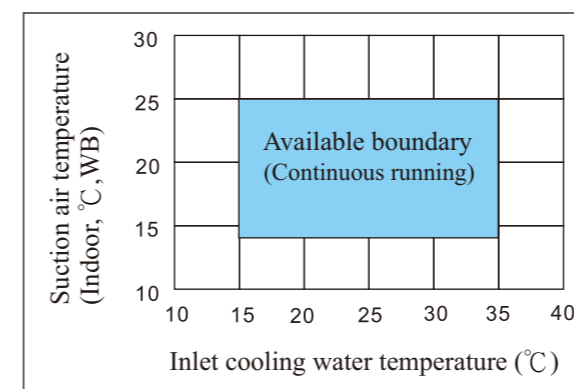
## Specifications

Model	TCC-5NALF	TCC-8NALF	TCC-10NALF	TCC-15NALF	TCC-20NALF	TCC-30NALF	
Power source	3ø 4W 380V 50Hz						
Cooling capacity (kW)	18.0	30.0	35.2	53.2	70.3	105.5	
Running current (A)	8.4	13.8	16.2	26.0	36.9	53.5	
Power consumption (kW)	4.38	7.17	8.6	13.8	18.2	28.1	
COP (W/W)	4.10	4.18	4.09	3.86	3.86	3.75	
Maximum running current (A)	30	35	39	60	83	125	
Compressor	Type	Scroll type					
	Quantity	1	2	2	2	2	
Fan	Type	Dual Suction Multi-Blades					
	Motor output(kW)	0.75	1.5	2.2	3.7	5.5	7.5
	Air volume (CMM)	70	110	140	210	280	420
	EX Static pressure (pa)	80	80	80	100	100	200
Evaporator type	Fin-tube coil type						
Condenser type	Shell and tube						
Refrigerant & control	R-410A / Thermal expansion valve						
Cooling water flow rate(L/min)	60	100	128	190	257	380	
Cooling head lose (mAq)	3.2	3.4	3.5	3.1	3.4	5.0	
Controller	PLC						
Starting type	Sequence direct						
Safety devices	Coil anti-frozen protection, High & low pressure switch, Compressor thermal protector, Overload switch, 3-minute restarting protection, Fan motor overload switch, Reversal phase protection, Fusing plug, Heater and humidifier protector						
Air filter	All-Aluminum foil						
Piping	Condenser	PT 1 1/2B	PT 1 1/2B	PT 2B	PT 2 1/2B		
	Drain pipe	PS 1B	PS 1B	PS 1B	PS 1B		
Dim.	HxWxD (mm)	1,762x1,320x854	1,911x1,621x942	1,855x1,857x1,200	2,153x2,200x1,367		
Heater	Capacity	3.0 kW x4		4.5 kW x4	6.0 kW x4	9.0 kW x4	
	kcal/hr	10,320		15,480	20,640	30,960	
Humidifier	Capacity	2.0 kW	3.0 kW	4.0 kW	6.0 kW	5.0 kW x2	
	kcal/hr	2.4	3.6	4.8	7.2	12	
Weight (kg)		370	440	520	600	720	1,195

## Notes :

1. Cooling capacity is based on indoor air temperature 27°C DB/19.0°C WB, entering condenser water temperature 30°C and leaving condenser water temperature 35°C.
2. Applied temperature control boundary: 20~27±1°C; humidity control boundary : 45%~55%±5%(RH).
3. Maximum running current are based on when all compressors, heaters, humidifiers are started.
4. Owing to technological advances, the above specifications might be updated without early notice.
5. 1KW=860 kcal/hr; 1kcal/hr=3.968 Btu/hr.

## Operation boundary



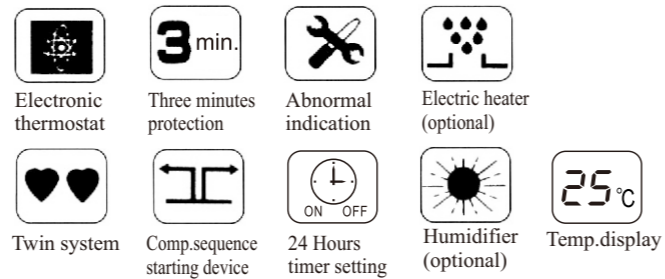
# “Down-Blasting Type” Package (Constant Temperature & Humidity Control)

## Features:

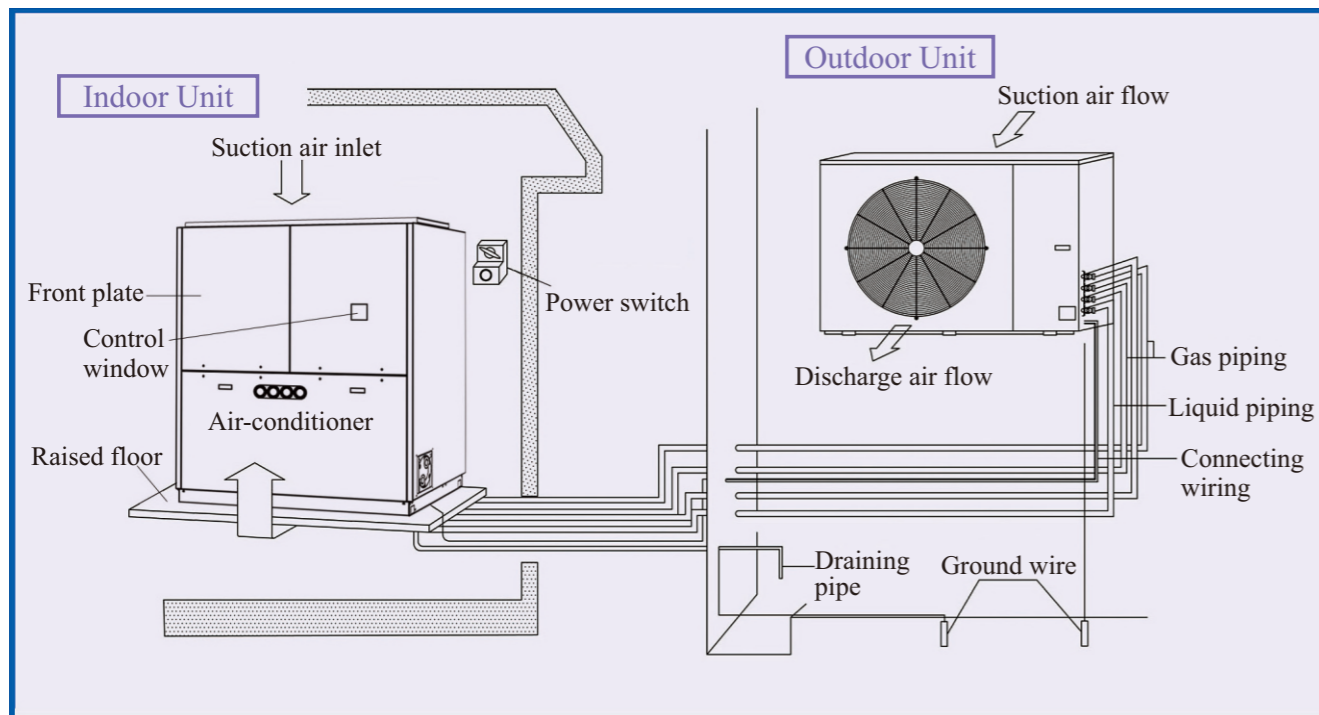
- ▶ Designed for raised floor, with high S.H.F. and large air volume flow rate.
- ▶ Draining basins of evaporator and unit base are made of stainless material.
- ▶ Precisely control makes constant temperature and humidity.
- ▶ Anti-frozen protection is set on the evaporator coil to avoid breakdown of the system.
- ▶ Twin-compressor design and alternate starting sequence prolong the life of compressor.
- ▶ Air flow velocity passing through the evaporator is less than 2 m/s to avoid water being blown out.



Outdoor



## Installation Illustration



## Specifications

Model	Indoor unit	TSC-5NALF	TSC-8NALF	TSC-10NALF	TSC-15NALF	TSC-20NALF	TSC-30NALF	
	Outdoor unit	RP-5NAL	RS-8NAL	RS-10NAL	RP-8NAL x2	RP-10NAL x2	RS-30NA	
Power source	3ø 4W 380V 50Hz							
Cooling capacity (kW)	15.0	26.4	32.6	50.0	65.1	97.6		
Running current (A)	11.8	16.3	20.5	30.3	41.0	66.2		
Power Input (kW)	5.26	9.27	11.1	17.2	22.3	36.6		
COP	2.85	2.85	2.94	2.90	2.92	2.67		
Maximum running current (A)	31.0	38.0	43.0	64.0	87.0	136.0		
Indoor Unit	Evaporator	Cross fin coil						
	Type	Multi-Blade						
	Motor(kW)	0.75	1.5	2.2	3.7	5.5	7.5	
	Air volume(CMM)	70	110	140	210	280	420	
	ESP ** (pa)	80	80	80	100	100	200	
	Dim. (HxWxD) (mm)	1,762x1,320x854	1,911x1,621x942		1,855x1,857x1200		2,153x2,200x1,367	
Outdoor Unit	Condenser	Cross fin coil						
	Type	Scroll x2						
	Quantity	1	2	2	2	2	2 (※)	
	Capacity Control(%)	0,100	0,50,100	0,50,100	0,50,100	0,50,100	0,50,100	
	Type x Quantity	Propeller Fan x2		Propeller Fan x1			Propeller Fan x2	
	Output	W	84+84	355	460	355	460	790+790
Dim. (HxWxD) (mm)	mm	1320x930x370	1,308x1,685x630			1,417x2,000x960		
Weight (kg)	kg	165	220	240	210	230	340	
Starting type	direct	Sequence direct						
Power supply wiring	Outdoor unit & indoor unit fan							
Refrigerant & Control	R-410A/ Thermal expansion valve							
Controller	LED							
Indoor unit draining pipe	PS 1B							
Heater	Capacity	3.0 kW x4		4.5 kW x4	6.0 kW x4	9.0 kW x4		
	kcal/hr	10,320		15,480	20,640	30,960		
Humidifier	Capacity	2.0 kW		3.0 kW	4.0kW	6.0 kW	5.0 kW x2	
	kcal/hr	2.4		3.6	4.8	7.2	12	
Safety devices	Coil anti-frozen protection · High & low pressure switch							
	Compressor thermal protector & 3-minute protection							
	Indoor unit fan motor protection · Reversal phase protection							
Piping	Gas side	mm	ø19.1x1	ø19.1x2	ø19.1x2	ø19.1x4	ø19.1x4	ø28.6x2
	Liquid-side	mm	ø12.7x1	ø12.7x2	ø12.7x2	ø15.9x4	ø15.9x2	ø19.1x2

### Notes:

- Cooling Capacity is based on indoor air temp. 27°C DB / 19°C WB , outdoor temp. 35°C DB/24°C WB.
  - Cooling operation temperature limits: Indoor 21~32°C, Outdoor 10~43°C.
  - Applied temperature control boundary: 20~27±1°C; humidity control boundary : 45%~55%±5%(RH).
  - Owing to technological advances, the above specifications might be updated without early notice.
  - If the piping distance of refrigerant between indoor and outdoor unit is longer than 30m, additional design is required to protect the unit. Please notify our sales in advance.
  - 1 KW=860 kcal/hr, 1 kcal/hr=3.968 Btu/hr.
  - Maximum running current are based on when all compressors, heaters, humidifiers are started.
- ※: The compressors are placed in the indoor unit for model TSC-30NAF.

### Operation boundary

