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TICA Central Air Conditioner

Integrated Product Manual

T2001

Established in 1991

TICA is a professional enterprise specialized in R&D, manufacturing, sales and services of environment cleaning and thermal energy utilization.

TICA is a national high-tech enterprise, a single leading enterprise cultivated by the Ministry of Industry and Information Technology, a national brand cultivation enterprise of the Ministry of Industry and Information Technology, and a vice chairman member of China Refrigeration and Air-conditioning Industry Association. It has a national-recognized enterprise technology center, an enterprise academician workstation, and a post-doctoral research workstation. Its projects cover Beijing Bird's Nest Stadium, Water Cube, Wukesong Indoor Stadium, PetroChina, Sinopec, State Grid, Nanjing Panda, Hangzhou Xiaoshan International Airport, Hainan Airlines Group, Shangri-La Hotel, Manila Ocean Park, Abu Dhabi Al Muneera, SM City in Philippines and Unilever, etc.

TICA is also the outstanding provider of central air conditioners for China's subway networks and has successfully served nearly 60 key subway lines in major cities such as Beijing, Shanghai, Guangzhou, Shenzhen, Chengdu, Suzhou, Hangzhou and Tianjin. TICA is a professional supplier and service provider in China that specializes in system integration of clean environment. While for microelectronics, hospital operating rooms, biopharmaceutical industry and other professional purification areas, our market share has achieved over 40% in each.

TICA Quality For IAQ

TICA focuses on indoor air quality (IAQ) in clean environments. Product lines include return air purifiers, heat recovery ventilators, fresh air purifiers, air purifiers, as well as the clean air handling units and digital variable-capacity air handling units used in the professional purification field. Regarding core technology, TICA established an ISO class 1 super-clean environment integration system and won the first prize of CMIST.
TICA's product lines include modular chillers, VRF units, screw chillers, centrifugal chillers, and ORC low-temperature waste heat power generation systems. In 2015, TICA and United Technologies Corporation (UTC) established a global strategic joint venture cooperation relationship and acquired PureCycle, an ORC low-temperature power generation company owned by Pratt & Whitney under UTC. TICA obtained PureCycle trademarks and more than 100 patents and national copyrights. TICA's efficient centrifugal chillers, water-cooled screw chillers, and air-cooled screw chillers are manufactured with the technical license of Carrier under UTC.
TICA is characterized by excellent system integration capability. In the application of "Efficient Refrigeration System of Underground Railway Station", the integrated COP of the refrigeration room amounts to 6.0, and the research achievement reaches the international advanced level. In 2018, TICA merged and acquired an OFC central air conditioning enterprise **SMARDT**. TICA's excellent system integration capability and the **SMARDT** OFC water chillers help increase the integrated COP of the efficient equipment room to 6.7 to 7.0.
TICA---We're striving.

TICA aims to build itself into a world-leading system integration supplier and service provider that specializes in clean environment and thermal energy utilization.

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WATER-COOLED FLOODED SCREW CHILLER (R134a)

Nomenclature

TWSF 0109 . 1 D C 1 R

- R: With Heat Recovery (optional)
- 1: R134a
- C: Cooling Only
- D: Design Code
- 1: Number of compressors
- 0109: Specification
- TWSF: TICA Water-cooled Flooded Screw Chiller

- The double-screw compressor special for HFC-134a enables the unit to operate efficiently in both full-load and partial-load conditions.
- The flooded evaporator is equipped with advanced heat exchange tubes to improve heat transfer efficiency.
- The screw rotator reaches micron-level precision to ensure reliable performance.
- The embedded oil separator of the compressor is separate from that in the condenser.
- The multi-head and multi-circuit design enhances regulator performance and provides spare parts.
- With the slide valve for stepless regulation, a single compressor can precisely match 25% – 100% load changes.
- The EXV implements sensitive control, and boasts high efficiency in partial load.
- The microcomputer controller has robust functions and user-friendly GUI to simplify operation.
- The HFC-134a refrigerant is chlorine-free.
- The unit can run stably and produce low vibration and low noise.

High Efficiency Series

Model: TWSF-DC1			0110.1	0135.1	0150.1	0170.1	0200.1	0220.1	0240.1	0265.1	0280.2	0300.2
Cooling Capacity	RT		106	129	145	167	199	215	237	260	277	293
	10^4kcal/h		32	39	44	50	60	65	72	79	84	89
	kW		382	455	510	587	698	755	835	915	973	1030
	COP		5.90	5.91	5.93	5.93	5.87	5.90	5.92	5.90	5.97	6.06
Power Input(kW)			63	77	86	99	119	128	141	155	163	170
Running Current（A）			117	135	138	161	212	215	232	258	290	292
Max.Running Current（A）			214	245	245	280	363	363	398	433	490	490
Starter Current（A）			378	415	415	479	650	650	683	845	660	660
Power Supply			380V 3N~50Hz									
Refrigerant			R134a									
Energy Control			Stepless Control									
Compressor Quantity			1	1	1	1	1	1	1	1	2	2
Evaporator	Designed Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	64	78	88	101	120	130	144	157	167	177
	Water Pressure Drop	kPa	52	55	44	43	50	42	44	53	64	59
	Pipe Diameter DN		150	150	150	150	150	150	150	150	200	200
Condenser	Design Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	75	92	103	118	141	152	168	184	195	206
	Water Pressure Drop	kPa	50	50	50	49	49	49	48	49	59	58
	Pipe Diameter DN		150	150	150	150	200	200	200	200	200	200
Unit Dimension	Length	mm	3097	3097	3097	3097	3124	3124	3124	3124	4854	4854
	Width	mm	1530	1530	1530	1530	1660	1660	1660	1660	1670	1670
	Height	mm	1820	1820	1820	1820	1920	1920	1920	1920	2070	2070
Unit Weight	shipping Weight	kg	2800	3260	3300	3385	3805	3855	3990	4115	6528	6570
	Operating Weight	kg	2990	3450	3520	3635	4105	4155	4290	4415	6938	6980

Notes:

1. Nominal cooling capacity condition: Chilled water inlet/outlet temp is 12/7 ℃.Cooling water inlet/outlet temp is 30/35℃
2. If there is non-standard working conditions technical data please contact TICA each branch.
3. Start mode of max. starting current :Y-△
4. The allowable voltage fluctuation is ±10℃.
5. 1.6MPa and 2.0MPa water pressure drop for option.
6. TICA reserver the right to make changes to the above without notice.

Model: TWSF-DC1			0325.2	0350.2	0370.2	0390.2	0410.2	0430.2	0450.2	0465.2	0495.2	0510.2
Cooling Capacity	RT		316	340	367	392	409	425	441	461	486	507
	10^4kcal/h		95	103	111	119	124	129	133	139	147	153
	kW		1110	1197	1292	1379	1438	1495	1551	1620	1710	1782
	COP		6.00	6.03	6.01	6.05	6.04	6.10	6.08	6.07	6.09	6.08
Power Input(kW)			185	198	215	228	238	245	255	267	281	293
Running Current（A）			303	322	353	383	385	416	440	464	490	516
Max.Running Current（A）			525	560	644	685	685	726	761	796	831	866
Starter Current（A）			724	759	828	972	972	1013	1048	1081	1243	1278
Power Supply			380V 3N~50Hz									
Refrigerant			R134a									
Energy Control			Stepless Control									
Compressor Quantity			2	2	2	2	2	2	2	2	2	2
Evaporator	Designed Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	191	205	222	237	247	257	267	279	294	307
	Water Pressure Drop	kPa	57	52	66	65	60	57	63	63	63	62
	Pipe Diameter DN		200	200	200	200	200	200	200	200	200	200
Condenser	Design Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	223	239	259	276	288	299	311	325	342	357
	Water Pressure Drop	kPa	56	55	57	56	56	56	59	61	60	62
	Pipe Diameter DN		200	200	200	200	200	200	200	200	200	200
Unit Dimension	Length	mm	4854	4854	4854	4854	4854	4854	5024	5024	5024	5024
	Width	mm	1670	1670	1800	1800	1800	1800	1800	1800	1800	1800
	Height	mm	2070	2070	2250	2250	2250	2250	2250	2250	2250	2250
Unit Weight	shipping Weight	kg	6679	6771	7146	7204	7275	7388	7522	7644	7757	7820
	Operating Weight	kg	7109	7201	7596	7664	7755	7878	8132	8264	8477	8440

SPECIFICATIONS

Standard Efficiency Series

Model: TWSF-DC1			0109.1	0134.1	0149.1	0169.1	0199.1	0219.1	0239.1	0264.1	0279.2	0299.2
Cooling Capacity	RT		106	129	145	167	197	213	235	258	275	291
	10^4kcal/h		32	39	44	50	59	64	71	78	83	88
	kW		371	455	509	586	691	748	828	908	966	1023
	COP		5.80	5.83	5.85	5.80	5.81	5.84	5.83	5.82	5.82	5.85
Power Input(kW)			64	78	87	101	119	128	142	156	166	175
Running Current（A）			118	136	140	163	212	215	233	259	291	293
Max.Running Current（A）			214	245	245	280	363	363	398	433	490	490
Starter Current（A）			378	415	415	479	650	650	683	845	660	660
Power Supply			380V 3N~50Hz									
Refrigerant			R134a									
Energy Control			Stepless Control									
Compressor Quantity			1	1	1	1	1	1	1	1	2	2
Evaporator	Designed Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	64	78	88	101	119	129	142	156	166	176
	Water Pressure Drop	kPa	66	71	58	56	66	54	58	69	84	75
	Pipe Diameter DN		150	150	150	150	150	150	150	150	200	200
Condenser	Design Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	75	92	103	118	139	151	167	183	195	206
	Water Pressure Drop	kPa	64	65	66	64	64	64	63	64	76	76
	Pipe Diameter DN		150	150	150	150	200	200	200	200	200	200
Unit Dimension	Length	mm	3097	3097	3097	3097	3124	3124	3124	3124	4854	4854
	Width	mm	1530	1530	1530	1530	1660	1660	1660	1660	1670	1670
	Height	mm	1820	1820	1820	1820	1920	1920	1920	1920	2070	2070
Unit Weight	shipping Weight	kg	2770	3220	3250	3325	3735	3780	3905	4020	6428	6460
	Operating Weight	kg	2960	3410	3470	3575	4035	4080	4205	4320	6838	6870

Notes:

1. Nominal cooling capacity condition: Chilled water inlet/outlet temp is 12/7 ℃.Cooling water inlet/outlet temp is 30/35℃
2. If there is non-standard working conditions technical data please contact TICA each branch.
3. Start mode of max. starting current :Y-△
4. The allowable voltage fluctuation is ±10℃.
5. 1.6MPa and 2.0MPa water pressure drop for option.
6. TICA reserver the right to make changes to the above without notice.

Model: TWSF-DC1			0324.2	0349.2	0369.2	0389.2	0409.2	0429.2	0449.2	0464.2	0494.2	0509.2
Cooling Capacity	RT		314	338	367	391	408	425	441	460	486	506
	10^4kcal/h		95	102	111	118	123	129	133	139	147	153
	kW		1103	1190	1290	1375	1435	1495	1550	1618	1710	1780
	COP		5.84	5.86	5.84	5.85	5.88	5.86	5.85	5.84	5.86	5.87
Power Input(kW)			189	203	221	235	244	255	265	277	292	303
Running Current (A)			305	325	355	386	388	420	445	468	495	520
Max.Running Current (A)			525	560	644	685	685	726	761	796	831	866
Starter Current (A)			724	759	828	972	972	1013	1048	1081	1243	1278
Power Supply			380V 3N~50Hz									
Refrigerant			R134a									
Energy Control			Stepless Control									
Compressor Quantity			2	2	2	2	2	2	2	2	2	2
Evaporator	Designed Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	190	205	222	237	247	257	267	278	294	306
	Water Pressure Drop	kPa	73	68	86	85	78	75	83	83	82	80
	Pipe Diameter DN		200	200	200	200	200	200	200	200	200	200
Condenser	Design Water Pressure	MPa	1.0									
	Water Flow Rate	m^3/h	222	240	260	277	289	301	312	326	344	358
	Water Pressure Drop	kPa	72	72	75	73	73	74	72	73	73	72
	Pipe Diameter DN		200	200	200	200	200	200	200	200	200	200
Unit Dimension	Length	mm	4854	4854	4854	4854	4854	4854	5024	5024	5024	5024
	Width	mm	1670	1670	1800	1800	1800	1800	1800	1800	1800	1800
	Height	mm	2070	2070	2250	2250	2250	2250	2250	2250	2250	2250
Unit Weight	shipping Weight	kg	6564	6646	7016	7064	7130	7238	7362	7474	7582	7640
	Operating Weight	kg	6994	7076	7466	7524	7610	7728	7972	8094	8302	8260

WATER-COOLED SCROLL CHILLER (HEAT PUMP)

Nomenclature

TWS 20 M D C 4

- 4 — Refrigerant: R410A
- C — Feature code: C-Cooling only, W-Underground water type, G-Geothermal type
- D — Design code: D, E,……
- M — Modular unit
- 20 — Specification code: 20, 30, 40
- TWS — TICA Water-Cooled Scroll Chiller (Heat Pump)

- The high-efficiency compliant scroll compressor boasts small clearance and high efficiency.
- The high-efficiency shell-and-tube heat exchanger ensures that the unit runs efficiently.
- Cooling accessories come from international brand manufacturers, and boast reliable performance and high precision of control.
- Modular parts can be assembled flexibly, and installed and deployed easily.
- The advanced microcomputer control system provides perfect protection functions.
- The HFC-410A refrigerant is eco-friendly.

Performance Specifications of Cooling-only Unit

Model TWS-MDC4	Cooling capacity kW	Power input kW	Compressor quantity	Number of energy regulation levels	Shell-and-tube evaporator				Shell-and-tube condenser			
						Water flow m³/h	Water pressure drop kPa	Connection mode	Water pipe diameter	Water flow m³/h	Water pressure drop kPa	Connection mode
20	74.4	14.9	2	0-100%, 2 levels	DN50	12.8	39	Flexible clamp	DN65	16.0	24	Flexible clamp
30	112.2	22.4	2	0-100%, 2 levels	DN50	19.3	47		DN65	24.1	48	
40	146.3	29.2	2	0-100%, 2 levels	DN65	25.2	60		DN80	31.5	82	

Model TWS-MDC4	Compressor Type	Startup mode	Maximum running current A	Dimensions			Refrigeration system				Lubricant model	Weight	
				Length (mm)	Width (mm)	Height (mm)	Refrigerant	System quantity	Control mode	Charge amount kg		Shipping weight	Operating weight
20	Hermetic scroll compressor	Direct starting	48.0	1880	660	1380	R410A	2	EXV	12	RL32-3MAF	470	500
30			71.9	1880	660	1490		2		14.5		520	555
40			95.8	1880	740	1590		2		18		630	670

Notes:
1. The above data is obtained based on nominal conditions of the unit: inlet/outlet chilled water temperature 12/7°C; inlet/outlet cooling water temperature 30/35°C;
2. Power supply: 380V 3N-50Hz; allowable voltage fluctuation: ±10%;
3. If other related parameters of the unit are needed, contact the factory;
4. The specifications are subject to change due to product improvement without prior notice.

Performance Parameters of Water Source Heat Pump Unit (Underground Water)

Model TWS-MD W4	Cooling capacity kW	Heating capacity kW	Cooling power input kW	Heating power input kW	Compressor Qty	Number of energy regulation levels	Cold and hot water-side heat exchanger				Underground water-side heat exchanger			
							Water pipe diameter	Water flow m³/h	Water pressure drop kPa	Connection mode	Water pipe diameter	Water flow m³/h	Water pressure drop kPa	Connection mode
20	78.3	83.4	13.6	18.3	2	0-100%, 2 levels	DN50	13.5	40	Flexible clamp	DN65	8.1	7	Flexible clamp
30	116.5	127.0	20.3	28.2	2	0-100%, 2 levels	DN50	20.0	49		DN65	12.0	13	
40	150.0	163.9	26.4	36.1	2	0-100%, 2 levels	DN65	25.8	63		DN80	15.5	22	

Model TWS-MD W4	Compressor Type	Startup mode	Maximum running current A	Dimensions			Refrigeration system				Lubricant model	Weight	
				Length (mm)	Width (mm)	Height (mm)	Refrigerant	System quantity	Control mode	Charge amount kg		Shipping weight	Operating weight
20	Hermetic scroll compressor	Direct starting	48.0	1880	660	1380	R410A	2	EXV	12	RL32-3MAF	470	500
30			71.9	1880	660	1490		2		14.5		520	555
40			95.8	1880	740	1590		2				630	670

Notes:
1. The above data is obtained based on nominal conditions of the unit:
   Cooling mode: inlet/outlet chilled water temperature 12/7°C; inlet/outlet underground water temperature 18/29°C;
   Heating mode: outlet hot water temperature 45°C; inlet underground water temperature 15°C;
2. Power supply: 380V 3N-50Hz; allowable voltage fluctuation: ±10%;
3. If other related parameters of the unit are needed, contact the factory;
4. The specifications are subject to change due to product improvement without prior notice.

Performance Parameters of Water Source Heat Pump Unit (Geothermal)

Model TWS-MD G4	Cooling capacity kW	Heating capacity kW	Cooling power input kW	Heating power input kW	Compressor Qty	Number of energy regulation levels	Cold and hot water heat exchanger				Underground water loop heat exchanger			
							Water pipe diameter	Water flow m³/h	Water pressure drop kPa	Connection mode	Water pipe diameter	Water flow m³/h	Water pressure drop kPa	Connection mode
20	75.6	81.2	13.7	18.3	2	0-100%, 2 levels	DN50	13.0	40	Flexible clamp	DN65	16.3	25	Flexible clamp
30	113.4	121.2	20.5	28.1	2	0-100%, 2 levels	DN50	19.5	48		DN65	24.4	50	
40	149.2	154.2	27.1	36.0	2	0-100%, 2 levels	DN65	25.7	63		DN80	32.1	87	

Model TWS-MD G4	Compressor Type	Startup mode	Maximum running current A	Dimensions			Refrigeration system				Lubricant model	Weight	
				Length (mm)	Width (mm)	Height (mm)	Refrigerant	System quantity	Control mode	Charge amount kg		Shipping weight	Operating weight
20	Hermetic scroll compressor	Direct starting	48.0	1880	660	1380	R410A	2	EXV	12	RL32-3MAF	470	500
30			71.9	1880	660	1490		2		14.5		520	555
40			95.8	1880	740	1590		2		18		630	670

Notes:
1. The above data is obtained based on nominal conditions of the unit
   Cooling mode: inlet/outlet chilled water temperature 12/7°C; inlet/outlet geothermal water temperature 25/30°C;
   Heating mode: outlet hot water temperature 45°C; inlet geothermal water temperature 10°C;
2. When the outlet geothermal water temperature is lower than 3°C, glycol solution needs to be added. Refer to Recommended Glycol Solution Concentration for details;
3. Power supply: 380V 3N-50Hz; allowable voltage fluctuation: ±10%;
4. If other related parameters of the unit are needed, contact the factory;
5. The specifications are subject to change due to product improvement without prior notice.

TICA Central Air Conditioner Integrated Product –

AIR-COOLED SCREW CHILLER (HEAT PUMP)

Nomenclature

TASD 105 . 1 C C 2 R

- R — Special function: R - Partial heat recovery
- 2 — Specification code: 2-R22, 3-R407C
- C — Series code: H - Heat pump, C - Cooling-only
- C — Design code: A, B, C...
- 1 — Number of compressors: 1, 2
- 105 — Specification code: 105, 140, 155...
- TASD — TICA Air-Cooled Screw Chiller (Heat Pump)

- The semi-hermetic screw compressor comes from an international brand manufacturer, and runs safely and reliably.
- The air-side inverted "M" type heat exchanger and its unique process design improve the air velocity distribution, and greatly enhance the efficiency and defrosting performance.
- The counter-current water-side heat exchanger, combined with the inner-threaded efficient heat exchange pipe, can increase the heat exchange efficiency by 20% to 30%.
- The EXV (with dual superheat degree control), combined with the high precision sensor, improves the operating efficiency of the unit.
- The modular design enables different modules to be separately operated and controlled by network connection.
- The compact structure of the unit takes a small space, greatly saving installation cost for users.
- The R407C refrigerant can be used. Partial heat recovery function is available for the complete line.

Technical Performance of Air-cooled Screw Chiller (Heat Pump) (R407C)

Unit Model TASD-CC/H3			105.1	140.1	155.1	180.1	210.1	245.2	280.2	295.2	310.2	335.2
Nominal cooling	Cooling capacity	kW	373	467	521	630	723	840	934	988	1042	1151
		kcal/h	320780	401620	448060	541800	621780	722400	803240	849680	896120	989860
	Power input	kW	123	154	173	207	236	277	308	327	346	380
	Rated current	A	214	268	301	360	410	482	535	568	601	661
Nominal heating*	Heating capacity	kW	386	494	547	655	755	880	988	1041	1094	1202
		kcal/h	331960	424840	470420	563300	649300	756800	849680	895260	940840	1033720
	Power input	kW	122	155	175	202	236	277	310	330	350	377
	Rated current	A	212	269	304	351	410	482	539	574	608	655
Partial heat recovery capacity**		kW	75	93	104	126	145	168	187	198	208	230
Maximum startup current		A	390	617	684	845	845	909	996	1071	1113	1274
Maximum operating current		A	284	379	429	481	521	663	758	808	858	910
Power supply			380V 3N~ 50Hz									
Refrigerant	Type		R407C									
	System Qty		1					2				
	Charge amount for cooling only	kg	80	90	110	120	130	170	180	200	220	230
	Charge amount for heat pump	kg	120	150	170	190	210	270	300	320	340	360
Compressor	Type		Semi-hermetic Screw Compressor									
	Energy Regulation Range		25%-100% Four-grade Regulation					12.5%-100% Eight-grade Regulation				
	Startup Type		Y-△									
Fan	Air flow	m^3/h	132000	176000	220000	220000	264000	308000	352000	396000	440000	440000
	Qty	Set	6	8	10	10	12	14	16	18	20	20
Water-side heat exchanger	Type		Highly Efficient Tube Type									
	Cooling water flow	m^3/h	64	80	90	108	124	144	161	170	179	198
	Water inlet/outlet pipe diameter	DN	150	150	150	150	150	200	200	200	200	200
	Water pressure drop	kPa	67	80	73	71	73	56	75	49	57	76
	Water-side pressure	MPa	1.0									
Heat exchanger on the heat recovery side	Type		Highly Efficient Tube Type									
	Water flow	m^3/h	13	16	18	22	25	29	32	34	36	40
	Water inlet/outlet pipe diameter	DN	65	65	65	65	65	65	65	65	65	65
	Water pressure drop	kPa	6	7	7	6	7	32	34	33	34	28
	Water-side pressure	MPa	1.0									
Dimensions	Length	mm	3787	4792	5797	5797	6803	8707	9712	10717	11700	11700
	Width	mm	2250									
	Height	mm	2470					2530				
Unit weight	Cooling-only transportation	kg	4270	5020	5720	5950	6630	9650	10370	11050	11510	11850
	Cooling-only operation	kg	4470	5220	5920	6150	6830	10050	10770	11450	11910	12250
	Heat pump transportation	kg	4450	5410	6090	6390	7090	10390	11120	11800	12260	12670
	Heat pump operation	kg	4650	5610	6290	6590	7290	10790	11520	12200	12660	13070

★ Notes:

1. Nominal cooling conditions: chilled water inlet/outlet temperature 12°C/7°C, ambient dry bulb temperature 35°C.
   Nominal heating conditions: hot water inlet/outlet temperature 40°C/45°C; ambient dry/wet bulb temperature 7°C/6°C.
2. Designed working conditions of the partial heat recovery unit: Hot water inlet/outlet temperature 50°C/55°C, chilled water inlet/outlet temperature 12°C/7°C, ambient dry bulb temperature 35°C.
3. Item marked with * indicates a heating parameter of the heat pump unit, and it is not applicable to cooling-only units.
4. Item marked with ** indicates a heating recovery capacity parameter of the partial heat recovery unit, and it is not applicable to cooling-only units and heating pump units.
5. Allowable voltage fluctuation: ±10%.

TICA Central Air Conditioner Integrated Product –

AIR-COOLED SCREW CHILLER (R134a)

Nomenclature

TASD 110. 1 A C 1

- 1 — Refrigerant: R134a
- C — Series code: C-Cooling-only
- A — Design code: A, B, C...
- 1 — Number of compressors: 1, 2, 3
- 110 — Specification code: 110, 145, 170, 210, 230, 260, 285, and 335
- TASD — TICA Air-Cooled Screw Water Chiller

- The semi-hermetic screw compressor comes from an international brand manufacturer, and runs safely and reliably.
- The unit adopts inverted M-shaped fin coil heat exchanger. When the heat exchanger is combined with low-noise outer rotor axial flow fan and long air duct, the unit can effectively reduce the airflow noise.
- The counter-current water-side heat exchanger, combined with the inner-threaded efficient heat exchange pipe, can increase the heat exchange efficiency by 20% to 30%.
- The EXV (with dual superheat degree control), combined with the high precision sensor, improves the operating efficiency of the unit.
- The modular design enables different modules to be separately operated and controlled by network connection.
- The compact structure of the unit takes a small space, greatly saving installation cost for users.
- The HFC-134a refrigerant is eco-friendly.

Technical Performance Table of Chillers (R134a)

Model TASD-AC1			110.1	145.1	170.1	210.1	230.2	260.2	285.2	335.2	405.2
Cooling capacity		kW	385	505	601	730	808	909	1001	1171	1425
		kcal/h	331100	434300	516860	627800	694880	781740	860860	1007060	1225500
Cooling power input		kW	123	159	189	233	254	285	319	371	464
Cooling rated current		A	219	288	341	419	479	507	578	665	840
Maximum startup current		A	615	845	845	965	1102	1264	1358	1358	1486
Maximum operating current		A	419	513	523	521	900	932	1026	1026	1042
Power supply			380V 3N~ 50Hz								
Water-side heat exchanger	Type		Highly Efficient Tube Type								
	Cooling water flow	m^3/h	66	87	103	126	139	156	172	201	245
	Water inlet/ outlet pipe diameter	DN	125	125	125	150	150	150	150	200	200
	Water pressure drop	kPa	40	53	56	57	68	72	73	70	65
	Water-side pressure	MPa	1.0								
Compressor	Type		Semi-hermetic Screw Compressor								
	Energy regulation range		25%-100% Four-grade Regulation				12.5%-100% Eight-grade Regulation				
	Startup type		Y-△								
Fan	Air flow	m^3/h	150000	200000	250000	25000	350000	350000	400000	400000	500000
	Qty	Set	6	8	10	10	14	14	16	16	20
Refrigerant	Type		R134a								
	System Qty		1				2				
Dimensions	Length	mm	3787	4792	5797	5797	8707	8707	9712	9712	11700
	Width	mm	2250								
	Height	mm	2420				2480				
Shipping weight		kg	4470	5120	5740	6350	9950	10180	1054	11020	11800
Operating weight		kg	4670	5320	5940	6550	10350	10580	10940	11420	12400

★ Notes:

1. Nominal cooling conditions: chilled water inlet/outlet temperature 12°C/7°C, ambient dry bulb temperature 35°C.
2. Allowable voltage fluctuation: ±10%.
3. Specify otherwise if perennial cooling is required.

WATER-COOLED SCROLL CHILLER (HEAT PUMP)

Nomenclature

TASD 110 . 1 B C 1

- 1 → Refrigerant: 1-R134a
- C → Series codes: C- cooling only
- B → Design codes: A, B, C…
- 1 → Number of compressors: 1, 2, 3
- 110 → Specification codes: 110、145…
- TASD → TASD: TICA air-cooled screw chiller

- The semi-hermetic screw compressor comes from an international brand manufacturer, and runs safely and reliably.
- The unit adopts inverted M-shaped fin coil heat exchanger. When the heat exchanger is combined with low-noise outer rotor axial flow fan and long air duct, the unit can effectively reduce the airflow noise.
- The counter-current water-side heat exchanger, combined with the inner-threaded efficient heat exchange pipe, can increase the heat exchange efficiency by 20% to 30%.
- The EXV (with dual superheat degree control), combined with the high precision sensor, improves the operating efficiency of the unit.
- The modular design enables different modules to be separately operated and controlled by network connection.
- The compact structure of the unit takes a small space, greatly saving installation cost for users.
- The HFC-134a refrigerant is eco-friendly.

SPECIFICATIONS

TASD-BC1 Air-cooled Screw Chiller

Unit Model TASD-BC1			110.1	145.1	180.1	210.1	255.2	290.2	325.2	360.2	390.2	420.2
Modular Model			-	-	-	-	110+145	145+145	145+180	180+180	180+210	210+210
Cooling Capacity		kW	385	505	642	741	890	1010	1147	1283	1383	1482
		kcal/h	331100	434300	551727	637462	765400	868600	986027	1103454	1189189	1274923
Cooling Power Input		kW	124	160	201	242	284	319	361	402	443	484
Cooling Rated Current		A	216	278	349	421	493	555	627	699	770	842
Maximum Startup Current		A	615	683	845	965	1102	1164	1326	1368	1488	1486
Maximum Operating Current		A	419	481	523	521	900	962	1004	1046	1044	1042
Power Supply			380V 3N ~ 50Hz									
Water-side Heat Exchanger	Type		Highly Efficient Shell-and-tube Exchanger									
	Cooling Water Flow	m^3/h	66	87	110	127	153	174	197	221	238	255
	Water Inlet/ Outlet Pipe Diameter	DN	150	150	150	150	150+150	150+150	150+150	150+150	150+150	150+150
	Water Pressure Drop	kPa	62	64	58	79	64	64	64	58	79	79
	Water-side Pressure	MPa	1.0									
Compressor	Type		Semi-hermetical Screw Compressor									
	Energy Regulation Range		25%-100% Four-step Regulation				12.5%-100% Eight-step Regulation					
	Startup Type		Y-Δ									
Fan	Air Flow	m^3/h	132000	176000	220000	250000	308000	352000	396000	440000	470000	500000
	Qty	Set	6	8	10	10	14	16	18	20	20	20
Refrigerant	Type		R134a									
	System Qty		1				2					
	Charge Amount	kg	86	100	115	150	186	200	215	230	265	300
Dimensions	Length	mm	3787	4792	5797	5797	9579	10584	11589	12594	12594	12594
	Width	mm	2250									
	Height	mm	2470									
Shipping Weight		kg	4300	4650	5450	6000	8950	9300	10100	10900	11450	12000
Operating Weight		kg	4500	4880	5700	6300	9380	9760	10580	11400	12000	12600

Notes:
1. Cooling conditions: water inlet/outlet temperature 12/7°C, ambient temperature 35°C;
2. Allowable voltage fluctuation: ±10%;
3. 255RT and later models adopt two modular units, which are transported separately and assembled in parallel on site. The water system pipes of the two units are connected by the client;
4. The specifications are subject to change due to product improvement without prior notice.

TICA Central Air Conditioner Integrated Product –

Modular AHU

Nomenclature

TAC
TBC 15 19 C H W

- W: Application characteristics: Chilled water type air conditioning unit
- H: Type: H – Horizontal type; V – Vertical type; C – Ceilingtype
- C: Feature code: C – Cooling only
- C: Design S/N C and cannot set to default
- 19: Width modulus: 100 mm per modulus
- 15: Height modulus: 100 mm per modulus
- TBC: TICA's modular AHU
- TAC: For TAC, plate thick: 25 mm
- TBC: For TBC, plate thick: 50 mm

- Labyrinth box structure is a patented design, and wins certification from European authorities.
- Featuring a modular design, the unit is available in 25 mm and 50 mm plate thick.
- Anti-cold bridge performance reached the TB2 grade of European standard (Eurovent).
- With patented design, the air leakage rate reaches L2 grade of European standard (Eurovent).
- The heat preservation performance of box reaches T2 grade of European standard (Eurovent).
- With flat interior, the box applies to purification.
- The professional model selection software ensures consistency between the theory and the actual production performance.
- The entire unit passes AHRI certification.
- With smooth water drainage, the drain pan can discharge all condensate water. A discharge valve is deployed at the lowest point of the coil loop to discharge all water in the coil and avoid coil freezing.
- The unit can be equipped with a control cabinet to collect information such as temperature, humidity, valve and openness of air valve from air conditioners and air-side parts through a communication cable. The control cabinet is embedded with logic program to control valve and openness of air valve, monitor fan and filter status, and automatically generate alarms.

Air Flow Table

TAC/TBC		Windward fan speed of the coil (m/s)					(Unit: m³/h)
		2.00	2.25	2.50	2.80	3.00	3.50
06	07	1567	1762	1958	2193	2351	2742
06	08	1790	2014	2238	2506	2685	3133
06	08	2207	2783	2758	3089	3311	3862
06	10	2527	2843	3158	3537	3791	4422
07	10	2888	3249	3610	4043	4332	5054
07	11	3253	3660	4067	4555	4880	5693
08	10	3610	4061	4512	5053	5415	6318
08	11	4067	4575	5083	5964	6101	7117
08	12	4524	5089	5655	6334	6786	7917
08	13	4981	5604	6226	6974	7472	8717
08	14	5438	6118	6798	7614	8157	9517
10	12	5881	6616	7351	8234	8822	10292
10	13	6476	7285	8094	9066	9714	11333
10	15	7664	8622	9580	10730	11496	13412
10	16	8259	9291	10323	11562	12389	14453
11	15	8843	9949	11054	12381	13265	15475
11	16	9529	10720	11911	13341	14294	16676
11	17	10215	11492	12769	14301	15323	17876
12	17	10896	12258	13620	15254	16344	19068
12	18	11628	13081	14534	16279	17442	20349
13	17	12258	13790	15322	17161	18387	21452
13	18	13081	14716	16351	18313	19622	22892
13	19	13904	15642	17380	19465	20856	24332
14	19	14676	16511	18345	20547	22014	25683
14	20	15545	17488	19431	21763	233187	27204
15	19	16221	18249	20277	22710	24332	28387
15	21	18141	20409	22677	25398	27212	31747
16	21	19005	21381	23757	26607	28508	33259
16	22	20011	22513	25014	28016	30017	35019
16	24	22023	24776	27529	30832	33035	38540
19	22	24559	27629	30699	34383	36839	42978
19	23	25794	29018	32242	36111	38691	45140
19	25	28263	31795	35328	39568	42395	49460
20	25	29309	32973	36637	41033	43964	51291
20	26	30589	34413	38237	42825	45884	53531
21	26	32774	36871	40968	45884	49161	57355
22	27	33866	38099	42333	47412	50799	59266
23	26	36052	40558	45065	50473	54078	63091
22	30	39536	44478	49420	55351	59304	69188
25	28	42621	47949	53279	59670	63930	74587
25	31	47559	53504	59449	66582	71339	83228
25	34	52497	59059	62621	73495	78746	91870
28	34	59788	67261	74735	83703	89682	104629
28	38	67286	75697	84104	94200	100929	117751
29	40	72767	81863	90959	101874	109151	127342
31	41	79292	89204	99115	111009	118938	138761
32	45	89467	100650	111833	125253	134201	153567
35	46	101523	114213	126904	142432	152285	177665
37	50	117371	132042	146713	164319	176057	205399
38	55	136921	154037	171152	191690	205382	239612
43	58	165054	185685	206317	231075	247581	
45	65	191575	215522	239469	268205	280000	

Cooling Performance Specifications

TAC/TBC		Rated Air Flow (m³/h)	Fresh Air Condition						Return Air Condition					
			4 rows		6 rows		8 rows		4 rows		6 rows		8 rows	
			Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)	Sensible Cooling Capacity (kW)	Total Cooling Capacity (kW)
06	07	1958	9	21	12	29	13	31	8	9	9	12	10	15
06	08	2238	11	24	14	33	15	36	9	11	10	14	11	17
06	09	2758	13	29	17	41	18	44	11	13	12	17	14	21
06	10	3158	15	33	19	46	21	50	12	15	14	19	16	24
07	10	3610	17	38	22	53	24	58	14	17	16	22	18	28
07	11	4067	19	43	25	60	27	65	16	20	18	25	21	31
08	10	4512	21	47	28	66	30	72	18	22	20	27	23	35
08	11	5083	24	53	31	75	34	81	20	24	22	31	26	39
08	12	5655	27	59	35	83	37	90	22	27	25	34	29	43
08	13	6226	29	66	38	92	41	99	24	30	27	38	31	48
08	14	6798	32	72	42	100	45	108	27	33	30	41	34	52
10	12	7351	35	77	45	108	49	117	29	35	32	45	37	56
10	13	8094	38	85	50	119	53	129	32	39	36	49	41	62
10	15	9580	45	101	59	141	63	153	37	46	42	58	48	73
10	16	10323	49	109	63	152	68	165	40	50	45	63	52	79
11	15	11054	52	116	68	163	73	176	43	53	49	67	56	85
11	16	11911	56	125	73	175	79	190	46	57	52	72	60	91
11	17	12769	60	134	78	188	84	204	50	61	56	78	54	98
12	17	13620	64	143	84	200	90	217	53	65	60	83	69	104
12	18	14534	69	153	89	214	96	232	57	70	64	88	73	111
13	17	15322	72	161	94	225	101	244	60	74	67	93	77	118
13	18	16351	77	172	100	241	108	261	64	79	72	99	82	125
13	19	17380	82	183	107	256	115	277	68	83	76	106	88	133
14	19	18345	87	193	113	270	121	293	72	88	81	111	93	141
14	20	19431	92	204	119	286	128	310	76	93	85	118	98	149
15	19	20277	96	213	124	298	134	324	79	97	89	123	102	156
15	21	22677	107	239	139	334	150	362	89	109	100	138	114	174
16	21	23757	112	250	146	350	157	379	93	114	104	144	120	182
16	22	25014	118	263	153	368	165	399	98	120	110	152	126	192
16	24	27529	130	290	169	405	182	439	107	132	121	167	139	211
19	22	30699	145	323	188	452	203	490	120	147	135	186	155	235
19	23	32242	152	339	198	474	213	514	126	155	142	196	163	247
19	25	35328	167	372	217	520	233	564	138	170	155	215	178	271
20	25	36637	173	385	225	539	242	585	143	176	161	222	185	281
20	26	38237	180	402	234	563	252	610	149	184	168	232	193	293
21	26	40968	193	431	251	603	270	654	160	197	180	249	207	314
22	27	42333	199	445	259	623	279	676	165	204	186	257	214	324
23	26	45065	212	474	276	663	297	719	176	216	198	274	227	346
22	30	49420	233	520	303	727	326	789	193	238	217	300	250	279
25	28	53276	251	560	327	784	352	850	208	256	234	324	269	409
25	31	59449	280	625	365	875	392	948	232	285	261	361	300	456
25	34	62621	309	690	402	965	433	1047	256	315	288	398	331	503
28	34	74735	352	786	458	1100	493	1192	292	359	328	454	377	573
28	38	84107	397	885	516	1237	555	1342	328	404	370	511	424	645
29	40	90959	429	957	558	1338	600	1451	355	437	400	552	459	698
29	40	90959	429	957	558	1338	600	1451	355	437	400	552	459	698
31	41	99115	467	1043	608	1458	654	1581	387	476	435	602	500	760
32	45	111833	527	1177	686	1645	738	1784	436	537	491	679	564	858
35	46	126904	598	1335	778	1867	838	2025	495	609	558	771	640	973
37	50	146713	692	1543	900	2158	968	2341	573	705	645	891	740	1125
38	55	171152	807	1801	1050	2518	1130	2731	668	822	752	1039	863	1313
43	58	206317	973	2171	1265	3035	1362	3292	805	991	906	1253	1040	1582
45	65	239469	1129	2519	1468	3523	1581	3821	935	1150	1052	1454	1207	1837

★ Notes:

1. Fresh air conditions: Dry bulb temperature of air inlet 35°C, wet bulb temperature 28°C.
2. Return air conditions: Dry bulb temperature of air inlet 27°C, wet bulb temperature 19.5°C.
3. Chilled water inlet/outlet temperature 7°C/12°C, and windward fan speed of the coil 2.5 m/s.
4. The preceding parameter values are for references only. If the working condition or the coil loop distribution changes, the cooling capacity will change accordingly. For more information, contact TICA.

Hot Water Coil Performance Specifications

TAC/TBC		Rated air flow m^3/h	Fresh air condition (air inlet DB temperature: 7°C)				Return air condition (air inlet DB temperature: 15°C)			
			1 rows	2 rows	3 rows	4 rows	1 rows	2 rows	3 rows	4 rows
			Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)	Total heat quantity (kW)
06	07	1958	12	18	23	26	9	14	19	21
06	08	2238	14	20	26	30	10	16	21	24
06	09	2758	17	25	32	37	12	20	26	30
06	10	3158	20	29	37	42	14	23	30	34
07	10	3610	23	33	42	48	16	26	34	39
07	11	4067	26	37	47	54	18	29	39	44
08	10	4512	28	41	52	60	20	32	43	49
08	11	5083	32	46	59	68	23	36	49	55
08	12	5655	36	52	65	75	25	41	54	62
08	13	6226	39	57	72	83	28	45	59	68
08	14	6798	43	62	79	91	30	49	65	74
10	12	7351	46	68	85	98	33	53	70	80
10	13	8094	51	74	94	108	36	58	77	88
10	15	9580	60	87	111	128	42	69	91	105
10	16	10323	65	94	120	138	46	74	99	113
11	15	11054	70	101	128	147	49	79	106	121
11	16	11911	75	109	138	159	53	85	114	130
11	17	12769	81	116	148	170	57	91	122	139
12	17	13620	86	124	158	182	60	98	130	149
12	18	14534	92	133	168	194	64	104	139	159
13	17	15322	97	140	177	204	68	110	146	167
13	18	16351	103	149	189	218	72	117	156	178
13	19	17380	110	158	201	232	77	124	166	190
14	19	18345	116	167	212	245	81	131	175	200
14	20	19431	123	177	225	259	86	139	186	212
15	19	20277	128	185	235	270	90	145	194	221
15	21	22677	143	207	263	302	100	162	217	247
16	21	23757	150	217	275	317	105	170	227	259
16	22	25014	158	228	290	334	111	179	239	273
16	24	27529	174	251	319	367	122	197	263	300
19	22	30699	194	280	355	409	136	220	293	335
19	23	32242	204	294	373	430	143	231	308	352
19	25	35328	223	322	409	471	157	253	337	386
20	25	36637	231	334	424	488	162	262	350	400
20	26	38237	241	349	443	510	169	274	365	417
21	26	40968	259	374	474	546	182	293	391	447
22	27	42333	268	389	497	562	184	303	399	454
23	26	45065	284	411	522	601	200	323	430	492
22	30	49420	313	454	581	656	215	353	466	530
25	28	53276	336	486	617	710	236	382	509	581
25	31	59449	375	542	688	793	263	426	568	649
25	34	62621	414	598	760	875	291	470	627	716
28	34	74735	472	682	865	996	331	535	714	816
28	38	84107	531	767	974	1121	373	602	803	918
29	40	90959	574	829	1053	1213	403	652	869	993
31	41	99115	626	904	1148	1322	439	710	947	1082
32	45	111833	706	1020	1295	1491	496	801	1068	1220
35	46	126904	801	1157	1469	1692	562	909	1212	1385
37	50	146713	926	1338	1699	1956	650	1051	1401	1601
38	55	171152	1080	1561	1982	2282	758	1226	1635	1868
43	58	206317	1302	1881	2389	2751	914	1478	1970	2251
45	65	239469	1512	2773	2773	3193	1061	1715	2287	2613

★ Notes:

1. Hot water inlet and outlet temperature: 60°C/50°C; windward fan speed of the coil: 2.5 m/s.
2. The preceding parameter values are for references only. If the air inlet condition or inlet/outlet water temperature changes, the heating capacity will change accordingly. For more information, contact TICA.

STANDARD AIR HANDLING UNITCEILING TYPE

Nomenclature

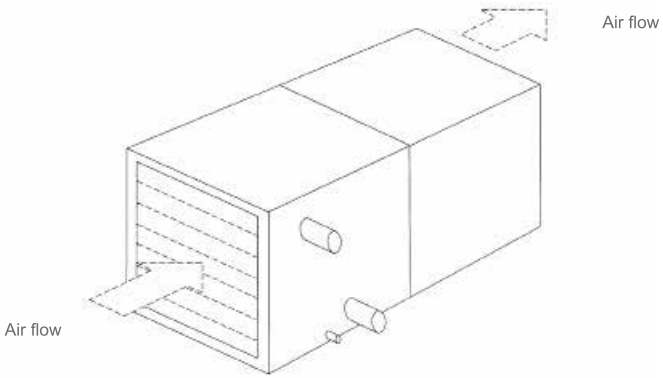
TFD 030 F C L R 4 1 24 W B

- B- Direct drive(380V)
- D- Belt drive(380V) S- Jet type(380V)
- W- White outer panel
- 24- External Static Pressure 24 x 10 = 240Pa
- 1- 1 row heating coil 2- 2 rows heating coil N-No heating coil
- 4- 4 rows cooling coil 6- 6 rows cooling coil N-No cooling coil
- R- Return air F- Fresh air
- L- Left (face supply air) R- Right(face supply air)
- C-Ceiling type
- F-Product generation
- 030- Air flow 3000CMH
- TFD- Ceiling Type Standard Air Handling Unit

- The patented labyrinth box structure is a dual-walled structure, so it has high insulation, high rigidity, and low air leakage rate.
- With the low-noise centrifugal fan, unit size and noise are reduced.
- The unit can be equipped with outer rotor high-efficiency centrifugal fan, which frees users of maintaining belts.
- The unit is equipped with an access panel to facilitate daily maintenance.
- The heat exchanger passes AHRI certification.
- With smooth water drainage, the drain pan can discharge all condensate water. A discharge valve is deployed at the lowest point of the coil loop to discharge all water in the coil and avoid coil freezing.
- The S series air jet unit adopts high-performance spherical nozzle as air inlet/outlet, and can implement remote direct air supply without the duct, which saves space, reduces layer height, and lowers investment costs.
- Optional accessories include startup cabinet, wet film humidifier, moisture eliminator, and steam coil.

Method To Determine The Side Of Unit

The unit is left type



Facing the air flow, if water piping at left side indicates left type. Otherwise, right type.

General Data - TFD-B/D

Return air condition

Model	Air Flow	4Rows						6Rows						ESP	Sound Level	Condensate Water Pipe	Power Supply	Drive Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe					
TFD	m^3/h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	Pa	dB(A)	DN		
010	1000	5.1	10.2	0.24	3.0	0.18	32	7.2	12.4	0.34	8.8	0.18	32	80	53	25	380V 3N~ 50Hz	Direct Drive
015	1500	8.3	15.2	0.40	9.0	0.32	32	11.0	18.5	0.52	19.5	0.32	32	80	53	25		
020	2000	11.5	21.2	0.55	11.0	0.32	32	14.9	25.3	0.71	26.0	0.32	32	80	55	25		
025	2500	14.4	26.0	0.69	18.0	0.55	32	18.2	30.8	0.87	38.0	0.55	32	120	56	25		
030	3000	17.5	32.0	0.83	31.0	0.75	32	22.0	37.3	1.05	62.0	0.75	32	160	59	25		Belt Drive
040	4000	23.4	41.5	1.13	60.0	1.1	40	30.1	49.1	1.43	49.5	1.1	40	200	60	25		
050	5000	28.3	51.4	1.37	40.0	1.5	40	35.2	61.8	1.68	78.0	1.5	40	200	62	25		
060	6000	34.5	61.7	1.64	47.0	1.5	40	43.7	73.9	2.08	44.0	2.2	40	200	63	25		
070	7000	40.3	71.3	1.92	66.0	2.2	40	49.4	85.3	2.35	59.0	2.2	50	240	64	25		
080	8000	46.2	83.1	2.20	58.0	2.2	40	57.6	98.3	2.74	56.0	3.0	50	240	64	25		
090	9000	52.1	93.1	2.48	79.0	3.0	40	64.8	110.3	3.09	25.4	3.0	50	280	66	25		
105	10500	59.9	108.1	2.85	51.0	3.0	50	75.1	135.3	3.58	39.0	4.0	50	280	67	25		
120	12000	69.3	131.7	3.30	57.0	4.0	50	85.8	161.1	4.09	44.0	4.0	50	280	68	25		
135	13500	76.8	146.6	3.66	56.0	4.0	50	102.3	176.4	4.87	42.0	4.0	65	320	68.5	32		
150	15000	85.3	162.8	4.06	51.0	5.5	50	108.5	189.7	5.17	39.0	5.5	65	320	69	32		

★ NOTE:

1. Cooling capacity is based on the following:
a) Inlet and outlet water temperature: 7°C/12°C b) Air entering condition: 27°C DB/19.5°C WB
2. Heating capacity is based on the following (with the same water flow rate as cooling mode):
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 15°C DB
3. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
4. The water flow in the above table indicates the cold water supply flow. Because the hot water supply flow is smaller than cold water supply flow, cold water supply flow is provided in the table for your reference to select the water pump.

Fresh air condition

Model	Air Flow	4Rows						6Rows						ESP	Sound Level	Condensate Water Pipe	Power Supply	Drive Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe					
TFD	m^3/h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	Pa	dB(A)	DN		
010	1000	13.9	13.2	0.66	16.0	0.18	32	15.8	15.6	0.75	31.0	0.18	32	80	53	25	380V 3N~ 50Hz	Direct Drive
015	1500	18.7	18.4	0.93	42.0	0.32	32	24.5	23.7	1.17	80.0	0.32	32	80	53	25		
020	2000	27.0	27.5	1.29	49.0	0.32	32	31.2	31.3	1.49	35.0	0.32	32	80	55	25		
025	2500	30.8	31.8	1.47	79.0	0.55	32	40.3	39.3	1.92	58.0	0.55	40	120	56	25		
030	3000	39.9	40.9	1.90	48.0	0.75	40	45.8	45.1	2.18	80.0	0.75	40	160	59	25		Belt Drive
040	4000	49.7	51.1	2.37	38.0	1.1	40	63.8	61.8	3.04	76.0	1.1	50	200	60	25		
050	5000	64.5	64.0	3.07	63.0	1.5	50	75.4	70.3	3.59	51.0	1.5	50	200	62	25		
060	6000	72.7	75.5	3.46	74.0	1.5	50	92.6	91.9	4.41	57.0	2.2	50	200	63	25		
070	7000	84.1	87.1	4.00	17.0	2.2	50	105.6	104.8	5.03	80.0	2.2	65	240	64	25		
080	8000	99.0	101.7	4.71	14.4	2.2	50	120.7	119.7	5.75	30.0	3.0	65	240	64	25		
090	9000	111.0	113.8	5.29	19.0	3.0	65	137.3	135.3	6.54	41.0	3.0	65	280	66	25		
105	10500	133.1	133.3	6.34	31.0	3.0	65	160.2	157.9	7.63	57.9	4.0	80	280	67	25		
120	12000	149.4	155.1	7.12	35.0	4.0	65	185.2	180.4	8.20	68.8	4.0	80	280	68	25		
135	13500	165.8	180.2	7.90	33.0	4.0	80	222.6	213.4	9.84	63.0	4.0	80	320	68.5	32		
150	15000	184.2	200.2	8.77	31.0	5.5	80	244.7	237.1	10.65	56.6	5.5	80	320	69	32		

★ NOTE:

1. Cooling capacity is based on the following:
a) Inlet and outlet water temperature: 7°C/12°C b) Air entering condition: 35°C DB/28°C WB
2. Heating capacity is based on the following(with the same water flow rate as cooling mode):
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 7°C DB
3. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
4. The water flow in the above table indicates the cold water supply flow. Because the hot water supply flow is smaller than cold water supply flow, cold water supply flow is provided in the table for your reference to select the water pump.

General Data-TFD-B/D Unit ESP and Power

TFD	Air Flow (m^3/h)	Cooling Coil Rows	ESP (Pa)						
			80	120	160	200	240	280	320
010	1000	4	0.18	0.18	0.25	0.32			
		6	0.18	0.25	0.32	0.32			
015	1500	4	0.32	0.32	0.32	0.32	0.37		
		6	0.32	0.32	0.32	0.37	0.45		
020	2000	4	0.32	0.32	0.37	0.37	0.45	0.45	
		6	0.32	0.37	0.37	0.45	0.45	0.55	
025	2500	4	0.45	0.55	0.55	0.75	0.75	0.75	
		6	0.55	0.55	0.75	0.75	0.75	0.75	
030	3000	4	0.55	0.75	0.75	0.75	0.75	1.1	1.1
		6	0.75	0.75	0.75	0.75	1.1	1.1	1.1
040	4000	4	1.1	1.1	1.1	1.1	1.1	1.1	1.5
		6	1.1	1.1	1.1	1.1	1.1	1.5	1.5
050	5000	4	1.1	1.5	1.5	1.5	1.5	2.2	2.2
		6	1.5	1.5	1.5	1.5	2.2	2.2	2.2
060	6000	4	1.5	1.5	1.5	1.5	2.2	2.2	2.2
		6	1.5	1.5	1.5	2.2	2.2	2.2	2.2
070	7000	4	1.5	1.5	2.2	2.2	2.2	2.2	2.2
		6	1.5	2.2	2.2	2.2	2.2	2.2	3.0
080	8000	4	2.2	2.2	2.2	2.2	2.2	3.0	3.0
		6	2.2	2.2	2.2	2.2	3.0	3.0	3.0
090	9000	4	2.2	2.2	2.2	2.2	2.2	3.0	3.0
		6	2.2	2.2	2.2	2.2	3.0	3.0	3.0
105	10500	4	3.0	3.0	3.0	3.0	3.0	3.0	4.0
		6	3.0	3.0	3.0	3.0	3.0	4.0	4.0
120	12000	4		3.0	3.0	3.0	4.0	4.0	4.0
		6		3.0	3.0	4.0	4.0	4.0	4.0
135	13500	4				3.0	3.0	4.0	4.0
		6				3.0	4.0	4.0	4.0
150	15000	4				4.0	4.0	4.0	5.5
		6				4.0	4.0	5.5	5.5

★ NOTE:

1. This table lists the motor power value of each type of unit under different external static pressures. (Uint: kW)

General Data-TFD-S

Return air condition

Model	Air Flow	4Row						6Row						Condensate Water Pipe	Power Supply	Drive Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe			
TFD	m^3/h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	DN		
010	1000	5.1	10.2	0.24	3.0	0.18	32	7.2	12.4	0.34	8.8	0.18	32	25	380V 3N~ 50Hz	Direct Drive
020	2000	11.5	21.2	0.55	11.0	0.32	32	14.9	25.3	0.71	26.0	0.32	32	25		
030	3000	17.5	32.0	0.83	31.0	1.1	32	22.0	37.3	1.05	62.0	1.1	32	25		Belt Drive
040	4000	23.4	41.5	1.13	60.0	1.1	40	30.1	49.1	1.43	49.5	1.1	40	25		
050	5000	28.3	51.4	1.37	40.0	1.5	40	35.2	61.8	1.68	78.0	2.2	40	25		
060	6000	34.5	61.7	1.64	47.0	1.5	40	43.7	73.9	2.08	44.0	2.2	40	25		
070	7000	40.3	71.3	1.92	66.0	1.5	40	49.4	85.3	2.35	59.0	2.2	50	25		
080	8000	46.2	83.1	2.20	58.0	2.2	40	57.6	98.3	2.74	56.0	3.0	50	25		
090	9000	52.1	93.1	2.48	79.0	2.2	40	64.8	110.3	3.09	25.4	3.0	50	25		
105	10500	59.9	108.1	2.85	51.0	3.0	50	75.1	135.3	3.58	39.0	3.0	50	25		
120	12000	69.3	131.7	3.3	57.0	4.0	50	85.8	161.1	4.09	44.0	4.0	50	25		

★ NOTE:

1. Cooling capacity is based on the following:
a) Inlet and outlet water temperature: 7°C/12°C b) Air entering condition: 27°C DB/19.5°C WB
2. Heating capacity is based on the following(with the same water flow rate as cooling mode):
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 15°C DB
3. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
4. The water flow in the above table indicates the cold water supply flow. Because the hot water supply flow is smaller than cold water supply flow, cold water supply flow is provided in the table for your reference to select the water pump.
5. The external static pressure is 0 Pa. If an air duct is required, please specify when you make the order.

Fresh air condition

Model	Air Flow	4Row						6Row						Condensate Water Pipe	Power Supply	Drive Type
		Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe	Rated Cooling Capacity	Rated Heating Capacity	Water Flow	Water Pressure Drop	Motor Power	Chilled Water Pipe			
TFD	m^3/h	kW	kW	l/s	kPa	kW	DN	kW	kW	l/s	kPa	kW	DN	DN		
010	1000	13.9	13.2	0.66	16.0	0.18	32	15.8	15.6	0.75	31.0	0.18	32	25	380V 3N~ 50Hz	Direct Drive
020	2000	27.0	27.5	1.29	49.0	0.32	32	31.2	31.3	1.49	35.0	0.32	32	25		
030	3000	39.9	40.9	1.90	48.0	1.1	40	45.8	45.1	2.18	80.0	1.1	40	25		Belt Drive
040	4000	49.7	51.1	2.37	38.0	1.1	40	63.8	61.8	3.04	76.0	1.1	50	25		
050	5000	64.5	64.0	3.07	63.0	1.5	50	75.4	70.3	3.59	51.0	2.2	50	25		
060	6000	72.7	75.5	3.46	74.0	1.5	50	92.6	91.9	4.41	57.0	2.2	50	25		
070	7000	84.1	87.1	4.00	17.0	1.5	50	105.6	104.8	5.03	80.0	2.2	65	25		
080	8000	99.0	101.7	4.71	14.4	2.2	50	120.7	119.7	5.75	30.0	3.0	65	25		
090	9000	111.0	113.8	5.29	19.0	2.2	65	137.3	135.3	6.54	41.0	3.0	65	25		
105	10500	133.1	133.4	6.34	31.0	3.0	65	160.2	157.9	7.63	57.9	3.0	80	25		
120	12000	149.4	155.1	7.12	35.0	4.0	65	185.2	180.4	8.20	68.8	4.0	80	25		

★ NOTE:

1. Cooling capacity is based on the following:
a) Inlet and outlet water temperature: 7°C/12°C b) Air entering condition: 35°C DB/28°C WB
2. Heating capacity is based on the following(with the same water flow rate as cooling mode):
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 7°C DB
3. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
4. The water flow in the above table indicates the cold water supply flow. Because the hot water supply flow is smaller than cold water supply flow, cold water supply flow is provided in the table for your reference to select the water pump.
5. The external static pressure is 0 Pa. If an air duct is required, please specify when you make the order.

Separate Heating Coil

Return air condition

Model	Air Flow	1Row				2Row			
		Rated Heating Capacity	Water Flow	Water Pressure Drop	Water Pipe	Rated Heating Capacity	Water Flow	Water Pressure Drop	Water Pipe
TFD	m^3/h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
010	1000	3.0	0.1	0.17	32	6.2	0.2	0.87	32
015	1500	4.3	0.1	0.19	32	9.9	0.3	2.1	32
020	2000	6.7	0.2	0.59	32	13.4	0.4	3.0	32
025	2500	8.2	0.2	0.63	32	16.4	0.4	3.3	32
030	3000	10.9	0.3	1.4	32	20.2	0.5	5.3	32
040	4000	14.8	0.4	1.5	32	27.7	0.7	6.5	32
050	5000	19.1	0.5	2.5	32	35.2	0.9	11.6	32
060	6000	23.2	0.6	3.0	32	43.0	1.1	14.2	32
070	7000	27.6	0.7	4.3	32	49.7	1.2	18.2	32
080	8000	31.5	0.8	4.0	32	57.3	1.4	18.2	32
090	9000	36.0	0.9	5.3	32	65.0	1.6	24.9	32
105	10500	42.6	1.1	8.4	32	76.4	1.8	34.0	32
120	12000	49.4	1.3	9.9	32	87.3	2.1	38.8	32
135	13500	55.6	1.5	9.8	32	98.2	2.4	36.2	32
150	15000	60.8	1.6	10.0	32	108.3	2.6	37.7	32

★ NOTE:

1. Heating capacity is based on the following
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 15°C DB
2. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
3. Pressure drop of heating coil is 20Pa per row.

Fresh air condition

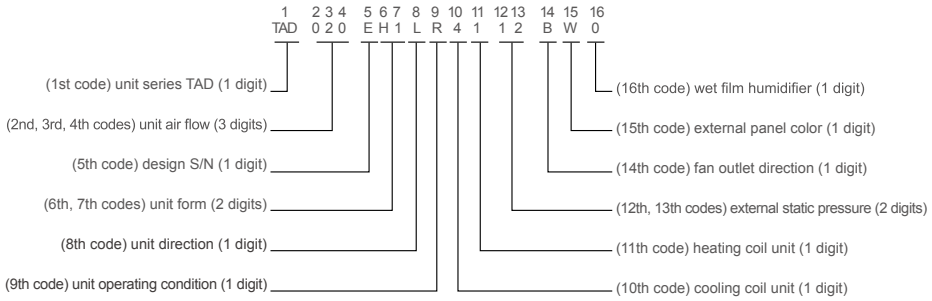
Model	Air Flow	1Row				2Row			
		Rated Heating Capacity	Water Flow	Water Pressure Drop	Water Pipe	Rated Heating Capacity	Water Flow	Water Pressure Drop	Water Pipe
TFD	m^3/h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
010	1000	4.3	0.2	0.64	32	7.3	0.2	0.87	32
015	1500	6.3	0.2	0.69	32	11.6	0.3	2.1	32
020	2000	8.9	0.3	1.3	32	16.5	0.5	4.5	32
025	2500	10.9	0.3	1.4	32	20.2	0.5	4.9	32
030	3000	13.7	0.4	2.5	32	25.3	0.7	9.9	32
040	4000	18.3	0.5	2.3	32	33.7	0.9	10.3	32
050	5000	24.2	0.7	4.7	32	42.9	1.1	16.7	32
060	6000	29.1	0.8	5.1	32	51.4	1.3	19.2	32
070	7000	33.9	0.9	6.9	32	61.0	1.5	27.1	32
080	8000	39.3	1.1	7.2	32	69.7	1.7	25.7	32
090	9000	44.3	1.2	9.0	32	78.4	1.9	33.8	32
105	10500	52.4	1.4	13.0	32	93.0	2.3	52.5	32
120	12000	60.7	1.6	14.5	32	106.2	2.6	56.7	32
135	13500	67.3	1.8	13.6	32	119.5	3.0	54.0	32
150	15000	73.8	1.9	13.7	32	130.7	3.2	54.7	32

★ NOTE:

1. Heating capacity is based on the following
a) Inlet and outlet water temperature: 60°C/50°C b) Air entering condition: 7°C DB
2. The manufacturer reserves the rights to make changers to the above specifications without prior notice.
3. Pressure drop of heating coil is 20Pa per row.

TICA Central Air ConditionerAir Handling Unit

Nomenclature



- The patented labyrinth box structure is a dual-walled structure, so it has high insulation, high rigidity, and low air leakage rate.
- With the low-noise centrifugal fan, unit size and noise are reduced.
- The unit is equipped with an access panel or access door to facilitate daily maintenance.
- The entire unit passes AHRI certification.
- With smooth water drainage, the drain pan can discharge all condensate water. A discharge valve is deployed at the lowest point of the coil loop to discharge all water in the coil and avoid coil freezing.
- The units can be combined according to on-site conditions and categorized into eight types: horizontal unit I, horizontal unit II, horizontal unit III, horizontal VI, horizontal VIII, horizontal IX, horizontal X, and vertical unit.
- Optional accessories include startup cabinet, wet film humidifier, moisture eliminator, air valve, and steam coil.

1st code

Unit series: TICA's AHU

TAD - wall thickness is 25 mm

TBD - wall thickness is 50 mm

2nd, 3rd, 4th codes

Unit air flow:

020-500 (*100m^3/h)

5th code

Design S/N

6th, 7th codes

Unit form

H1 - horizontal standard I | H2 - horizontal standard II

H3 - horizontal standard III | H8 - horizontal standard VIII

H9 - horizontal standard IX | HA - horizontal standard X

V1 - vertical standard I

(When the unit is installed on the ceiling in horizontal standard, the 6th code should be changed to "c")

8th code

Unit direction | L - left type | R - right type

9th code

Unit operating condition | R - air return | F - fresh air

10th code

Cooling coil

4-4 rows; | 6-6 rows | N is used if this function is not provided

11th code

Hot water coil

1-1 row; | 2-2 rows | N is used if this function is not provided

12th, 13th codes

ESP

*10 Pa

14th code

Fan outlet direction (UF as standard)

T-FT | R-UR | F-UF | B-FB

Note: the fan outlet direction is selectable for horizontal unit; consult TICA in case any change is needed

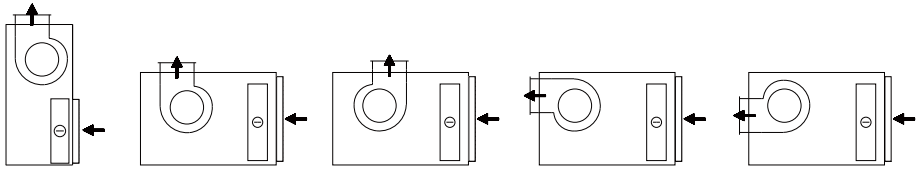
15th code

External panel color | W - white (standard)

16th code

Wet film humidifier | 0 - none | 1 - 50 mm thick | 2 - 100 mm thick

Fan outlet direction

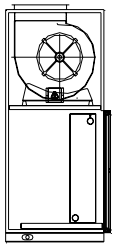


Upper front (UF) | Upper front (UF) | Upper rear (UR) | Front top (FT) | Front bottom (FB)

Optional Configurations

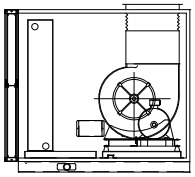
Vertical standard I

External nylon filter + cooling coil + fan



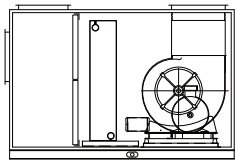
Horizontal standard I

External nylon filter + cooling coil + fan



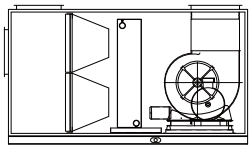
Horizontal standard II

Mixing box + primary efficiency filter + cooling coil + fan



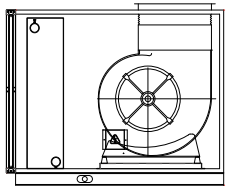
Horizontal standard III

Mixing box + primary efficiency filter + medium efficiency filter + cooling coil + fan



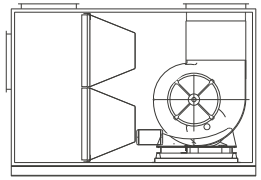
Horizontal standard VIII

External nylon filter + hot water heating + fan



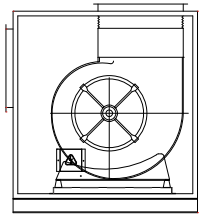
Horizontal standard IX

Mixing box + primary efficiency filter + medium efficiency filter + fan



Horizontal standard X

Air intake section + fan



Notes:

1. Vertical standard I (V1), horizontal standard I (H1) and horizontal standard VIII (H8) are available with nylon filter as standard configuration which can be optionally replaced with primary efficiency plate filter;
2. Wet film humidifiers can be optionally configured next to the cooling coil;
3. Hot water heating coil unit can be optionally configured next to the cooling coil;
4. As standard configuration, primary efficiency filter is G3 plate type and medium efficiency filter is M5 bag type.

Standard operating condition

Model	Air flow	4 rows						6 rows						Noises
		Rated Cooling capacity	Rated Heating capacity	Water flow	Water resistance	Chilled water pipe diameter	Condensate Water Pipe Diameter	Rated Cooling capacity	Rated Heating capacity	Water flow	Water resistance	Chilled water pipe diameter	Condensate Water Pipe Diameter	
TAD	m3/h	kW	kW	l/s	kPa	DN	DN	kW	kW	l/s	kPa	DN	DN	dB(A)
020E	2000	11.0	22.8	0.5	17.4	32	25	14.8	27.6	0.7	44.8	32	25	55.0
030E	3000	17.2	35.1	0.8	28.7	32	25	22.7	41.9	1.1	71.6	32	25	58.0
040E	4000	23.4	47.1	1.1	45.3	32	25	29.6	54.6	1.4	34.8	32	25	59.0
050E	5000	28.2	57.0	1.3	38.9	32	25	34.5	64.5	1.6	30.3	32	25	61.0
060E	6000	35.1	69.1	1.7	59.5	40	25	42.4	78.2	2.0	40.3	40	25	62.0
070E	7000	41.0	80.7	2.0	72.1	50	25	48.8	92.5	2.3	50.0	50	25	64.0
080E	8000	48.2	93.7	2.3	38.5	50	25	57.2	106.7	2.7	74.7	50	25	64.0
090E	9000	52.3	102.6	2.5	35.8	50	25	65.1	120.6	3.1	75.7	50	25	65.0
105E	10500	59.7	115.7	2.8	50.6	50	25	74.2	138.1	3.5	48.8	50	25	66.0
120E	12000	69.8	136.8	3.3	73.4	50	25	89.9	165.3	4.3	75.6	50	25	67.0
135E	13500	79.1	158.1	3.8	48.2	65	32	104.1	187.7	5.0	39.0	65	32	68.0
150E	15000	90.4	172.7	4.3	49.1	65	32	115.0	207.6	5.5	38.1	65	32	68.0
180E	18000	107.0	210.8	5.1	66.4	65	32	136.4	247.2	6.5	51.2	65	32	69.0
210E	21000	126.6	247.3	6.0	85.3	65	32	157.4	289.4	7.5	62.0	65	32	70.0
240E	24000	148.8	285.6	7.1	39.0	65	32	181.9	332.2	8.7	84.0	65	32	71.0
270E	27000	167.5	321.3	8.0	43.0	65	32	204.7	372.0	9.8	85.5	65	32	72.0
300E	30000	186.1	357.0	8.9	43.5	65	32	226.1	413.4	10.8	39.0	65	32	73.0
330E	33000	204.7	392.7	9.8	58.0	80	32	253.0	456.8	12.1	52.0	80	32	73.0
350E	35000	220.1	416.5	10.5	66.5	80	32	271.3	486.9	12.9	59.5	80	32	73.5
400E	40000	230.8	451.0	11.0	69.2	80	32	299.8	546.1	14.3	52.5	80	32	73.5
450E	45000	248.1	484.8	11.8	71.5	80	32	341.1	617.2	16.3	59.8	80	32	74.0
500E	50000	275.6	538.5	13.1	79.1	80	32	379.0	685.9	18.1	65.9	80	32	74.0

★ Note:

1. Cooling: inlet air dry bulb temperature 27°C, wet bulb temperature 19.5°C, inlet/outlet water temperature 7°C/12°C; heating: inlet air dry bulb temperature 15°C, inlet hot water temperature 60°C, and the water flow is the same with cooling water flow;
2. The noise value is the test value of vertical standard I and varies with the static pressure;
3. In actual use of the unit, if fresh air flow is increased, unit cooling capacity will change accordingly. Consult TICA for details.

Fresh air operating condition

Model	Air flow	4 rows						6 rows						Noises
		Rated Cooling capacity	Rated heating capacity	Water flow	Water resistance	Chilled water pipe diameter	Condensate water pipe diameter	Rated Cooling capacity	Rated Heating capacity	Water flow	Water resistance	Chilled water pipe diameter	Condensate water pipe diameter	
TAD	m^3/h	kW	kW	l/s	kPa	DN	DN	kW	kW	l/s	kPa	DN	DN	dB(A)
020E	2000	27.4	30.7	1.3	31.8	40	25	33.7	34.2	1.6	66.5	40	25	55.0
030E	3000	40.5	44.3	1.9	44.0	40	25	47.9	48.9	2.3	89.6	40	25	58.0
040E	4000	54.7	58.8	2.6	62.5	50	25	63.8	67.0	3.0	55.8	50	25	59.0
050E	5000	68.4	73.8	3.3	64.3	50	25	79.8	83.9	3.8	53.5	50	25	61.0
060E	6000	81.0	85.0	3.9	78.3	50	25	97.9	100.5	4.7	74.9	50	25	62.0
070E	7000	89.6	95.0	4.3	40.5	65	25	115.4	116.7	5.5	31.4	65	25	64.0
080E	8000	101.7	108.6	4.9	57.7	65	25	127.7	134.5	6.1	42.8	65	25	64.0
090E	9000	116.8	123.5	5.6	58.5	65	25	140.5	146.7	6.7	40.7	65	25	65.0
105E	10500	132.8	154.9	7.0	78.6	65	25	162.1	167.3	7.7	60.0	65	25	66.0
120E	12000	157.9	175.3	7.5	82.7	65	25	193.6	196.5	9.2	89.0	65	25	67.0
135E	13500	172.8	195.2	8.2	27.2	80	32	222.6	223.1	10.6	61.5	80	32	68.0
150E	15000	194.7	221.3	9.3	27.8	80	32	252.6	252.3	12.0	62.8	80	32	68.0
180E	18000	230.5	257.6	11.0	37.5	80	32	293.6	296.1	13.1	74.4	80	32	69.0
210E	21000	276.3	303.6	13.2	51.5	80	32	331.5	336.1	13.9	83.2	80	32	70.0
240E	24000	319.9	348.8	15.2	73.2	80	32	*366.2	*380.6	*12.5	80.0	80	32	71.0
270E	27000	359.9	389.7	17.1	76.5	80	32	*409.6	*428.2	*13.9	82.0	80	32	72.0
300E	30000	384.1	420.5	18.3	70.0	80	32	*455.2	*473.6	*15.5	80.0	80	32	73.0
330E	33000	445.7	482.0	21.2	87.5	80	32	*503.6	*523.3	*17.1	84.0	80	32	73.0
350E	35000	454.3	490.5	21.6	76.5	80	32	*552.5	*578.3	*15.5	83.9	80	32	73.5
400E	40000	477.1	525.2	22.7	40.3	80	32	*589.3	*622.5	*18.7	*83.5	80	32	73.5
450E	45000	536.7	594.2	25.6	45.3	80	32	*647.2	*679.6	*19.3	*79.8	80	32	74.0
500E	50000	605.1	663.9	28.8	51.6	80	32	*727.9	*774.6	*21.7	*89.9	80	32	74.0

★Note:

1. Cooling: inlet air dry bulb temperature 35°C, wet bulb temperature 28°C, inlet/outlet water temperature 7°C/12°C; heating: inlet air dry bulb temperature 7°C, inlet hot water temperature 60°C, and the water flow is the same with cooling water flow;
2. * indicates that the temperature difference between inlet water and return water is more than 5°C in order to control pressure reduction of refrigerant water pipe;
3. The noise value is the test value of vertical standard I and varies with the static pressure.

Standard operating condition (4-pipe heating coil unit)

Model	Air flow	1 row				2 rows			
		Rated heating capacity	Water flow	Water resistance	Water pipe diameter	Rated heating capacity	Water flow	Water resistance	Water pipe diameter
TAD	m^3/h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
020E	2000	6.7	0.2	0.2	32	13.6	0.3	1.2	32
030E	3000	10.2	0.3	0.3	32	20.0	0.5	2.0	32
040E	4000	13.8	0.3	0.5	32	27.2	0.7	3.0	32
050E	5000	18.5	0.5	0.5	32	35.8	0.9	3.3	32
060E	6000	23.2	0.6	0.7	32	43.7	1.1	4.3	32
070E	7000	27.6	0.7	0.9	32	50.9	1.2	5.1	32
080E	8000	32.5	0.8	1.3	32	56.8	1.4	6.4	32
090E	9000	37.0	0.9	1.3	32	64.4	1.6	6.5	32
105E	10500	42.0	1.0	1.8	32	77.7	1.9	10.3	32
120E	12000	48.7	1.2	2.5	32	88.8	2.2	14.2	32
135E	13500	56.4	1.4	3.7	40	101.5	2.5	20.4	40
150E	15000	61.7	1.5	3.9	40	111.0	2.7	21.1	40
180E	18000	75.2	1.8	5.4	40	135.3	3.3	29.2	40
210E	21000	88.9	2.2	7.0	40	157.8	3.9	37.5	40
240E	24000	103.1	2.5	10.2	40	174.7	4.3	7.7	40
270E	27000	116.0	2.8	10.3	40	196.5	4.8	7.8	40
300E	30000	128.8	3.1	10.4	40	216.5	5.3	7.7	40
330E	33000	141.7	3.5	13.4	40	240.1	5.9	10.1	40
350E	35000	150.3	3.7	15.6	40	254.7	6.2	11.7	40
400E	40000	167.0	4.1	13.9	40	281.5	6.9	10.4	40
450E	45000	187.9	4.6	15.3	40	322.1	7.9	11.8	40
500E	50000	208.8	5.1	16.7	40	357.9	8.7	12.8	40

★Note:

Heating: inlet air dry bulb temperature 15°C, inlet hot water temperature 60°C, outlet water temperature 50°C;

Fresh air operating condition (4-pipe heating coil unit)

Model	Air flow	1 row				2 rows			
		Rated heating capacity	Water flow	Water resistance	Water pipe diameter	Rated heating capacity	Water flow	Water resistance	Water pipe diameter
TAD	m3/h	kW	l/s	kPa	DN	kW	l/s	kPa	DN
020E	2000	9.0	0.2	0.3	32	16.6	0.4	1.7	32
030E	3000	13.5	0.3	0.5	32	25.7	0.6	3.1	32
040E	4000	18.6	0.5	0.8	32	33.2	0.8	4.2	32
050E	5000	23.2	0.6	0.8	32	43.6	1.1	4.6	32
060E	6000	28.7	0.7	1.0	32	50.6	1.2	5.5	32
070E	7000	33.9	0.8	1.3	32	63.0	1.5	7.2	32
080E	8000	39.9	1.0	1.9	32	73.1	1.8	10.5	32
090E	9000	45.5	1.1	1.8	32	78.4	1.9	9.1	32
105E	10500	51.6	1.3	2.5	32	92.9	2.3	14.0	32
120E	12000	59.0	1.4	3.5	32	106.2	2.6	19.2	32
135E	13500	69.2	1.7	5.3	40	123.3	3.0	28.4	40
150E	15000	75.9	1.9	5.5	40	134.9	3.3	29.5	40
180E	18000	92.3	2.3	7.6	40	161.9	3.9	39.7	40
210E	21000	109.2	2.7	10.0	40	182.9	4.5	7.4	40
240E	24000	124.8	3.0	14.1	40	212.4	5.2	10.7	40
270E	27000	140.4	3.4	14.3	40	237.1	5.8	10.7	40
300E	30000	156.0	3.8	14.4	40	261.3	6.4	10.7	40
330E	33000	173.9	4.2	19.0	40	292.1	7.1	14.1	40
350E	35000	184.4	4.5	22.1	40	309.8	7.6	16.4	40
400E	40000	202.3	4.9	19.2	40	342.8	8.4	14.5	40
450E	45000	227.6	5.6	21.2	40	385.7	9.4	16.0	40
500E	50000	256.1	6.2	23.6	40	423.6	10.3	17.1	40

★ Note:

Heating: inlet air dry bulb temperature 7°C, inlet hot water temperature 60°C, outlet water temperature 50°C;

Ceiling Concealed FCU - TCR

AHRI CERTIFIED®
www.ahridirectory.org
Central Station Air-Handling Unit Casings
AHRI Standard 1350

Nomenclature

TCR 200 G LSSNNNTN

- TCR: Ceiling concealed FCU
- 200: Specification code 200/300……
- G: Design S/N A, B and C
- LSSNNNTN: Feature code
  - L-Left piping R-Right piping
  - S-Low static pressure 3-30Pa static pressure 5-50Pa static pressure
  - S-Standard drain pan A-Extended 150mm
  - N-No return air plenum D-Bottom return air plenum B-Back return air plenum
  - N-No filter
  - N-No electric heater
  - T-3-rows coil W-(4 pipes) FCU with hot water coil
  - N-Capacitor motor

- Different ESP for option
- Multiple coils design
- Return air purifiers as optional to make environment clean

TCR Ceiling Concealed FCU (3 rows 2 pipes)

TCR			200G	300G	400G	500G	600G	700G	800G	1000G	1200G	1400G
Air Flow m³/h		High	340	510	680	850	1020	1170	1360	1700	2040	2380
		Medium	270	380	510	640	780	880	1030	1290	1540	1850
		Low	190	280	340	450	560	610	740	890	1040	1255
Total Cooling Capacity W		High	2210	3200	4150	5000	5950	6600	8100	9100	11250	13000
		Medium	1990	2782	3570	4197	5200	5600	6882	8200	9613	11700
		Low	1635	2304	2950	3298	4200	4600	5749	6700	7403	7560
Sensible Cooling Capacity W		High	1590	2285	2880	3570	4200	4700	5880	6700	8260	9750
		Medium	1400	1920	2420	2930	3570	3900	4880	5700	6935	8280
		Low	1050	1555	1930	2210	2900	3200	3935	4500	5120	5945
Heating Capacity W		High	3500	5200	6500	7870	9800	10900	13570	14900	18800	22100
Rated Power Input (AC Motor) W	12Pa	High	30	45	55	72	90	100	128	150	189	228
		Medium	27	36	43	58	80	97	112	130	165	198
		Low	23	30	35	48	68	78	95	110	136	165
	30Pa	High	38	55	65	82	100	120	148	170	212	253
		Medium	32	45	50	64	80	105	133	160	195	230
		Low	27	33	37	53	70	90	128	140	170	195
	50Pa	High	45	62	75	91	115	130	165	200	250	290
		Medium	36	50	65	86	105	110	150	190	230	270
		Low	30	42	55	73	90	96	122	170	200	250
Sound Pressure Level (dB(A))	Low Static Pressure (12Pa)	High	35	38	39	41	45	46	46	47	49	51
		Medium	28.5	30	31	32	39	41	40	41	44	47
		Low	20.5	21	22	24	33	33	31	32	34	36
	30Pa	High	38	41	42.5	45	46.5	48	47	49	51	52
		Medium	30.5	32	34	38.5	38.5	41	41	43	46	48
		Low	23	22	22	29.5	31	32	32	34	35	36
	50Pa	High	42	43	45	47	49	50	50	52	53	53
		Medium	35.5	36	38	38.5	45	44	44	46	47.5	49
		Low	29	28	28	29	37	36	36	38	42	42
Fan	Type		Centrifugal (Blade: Forward-Curved)									
	Quantity		1	2	2	2	2	2	3	4	4	4
Motor	Type	AC	Split-capacitor motor with ball bearing									
	Insulation Class		B									
	Protection Class		IP20									
	Power Supply		220V~50Hz									
	Quantity		1	1	1	1	1	1	2	2	2	2
Coil	Type		Seamless copper tube mechanically bonded to aluminum hydrophilic fin									
	Max. Working Pressure MPa		1.6									
	Pipe Connection		Rc3/4 (Taper Pipe Female Threaded)									
	Water Flow Rate m³/h		0.42	0.55	0.72	0.87	1.05	1.12	1.39	1.67	1.90	2.23
Water Resistance	Cooling Mode kPa		25	25	30	30	40	40	35	40	40	50
	Heating Mode kPa		20	20	25	25	35	35	30	35	35	45
Condensate Drain Pan	Pipe Connection		Rc3/4 (Taper Pipe Male Threaded)									
Dimensions (without return air plenum)	L mm		695	845	930	995	1085	1235	1530	1530	1795	1795
	W mm		470	470	470	470	470	470	470	470	490	490
	H mm		230	230	230	230	230	230	230	230	250	250
Net Weight (kg)	Without plenum box		11	13	15	16	17	18.5	24.5	26	31	31.5
	With plenum box		13	16	18	19	20	22.5	30	30	37	37.5

★ Note:

1. Cooling capacity is based on the following: a) Water temperature: 7°C (inlet)/12°C (outlet) b) Air entering condition: 27°C DB/19.5°C WB.
2. Heating capacity is based on the following (with same water flow rate as cooling cycle): a) Water temperature: 60°C (inlet) b) Air entering condition: 21°C DB.
3. Low ESP means 0Pa with air vent & filter and 12Pa without air vent& filter.
4. FCU with return air purifier,correct air flow,cooling capacity and heating capacity must multiply by correction factor 0.85.In order to ensure enough air flow,cooling capacity and heating
capacity ,ESP 30Pa FCU is suggested to choose if ESP is 12Pa.ESP 50Pa FCU is suggested to choose if ESP is 30Pa.
5. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

TCR Celling Concealed FCU (3+1 rows, 4 Pipes)

TCR			200G	300G	400G	500G	600G	700G	800G	1000G	1200G	1400G
Air Flow m³/h		High	340	500	680	830	1000	1140	1340	1700	2040	2380
		Medium	270	380	510	620	750	880	1030	1290	1540	1975
		Low	190	240	340	420	560	610	720	890	1040	1255
Total Cooling Capacity W		High	2210	3200	4150	4800	5950	6800	7900	9200	10275	12600
		Medium	1890	2782	3570	4150	5200	5900	6900	8000	8500	11000
		Low	1500	2304	2950	3400	4200	5000	5800	6700	7450	9500
Sensible Cooling Capacity W		High	1590	2285	2880	3400	4200	4700	5750	6600	7400	9400
		Medium	1350	1920	2420	2880	3570	3900	4800	5500	6200	7900
		Low	1050	1555	1930	2210	2900	3200	3700	4200	4930	6200
Heating Capacity W		High	2050	3000	3850	4500	5300	6300	7550	8500	9800	10800
Power Input W	Low Static Pressure (12Pa)	High	30	45	55	72	90	100	128	150	189	228
		Medium	27	36	43	58	80	97	112	130	165	198
		Low	23	30	35	48	68	78	95	110	136	165
	30Pa	High	38	55	65	82	100	120	148	170	212	253
		Medium	32	45	50	64	80	105	133	160	195	230
		Low	27	33	37	53	70	90	128	140	170	195
	50Pa	High	45	62	75	91	115	130	165	200	250	290
		Medium	36	50	65	86	105	110	150	190	230	270
		Low	30	42	55	73	90	96	122	170	200	250
Sound Pressure Level (dB(A))	Low Static Pressure (12Pa)	High	36.5	38	39	42	45	46	46	47	49	51
		Medium	30	30	32	33	40	41	41	41	44	47
		Low	21	21	24	25	33	33	33	33	34	36
	30Pa	High	38.5	41	42.5	45	46.5	48	47	49	51	52.5
		Medium	32	32.5	36	38.5	40	42	41	43	46	48
		Low	24	23	24	29.5	32	33	32	34	35.5	38
	50Pa	High	42	43.5	45	47	49	50	50	52	53	53.5
		Medium	37	38	38	40.5	45	45	44.5	46.5	47.5	50
		Low	30.5	29.5	28	31	37	36	35	38	42	45
Fan	Type		Centrifugal (Blade:Forward-Curved)									
	Quantity		1	2	2	2	2	2	3	4	4	4
Motor	Type		Split-capacitor motor with ball bearing									
	Insulation Class		B									
	Protection Class		IP20									
	Power Supply		220V ~ 50Hz									
	Quantity		1	1	1	1	1	1	2	2	2	2
Coil	Type		Seamless copper tube mechanically bonded to aluminum hydrophilic fin									
	Max. Working Pressure MPa		1.6									
	Pipe Connection		Rc3/4 (Taper Pipe Female Threaded)									
Water Flow Rate m³/h	Cooling Mode m³/h		0.39	0.63	0.73	0.86	1.04	1.17	1.39	1.65	1.90	2.23
	Heating Mode m³/h		0.21	0.29	0.33	0.42	0.47	0.55	0.66	0.72	0.88	1.06
Water Resistance	Cooling Mode kPa		25	25	30	30	40	40	40	40	40	50
	Heating Mode kPa		10	15	20	30	20	20	30	40	40	50
Condensate Drain Pan	Pipe Connection		Rc3/4 (Taper Pipe Male Threaded)									
Net Weight (AC) kg	Without plenum box kg		12.1	14	16.6	17.8	19.3	20.8	27.2	28.5	34	37.5
	With plenum box kg		14.4	16.5	19.8	21	22.8	24.5	31.6	33.2	40	43.7

★ Note:

1. Cooling capacity is based on the following:
a) Water temperature : 7°C (inlet)/12°C (outlet)
b) Air entering condition : 27°C DB/19.5°C WB
2. Heating capacity is based on the following (with same water flow rate as cooling cycle):
a) Water temperature : 60°C (inlet)
b) Air entering condition : 21°C DB
3. Low ESP means 0Pa with air vent & filter and 12Pa without air vent& filter.
4. The air volume is tested under entering air condtion of 20°C DB and dry coil condition.

Ceiling Concealed Low Noise FCU - TCRQ

AHRI CERTIFIED®
www.ahridirectory.org
Central Station Air-Handling Unit Casings
AHRI Standard 1350

Nomenclature

TCRQ 300 B LSSDNNTY

- LSSDNNTY — Feature code:
  - L-Left piping R-Right piping
  - 30Pa
  - S-Standard drain pan A-Extended 300mm
  - D-Bottom return air plenum
  - N-No filter
  - N-No electric heater
  - T-3-rows coil W-(4 pipes) FCU with hot water coil
  - Y-Brushless DC motor
- B — Design C
- 300 — Specification code 200, 300……
- TCRQ — Ceiling concealed - low noise FCU

Remarks: The standard default static pressure of the TCRQ unit is 30 Pa, while, 12 Pa and 50 Pa static pressure can be adjusted on site.

- Different ESP for option
- Multiple coils design
- Return air purifiers as optional to make environment clean

Low Noise DC Brushless FCU

TCRQ			200C	300C	400C	500C	600C	700C	800C	1000C	1200C
Air Flow m³/h		High	340	510	680	850	1020	1190	1360	1700	2040
		Medium	270	380	510	640	765	890	1020	1275	1530
		Low	190	255	340	425	510	695	680	850	1020
Total Cooling Capacity W		High	2210	3200	4150	5000	5950	6600	8100	9100	11250
		Medium	1990	2782	3570	4197	5200	5600	6882	8200	9613
		Low	1635	2304	2950	3298	4200	4600	5749	6700	7403
Sensible Cooling Capacity W		High	1590	2285	2880	3570	4200	4700	5880	6700	8260
		Medium	1400	1920	2420	2930	3570	3900	4880	5700	6935
		Low	1050	1555	1930	2210	2900	3200	3935	4500	5120
Heating Capacity W		High	3500	5200	6500	7870	9800	10900	13570	14900	18800
Power Input W	Low Static Pressure (12 Pa)	High	16	17	24	34	47	47	54	72	99
		Medium	9	10	14	18	24	24	28	39	48
		Low	5	6	8	10	13	13	15	22	24
	30Pa static pressure	High	22	23	33	44	57	57	68	90	119
		Medium	12	13	17	22	29	29	34	47	57
		Low	7	8	9	12	14	15	18	25	27
	50Pa static pressure	High	30	31	42	53	68	71	87	111	143
		Medium	15	16	22	27	33	35	42	55	88
		Low	8	9	11	13	16	17	20	28	38
Sound Level dB(A)	Low Static Pressure (12 Pa)	High	32	33	37	40	43	43	43	45	47
		Medium	24	25	29	30	35	35	36	38	40
		Low	20	21	22	25	28	28	28	28	30
	30Pa static pressure	High	37	38	40	43.5	45	45	45.5	47	49
		Medium	29	30	32	34.5	36	36	36.6	40	42
		Low	21	22	22	27	30	30	30	30	32
	50Pa static pressure	High	40	41.5	43	45.5	47	47	48	49	51
		Medium	33	34	36	37	39	39	40	42	45
		Low	24	25	27	29	32	32	32	32	36
Fan	Type		Forward-curved multi-blade double inlet centrifugal fan								
	Qty		2	2	2	2	2	3	3	4	4
Motor	Type		Brushless DC motor (built-in AC-DC conversion module)								
	Insulation Class		Level B								
	Protection Class		IP41								
	Power Supply		220V-50Hz								
	Qty		1	1	1	1	1	1	1	2	2
Heat Exchanger	Type		Efficient double-flanged aluminum fins and copper tubes, expanded into one								
	Max. Working Pressure MPa		1.6								
	Pipe Connection		Rc3/4 (Taper Pipe Female Threaded)								
	Water Flow Rate m³/h		0.58	0.6	0.71	0.83	1.02	1.1	1.36	1.61	1.91
	Water Resistance kPa		30	30	30	30	40	40	40	40	40
Condensate Drain Pan	Pipe Connection		Rc3/4 (Taper Pipe Male Threaded)								
Dimensions	Length	mm	890			1050		1430		1730	
	Width	mm	465			465		465		485	
	Height	mm	242			242		242		262	
Net weight			15	15	15	17	17	24	24	32	32

★ Note:

1. Cooling capacity is based on the following:
   a) Water temperature: 7°C (inlet)/12°C (outlet)
   b) Air entering condition: 27°C DB/19.5°C WB
2. Heating capacity is based on the following (with same water flow rate as cooling cycle):
   a) Water temperature: 60°C (inlet)
   b) Air entering condition: 21°C DB
3. The air flow is tested under air entering condition of 20°C DB and dry coil condition.
4. The sound pressure level is based on 11.5 dB(A) hemi-anechoic room background noise.
5. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

Low Noise DC Brushless FCU (3+1 rows 4 pipes)

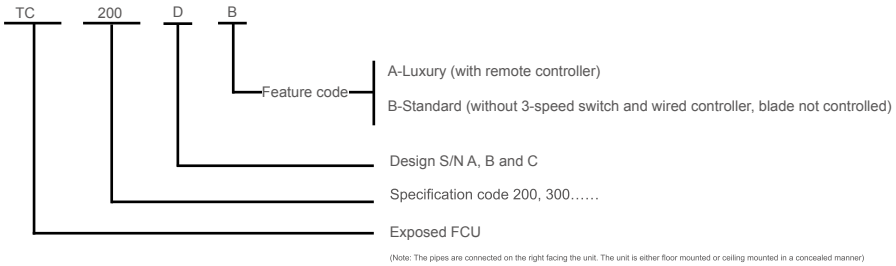
TCRQ			300C	400C	500C	600C	700C	800C	1000C	1200C
Rated Air Flow (m^3/h)		High	500	650	830	1000	1120	1300	1600	1900
		Medium	360	480	620	740	840	960	1180	1340
		Low	240	320	425	500	590	680	780	880
Total Cooling Capacity (W)		High	3100	4000	4850	5600	6200	7800	9000	10800
		Medium	2480	3200	3880	4480	4960	6240	7200	8640
		Low	1860	2400	2910	3360	3720	4680	5400	6480
Sensible Cooling Capacity (W)		High	2170	2800	3395	3920	4340	5460	6300	7560
		Medium	1736	2240	2716	3136	3472	4368	5040	6048
		Low	1302	1680	2037	2352	2604	3276	3780	4536
Heating Capacity (W)		High	2800	3600	4400	5000	5600	7000	8100	9800
		Medium	2240	2880	3520	4000	4480	5600	6480	7840
		Low	1680	2160	2640	3000	3360	4200	4860	5880
Power Input (W)	12Pa	High	19	25	38	50	65	74	88	100
		Medium	12	15	21	27	32	36	47	55
		Low	8	9	11	14	16	20	22	26
	30Pa	High	27	34	50	62	71	81	106	122
		Medium	15	19	26	33	38	44	56	64
		Low	9	10	13	16	18	23	26	29
	50Pa	High	35	45	63	77	89	100	126	148
		Medium	19	24	32	40	46	54	65	75
		Low	11	12	15	19	20	26	29	33
Sound Level (dB(A))	12Pa	High	33	38	41	44	44	44	45	47
		Medium	27	31	34	38	38	38	38	40
		Low	23	24	27	28	28	28	28	32
	30Pa	High	38	41	44	47	47	47	47	49
		Medium	32	34	35	40	40	40	40	42
		Low	25	26	29	31	31	31	32	32
	50Pa	High	41.5	43	46.5	48	48	48.5	49	51
		Medium	34	36	37	41	41	41	42	45
		Low	26	28	30	33	33	33	34	36
Fan	Type		Forward-curved multi-blade double inlet centrifugal fan							
Motor	Type		Brushless DC motor							
	Insulation Class		B							
	IP Rating		IP41							
	Power Supply		220 V - 50 Hz							
Heat Exchanger	Type		Efficient double-flanged aluminum fins and copper tubes, expanded into one							
	Maximum Operating Pressure		1.6 Mpa							
	Water Inlet/Outlet Pipe Diameter		Rc3/4 (Taper Pipe Female Threaded)							
	Cooling Water Flow (m^3/h)		0.55	0.72	0.87	1.05	1.12	1.39	1.67	1.9
	Heating Water Flow (m^3/h)		0.24	0.31	0.38	0.43	0.48	0.6	0.69	0.84
Cooling Water Pressure Drop (kPa)			30	30	30	40	40	40	40	40
Heating Water Pressure Drop (kPa)			20	20	30	40	30	30	40	40
Drain Pan	Condensate Water Pipe Diameter		Rc3/4 (Taper Pipe Male Threaded)							
Dimensions	Length (mm)		890		1050		1430		1730	
	Width (mm)		465		465		465		485	
	Height (mm)		242		242		242		262	
Weight	With Plenum Box (kg)		18	18	21	21	29	29	38	38

★ Note:

1. The air flow in the table is obtained when the unit is running in dry state; air return conditions: the dry/wet bulb temperature of air inlet is 20/15°C.
2. Cooling: supply water and return water temperatures 7/12°C; air return conditions: the dry/wet bulb temperature of air inlet is 27/19.5°C.
3. Heating: supply water and return water temperatures 60/50°C; air return conditions: the dry bulb temperature of air inlet is 21°C.
4. In the table, static pressure refers to the external static pressure of the unit, when the unit is not equipped with a plenum box or a filter screen.
5. In the table, noise is measured according to GB/T 19232-2003 in a semi-anechoic room where the background noise is 11.5 dB(A).
6. Left & right swing manner cannot be adjusted on site.

Ceiling & Floor Exposed FCU - TC

Nomenclature



- Flexible installation, ceiling or floor mounted
- Automatic horizonal and vertical air flow
- One side access hole ,easy for maintenance

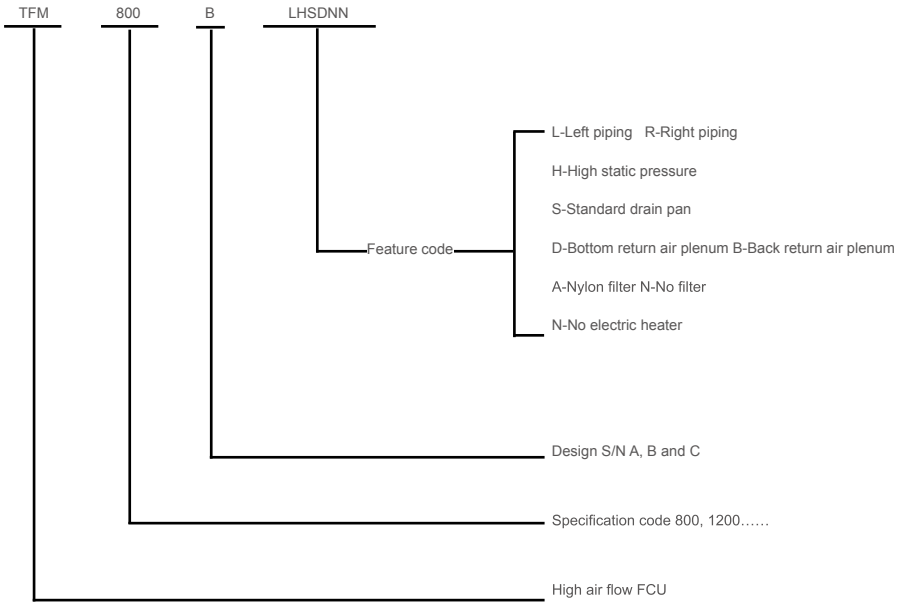
TC		200D	300D	400D	500D	600D	800D	1000D	1200D	1400D
Air Flow m^3/h	High	350	520	680	850	1030	1360	1700	2040	2380
	Medium	280	440	560	700	870	1255	1450	1830	2100
	Low	230	350	410	570	740	1080	1160	1500	1650
Total Cooling Capacity W	High	1970	2850	3600	4300	5400	6600	8400	9600	10500
	Medium	1675	2400	3060	3655	4590	5610	7140	8160	8900
	Low	1380	1995	2520	3010	3780	4620	5880	6720	7350
Heating Capacity W	High	3200	4500	5600	6800	8600	10500	13500	15000	16800
	Medium	2680	3825	4760	5780	7310	8900	11500	12750	14280
	Low	2200	3150	3920	4760	6020	7350	9450	10500	11760
Fan	Type	Centrifugal (Blade:Forward-Curved)								
	Quantity	2	2	2	2	3	3	4	4	4
Power Supply		220V~50Hz								
Motor Rated Power Input(W)		37	52	62	76	106	134	165	189	228
Coil	Type	Seamless copper tube mechanically bonded to aluminum fin								
	Max. Working Pressure MPa	1.6								
	Pipe Connection	Rc3/4(Taper Pipe Female Threaded)								
	Condensate Pipe	Φ25								
	Water Flow Rate m^3/h	0.34	0.49	0.62	0.74	0.89	1.12	1.44	1.65	1.81
	Water Pressure Drop kPa	12	14	22	26	15	20	20	24	29
Weight	(Without return air plenum) kg	25	25	25	25	40	40	45	45	45
Dimension (Without return air plenum)	Length(mm)	905	905	905	905	1288	1288	1672	1672	1672
	Width(mm)	243	243	243	243	243	243	243	243	243
	Height(mm)	673	673	673	673	673	673	673	673	673
Sound Pressure Level (High) dB(A)		37	39	41	43	45	46	48	50	52

★ Note:

1. Cooling capacity is based on the following: a) Water temperature: 7°C(inlet)/12°C(outlet) b) Air entering condition:27°C DB/19.5°C WB
2. Heating capacity is based on the following(with same water flow rate as cooling cycle): a) Water temperature: 60°C(inlet) b) Air entering condition:21°C DB
3. The air volume is tested under entering air condition of 20°C DB and dry coil condition.
4. TCXXXDB series do not supply three speeds switch and wired controller is optional accessory.TCXXXDA series do supply remote controller.
5. Thermostat is optional which have three speed levels and can be connected to electric valve and adjust temperature.
6. The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
7. The manufacturer reserves the rights to make changes to the above specifications without prior notice.
8. The unit can be in vertical or ceiling installation and connect pipe at right direction when in front of the unit.
9. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

Celling Concealed High Pressure FCU - TFM

Nomenclature



- Large air flow, range from 655CMH to 6200CMH
- High External static pressure, up to 180Pa.

Model TFM		800B	1000B	1200B	1600B	1800B	2000B	3000B
Rated Air Flow (m^3/h)	High	1265	1510	1925	2490	2945	3880	5500
	Medium	1015	1215	1540	1990	2360	3100	4395
	Low	815	970	1230	1595	1890	2485	3520
Air Outlet Static Pressure (Pa)	High	130	130	130	130	130	130	130
Cooling Capacity (kW)	High	8.29	9.87	12.04	15.93	19.11	24.26	34.41
	Medium	6.64	7.90	9.63	12.75	15.29	19.39	27.51
	Low	5.30	6.31	7.70	10.20	12.22	15.53	22.01
Sensible Cooling Capacity (kW)	High	6.11	7.39	8.75	11.87	14.28	17.62	25.00
	Medium	4.89	5.91	6.99	9.51	11.42	14.09	19.98
	Low	3.92	4.73	5.60	7.61	9.14	11.29	15.99
Heating Capacity (kW)	High	12.37	15.19	19.60	24.56	28.66	39.47	55.99
	Medium	9.89	12.51	15.68	19.65	22.93	31.58	44.79
	Low	7.91	9.72	12.54	15.73	18.34	25.29	35.84
Power Input (W)	High	280	370	600	700	750	1200	1800
Sound Pressure Level (dB(A))	High	62	63	64	63	64.5	65	66
Fan	Type	Forward-curved multi-blade centrifugal fan (galvanized steel sheet)						
	Qty	1	1	1	2	2	2	3
Motor	Type	Single-phase capacitor motor						
	Insulation Class	B						
	Power Supply	220V~50Hz						
	Qty	1	1	1	1	2	2	3
Heat Exchanger	Structure Type	Aluminum-finned and copper-tube, mechanical expanding						
	Maximum Operating Pressure (MPa)	1.6MPa						
	Water Inlet/ Outlet Pipe Diameter	R1 (taper pipe male threaded)					$R1^{1/2}$ (taper pipe male threaded)	
	Water Flow (m^3/h)	1.60	1.88	2.39	3.08	3.65	4.50	6.16
Water Pressure Drop (kPa)		6	14	25	20	25	35	45
Drain pan	Con-densate Water Pipe Diameter	R1 (taper pipe male threaded)						
Dimensions	Length (mm)	860	860	960	1110	1260	1560	2010
	Width (mm)	820	820	820	820	820	820	820
	Height (mm)	430	430	430	430	430	430	430
Net Weight (kg)		50	50	56	65	76	94	126

★ Note:

1.Cooling capacity test conditions: supply water and return water temperatures 7/12°C; air return conditions: the dry/wet bulb temperature of air inlet is 27°C;

2.Heating capacity test conditions: supply water is 60°C, water quantity being the same as during cooling capacity test; air return conditions: the dry bulb temperature of air inlet is 21°C;

3.The air flow in the table is obtained when the unit is running in dry state and the dry bulb temperature is 20°C;

4.When FCU residual pressure consumption is 80Pa, moisture might occur;

5.Unless specified otherwise, the unit comes with the following return air plenum;

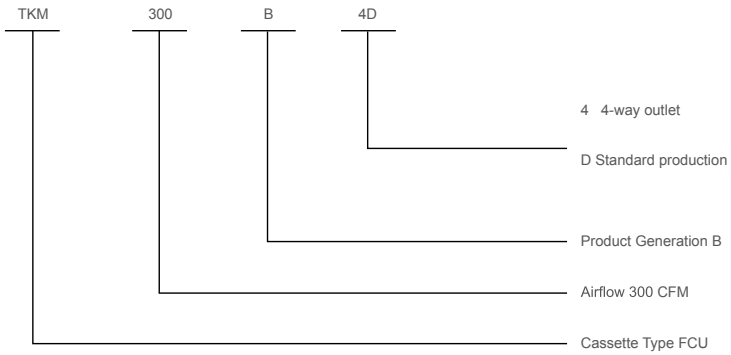
6.The sound pressure level in the table is obtained in a semi-anechoic chamber with noise at 11.5dB(A);

7.The specifications may be changed due to product improvement without a prior notice. The parameters indicated on the unit nameplate should prevail;

8.If thermostat or three-speed switch is required, please consult the factory.

Cassette Type FCU - TKM

Nomenclature



- 360° air outlet, no blind spot.
- Low noise

  The quality heat insulating and anechoic material is used to minimize the unit vibration and noise. The 3D aerofoil-type blade fan with a large diameter is used to ensure low speed and low noise.
- Compact design, built-in drain pump

Model TKM		300B4D	400B4D	500B4D	600B4D	800B4D	1000B4D	1200B4D
Air Flow m^3/h	High	510	680	820	1020	1360	1700	2040
	Medium	420	560	630	870	1150	1450	1750
	Low	350	460	500	715	950	1190	1430
Total Cooling Capacity W	High	2700	3600	4300	6000	8000	9500	10800
	Medium	2410	3100	3530	5150	6655	8285	9430
	Low	2140	2750	3010	4530	5860	6950	8200
Heating Capacity W	High	4050	5400	6450	10000	12500	15500	17000
Motor	Type	Split-capacitor motor with ball bearing						
	Insulation Class	B						
	Power Supply	220V~50Hz						
	Quantity	1						
	Rated Power Input	56	65	80	85	108	144	189
Coil	Type	Seamless copper tube mechanically bonded to aluminum hydrophilic fin						
	Max.Working Pressure Mpa	1.6						
	Inlet/outlet Pipe	Rc3/4 (Taper Pipe Female Threaded)						
	Condensing Pipe	Φ20						
	Water Flow Rate m^3/h	0.48	0.64	0.94	1.1	1.42	1.7	1.85
	Water Pressure Drop kPa	30	30	30	35	40	40	50
Sound Pressure Level (High) dB(A)		39	41	43	40	41	45	48
Body Dimension (Without Panel)	Length(mm)	570	570	730	840	840	840	840
	Width(mm)	570	570	730	840	840	840	840
	Height(mm)	250	250	290	230	310	310	310
Panel Dimension	Length(mm)	650	650	850	950	950	950	950
	Width(mm)	650	650	850	950	950	950	950
Net Weight kg		23	23	33	29	34	34	35

★ Note:

1. Cooling capacity is based on the following:
   a) Water temperature: 7°C (inlet)/12°C (outlet)
   b) Air entering condition:27°C DB/19.5°C WB
2. Heating capacity is based on the following(with same water flow rate as cooling cycle):
   a) Water temperature: 60°C (inlet)
   b) Air entering condition:21°C DB
3. Air volume above is tested under units with nylon filter.
4. The air volume is tested under entering air condition of 20°C DB and dry coil condition.
5. The sound pressure level is based on 11.5dB(A) hemi-anechoic room background noise.
6. Units supply blowing guide plate drive mechanism and remote control devices and pump.
7. The manufacturer reserves the rights to make changes to the above specifications without prior notice.

HEAT&ENERGY RECOVERY VENTILATOR

Nomenclature

TFM 010 F C L 2 07 11 J

Heat recovery	J: Full heat recovery
Discharge static pressure	11-110Pa
Air supply static pressure	07-70Pa
Number of water coil rows	N: None; 2: Two rows; 4: Four rows
Left/right type of unit	L: Left type; R: Right type
Structure type	C: Ceiling type; H: Horizontal type
Design S/N	A、B、C、
Specification code	Air flow specification X 100 m^3/h
Name code	TICA's AHU

- The patented labyrinth box structure is a dual-walled structure, so it has high insulation, high rigidity, and low air leakage rate.
- With the low-noise outer rotor centrifugal fan, unit size and noise are reduced, and you are free of maintaining the belts in daily operation.
- The unit is equipped with an access panel to facilitate daily maintenance.
- The high-efficiency heat recovery device can be widely used in different scenarios where fresh air is needed.

Heat & energy recovery ventilator (without any coils)

Model	Air flow	Cooling capacity	Heating capacity	External static pressure		Motor power		Power supply	Noise
	m^3h	kW	kW	Air supply/ Pa	Air discharge/ Pa	Air supply/ kW	Air discharge/ kW		dB(A)
010FC	1000	6.8	6.7	**90**	**90**	0.20	0.20	220V ~ 50Hz	53
				120	120	0 15	0 15		
015FC	1500	10.2	10.1	**110**	**110**	0.30	0.30	220V-50HZ	53
				150	150	030	0.30		
				180	180	0.45	0.45		
				70	70	0.25	0.25	380V3N-50HZ	
				90	90	0.25	0.25		
				130	130	025	0.25		
				200	200	0.32	0.32		
020FC	2000	13.6	13.5	80	80	0 375	0.375	220V - 50Hz	55
				120	**120**	0 45	0.45		
				150	150	0.45	0.45		
				180	180	0.45	0.45		
				200	200	0.55	0.55		
				250	250	055	0.55		
				50	50	0.32	0.32	380V 3N-50HZ	
				220	220	0 55	055		
				300	300	075	0.75		
025FC	2500	17	16.8	40	40	0 45	0.45	380V3N-50H7	56
				60	60	0.45	0.45		
				80	80	0.45	0.45		
				110	**110**	0.55	0.55		
				130	130	0.55	0.55		
				170	170	0 75	075		
				240	240	1.00	1.00		
030FC	3000	20.4	20.2	40	40	055	0.55	380V3N-50HZ	58
				60	60	0.55	0.55		
				80	80	0.55	0.55		
				100	**100**	0.55	0.55		
				150	150	0.75	0.75		
				220	220	0 75	0 75		
				270	270	075	0.75		
				310	310	0 75	0.75		
				370	370	0.75	0.75		
				400	400	1.00	1.00		
040FC	4000	27.2	26.9	50	50	1.00	1.00	380V3N-50HZ	59
				80	80	1 00	1.00		
				110	**110**	1 00	1.00		
				130	130	1 00	1 00		
				170	170	1.00	1.00		
				220	220	1.30	1.30		
				360	360	1.50	1.50		
				380	380	1.50	1.50		
				420	420	1.80	1.80		

Model	Air flow	Cooling capacity	Heating capacity	External static pressure		Motor power		Power supply	Noise
	m^3h	kW	kW	Air supply/ Pa	Air discharge/ Pa	Air supply/ kW	Air discharge/ kW		dB(A)
050FH	5000	34.0	33.7	40	40	1.10	1.10	380V 3N~50Hz	62
				70	70	1.10	1.10		
				100	**100**	1.50	1.50		
				160	160	1.50	1.50		
				240	240	1.50	1.50		
				270	270	1.50	1.50		
				340	340	2.20	2.20		
				390	390	2.20	2.20		
				470	470	2.20	2.20		
				540	540	3.00	3.00		
060FH	6000	40.8	40.4	40	40	0.55*2	0.55*2	380V 3N-50HZ	62
				60	60	0.55*2	0.55*2		
				80	80	0.55*2	0.55*2		
				100	**100**	0.55*2	0.55*2		
				150	150	0.75*2	0.75*2		
				220	220	0.75*2	0.75*2		
				270	270	0.75*2	0.75*2		
				310	310	0.75*2	0.75*2		
				370	370	0.75*2	0.75*2		
				400	400	1.00*2	1.00*2		
080FH	8000	54.4	53.9	50	50	1.00*2	1.00*2	380V3N-50HZ	63
				80	80	1.00*2	1.00*2		
				110	**110**	1.00*2	1.00*2		
				130	130	1.00*2	1.00*2		
				170	170	1.00*2	1.00*2		
				220	220	1.30*2	1.30*2		
				360	360	1.50*2	1.50*2		
				380	380	1.50*2	1.50*2		
				420	420	1.80*2	1.80*2		
105FH	10500	71.4	70.7	40	40	1.10*2	1.10*2	380V 3N~50Hz	66
				70	70	1.10*2	1.10*2		
				100	**100**	1.50*2	1.50*2		
				160	160	1.50*2	1.50*2		
				240	240	1.50*2	1.50*2		
				270	270	1.50*2	1.50*2		
				340	340	2.20*2	2.20*2		
				390	390	2.20*2	2.20*2		
				470	470	2.20*2	2.20*2		
				540	540	3.00*2	3.00*2		

★ Remarks:

1. Cooling: The dry bulb temperature of fresh air is 35°C, and the wet bulb temperature is 28°C; the dry bulb temperature of air return is 27°C, and the wet bulb temperature is 19.5°C.
2. Heating: The dry bulb temperature of fresh air is -7°C, and the dry bulb temperature of air return is 20°C;
3. The specifications are subject to change due to product improvement without a prior notice;
4. The static pressure shown in bold type is a standard static pressure, and the other static pressures are optional. Noise parameters are tested under the standard static pressure.

Model	Air flow	Cooling capacity	Heating capacity	ESP		Motor power		Power supply	Noise
	m^3/h	kW	kW	Air supply/Pa	Air discharge/Pa	Air supply/kW	Air discharge/kW		dB(A)
050FH	5000	34.0	33.7	40	40	1.10	1.10	380V 3N~50Hz	62
				70	70	1.10	1.10		
				100	100	1.50	1.50		
				160	160	1.50	1.50		
				240	240	1.50	1.50		
				270	270	1.50	1.50		
				340	340	2.20	2.20		
				390	390	2.20	2.20		
				470	470	2.20	2.20		
				540	540	3.00	3.00		
060FH	6000	40.8	40.4	40	40	0.55*2	0.55*2	380V 3N~50Hz	62
				60	60	0.55*2	0.55*2		
				80	80	0.55*2	0.55*2		
				100	100	0.55*2	0.55*2		
				150	150	0.75*2	0.75*2		
				220	220	0.75*2	0.75*2		
				270	270	0.75*2	0.75*2		
				310	310	0.75*2	0.75*2		
				370	370	0.75*2	0.75*2		
				400	400	1.00*2	1.00*2		
080FH	8000	54.4	53.9	50	50	1.00*2	1.00*2	380V 3N~50Hz	63
				80	80	1.00*2	1.00*2		
				110	110	1.00*2	1.00*2		
				130	130	1.00*2	1.00*2		
				170	170	1.00*2	1.00*2		
				220	220	1.30*2	1.30*2		
				360	360	1.50*2	1.50*2		
				380	380	1.50*2	1.50*2		
				420	420	1.80*2	1.80*2		
105FH	10500	71.4	70.7	40	40	1.10*2	1.10*2	380V 3N~50Hz	66
				70	70	1.10*2	1.10*2		
				100	100	1.50*2	1.50*2		
				160	160	1.50*2	1.50*2		
				240	240	1.50*2	1.50*2		
				270	270	1.50*2	1.50*2		
				340	340	2.20*2	2.20*2		
				390	390	2.20*2	2.20*2		
				470	470	2.20*2	2.20*2		
				540	540	3.00*2	3.00*2		

★ Remarks:

1. Cooling: The dry bulb temperature of fresh air is 35°C, and the wet bulb temperature is 28°C; the dry bulb temperature of air return is 27°C, and the wet bulb temperature is 19.5°C.
2. Heating: The dry bulb temperature of fresh air is -7°C, and the dry bulb temperature of air return is 20°C.
3. The specifications are subject to change due to product improvement without prior notice.
4. The static pressure shown in bold type is a standard static pressure, and the other static pressures are optional. Noise parameters are tested under the standard static pressure.

Heat & energy recovery ventilator (with two rows of coils)

Model	Air flow	Cooling capacity			Heating capacity			Water flow	Water resistance	External static pressure		Rated power		Power supply	Noise
	(m^3/h)	Q_{Total}kW	$Q_{Recovery}$kW	Q_{Mainkw}	Q_{Total}kW	$Q_{Recovery}$kW	Q_{Mainkw}	(l/S)	(kPa)	Air supply/Pa	Air discharge/Pa	Air supply/kW	Air discharge/kW		dB(A)
010FC	1000	11.0	6.8	4.2	12.0	6.5	5.7	0.2	13	70	90	0.15	0.20	220V - 50Hz	53
015FC	1500	16.7	10.2	6.5	18.3	9.5	8.8	0.3	15	130	110	0.45	0.30	220V~50Hz	53
020FC	2000	22.7	13.6	9.1	25.0	12.7	12.3	0.4	13	130	120	0.45	0.45	220V-50HZ	55
025FC	2500	27.8	17.0	10.8	30.5	15.9	14.6	0.5	29	120	110	0.75	0.55	380V3N~50Hz	56
030FC	3000	35.2	20.4	14.8	39.1	19.1	20.0	0.7	56	170	100	0.75	0.55	380V3N-50HZ	58
040FC	4000	47.6	27.2	20.4	53.0	25.5	27.5	1.0	55	170	110	1.30	1.00	380V3N-50HZ	60
050FH	5000	59.1	34.0	25.1	65.7	31.8	33.9	1.2	58	190	100	1.50	1.50	380V3N-50HZ	62
060FH	6000	70.4	40.8	29.6	78.2	38.2	40.0	1.4	56	170	100	0.75x2	0.55x2	380V3N-50HZ	61
080FH	8000	95.2	54.4	40.8	106.0	50.9	55.1	2.0	55	170	110	1.30x2	1.00x2	380V3N-50HZ	62
105FH	10500	124.1	71.4	52.7	138.0	66.8	71.2	2.5	58	190	100	1.50x2	1.50x2	380V3N~50Hz	65

Heat & energy recovery ventilator (with four rows of coils)

Model	Air flow	Cooling capacity			Heating capacity			Water flow	Water resistance	External static pressure		Rated power		Power supply	Noise
	(m^3/h)	Q_{Total}kW	$Q_{Recovery}$kW	Q_{Mainkw}	Q_{Total}kW	$Q_{Recovery}$kW	Q_{Mainkw}	(l/S)	(kPa)	Air supply/Pa	Air discharge/Pa	Air supply/kW	Air discharge/kW		dB(A)
015FC	1500	21.3	10.2	11.1	24.5	9.5	14.9	0.5	32	80	110	0.45	0.30	220V~50Hz	53
020FC	2000	29.1	13.6	15.5	33.6	12.7	20.9	0.7	25	80	80	0.45	0.375	220V~50HZ	55
025FC	2500	35.4	17.0	18.4	40.7	15.9	24.8	0.9	43	140	110	1.00	0.55	380V3N~50HZ	56
030FC	3000	45.6	20.4	25.2	53.1	19.1	34.0	1.2	54	120	100	0.75	0.55	380V3N~50HZ	58
040FC	4000	61.9	27.2	34.7	72.3	25.5	46.8	1.7	58	120	110	1.30	1.00	380V3N~50Hz	59
050FH	5000	76.7	34.0	42.7	89.4	31.8	57.6	2.0	59	140	100	1.50	1.50	380V3N~50HZ	62
060FH	6000	91.1	40.8	50.3	106.1	38.2	67.9	2.4	54	120	100	0.75x2	0.55x2	380V3N~50Hz	61
080FH	8000	123.8	54.4	69.4	144.5	50.0	93.6	3.4	58	120	110	1.30x2	1.00x2	380V3N~50HZ	62
105FH	10500	161.0	71.4	89.6	187.8	66.8	121.0	4.3	59	140	100	1.50x2	1.50x2	380V3N~50HZ	65

★ Remarks:

1. Cooling: The dry bulb temperature of fresh air is 35°C, and the wet bulb temperature is 28°C; the dry bulb temperature of air return is 27°C, and the wet bulb temperature is 19.5°C; the water inlet/outlet temperature is 7°C/12°C;
2. Heating: The dry bulb temperature of fresh air is -7°C, the dry bulb temperature of air return is 20°C, and the water inlet/outlet temperature is 60°C/50°C;
3. $Q_{Total}=Q_{Recovery}+Q_{Main}$. Q_{Total}: Fresh air load; $Q_{Recovery}$ Recovered cooling/heating capacity; Q_{Main}: Cooling/heating capacity provided by the chiller or boiler;
4. The specifications are subject to change due to product improvement without a prior notice;

DX MODULAR AIR HANDLING UNIT

Nomenclature

IDU model

TAC

TBC XX YY E H X

- X: Application characteristics
  - H: IDU of air-cooled cabinet type thermostatic and humidistatic AHU
  - X: IDU of air-cooled purifying type air conditioning unit
  - S: Deep dehumidification fresh air handling unit
  - U: Open energy-demand air handling unit
- H: Feature code: H – Horizontal type; V – Vertical type; C – Ceiling type
- E: Design S/N: A, B, C
- YY: Specifications: Width modulus, 100 mm per mode
- XX: Specifications: Height modulus, 100 mm per mode
- TBC: TICA's modular AHU: TAC box plate thickness: 25 mm. TBC box plate thickness: 50 mm.

ODU model

TSAX 330 B R 2

- 2: Feature code: 2 – R22 refrigerant R410A refrigerant (by default)
- R: Feature code: R – Cooling/heating Cooling-only (by default)
- B: Design S/N: A, B, C
- 330: Specifications: 012, 020, 025...
- TSAX: TICA's air-cooled DX air handling unit (ODU)

Specifications of Air-Cooled Cabinet Type Thermostatic and Humidistatic AHU & Air-Cooled Purifying Type Air Conditioning Unit (R410A)

Model		IDU	TAC	0607	0608	0810	0813	1013	1115	1117
			TBC							
		IDU fluorine coil	TSD	008BM	016BM	025CM	030CM	041CM	052CM	062CM
		ODU	TSAX	008BR	008BR*2	025C(R)	030C(R)	041C(R)	052C(R)	062C(R)
System parameters	Rated cooling capacity 1 (cooling-only type/heat pump type)		kW	7.5	15	25.5	30	41	52	62
	Rated cooling capacity 2 (cooling-only type/heat pump type)		kW	8.0	16.1	27.3	32.1	43.9	55.6	66.3
	Heating capacity (heat pump type)		kW	8	16	28.5	34.1	44	55	68
IDU	Air flow		m^3/h	1400	2400	5000	6000	7500	10000	12000
	Cooling coil section length for reference		mm	500	500	500	500	500	600	600
	Temperature setting range and precision		-	20℃~26℃ (Cooling only constant temperature and humidity type: ±1℃; heat pump/other type: ±2℃)						
	Humidity setting range and precision		-	45%~65% (Constant temperature and humidity, cooling only: ±5%; heat pump: ±10%; other types: no precision)						
	Power supply		-	380V 3N ~ 50Hz						
	Electric heater	Power	kW	8	12	16	20	24	32	38
	Humidifier	Type	-	Electrode humidifier (Electric heating humidifier is optional)						
		Power	kW	3.8	3.8	6.0	11.3	11.3	11.3	18.8
		Humidifying capacity	kg/h	5	5	8	15	15	15	25
ODU	Compressor type			Rotary compressor		Hermetic scroll compressor				
	Outer dimensions (single set)	Length	mm	865	865	1403	1403	1403	1808	1808
		Width	mm	350	350	821	821	821	1090	1090
		Height	mm	700	700	1200	1200	1200	1214	1214
	Weight (single set)		kg	56	56	245	270	280	415	455
	Power supply			220V 1N ~ 50Hz		380V 3N ~ 50Hz				
	Power input		kW	2.4	4.8	8.71	10.04	13.85	16.98	19.65
	Rated current		A	11.1	22.2	19.03	22.01	25.45	31.93	36.80
Refrigerant	Charge amount		kg	2.1	2.1*2	3.4*2	3.6*2	4.35*2	6.7*2	7.2*2
Connection pipe	ODU connection mode			Pipe socket					Welding	
	Dimensions	Liquid pipe	φmm	6.35	6.35*2	9.52*2	9.52*2	12.7*2	12.7*2	12.7*2
		Gas pipe	φmm	15.88	15.88*2	15.88*2	15.88*2	19.05*2	22.23*2	25.4*2

★ Remarks:

1. The rated cooling capacity 1 is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 24/17°C and the outdoor dry/wet bulb temperature is 35/24°C. The rated cooling capacity 2 is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 27/19°C and the outdoor dry/wet bulb temperature is 35/24°C.
2. The rated heating capacity is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 20/15°C and the outdoor dry/wet bulb temperature is 7/6°C.
3. The rated cooling capacity does not take into account the heating loss of fan motor. The nominal air flow refers to the operating air flow under the standard condition.
4. The standard configuration of the unit includes an electric heater, and hot water or steam heating can be adopted according to the customer's requirements.
5. The ODU dimensions provided in the parameter table are the external dimensions of single unit.
6. The standard electric heater in the sample is an auxiliary electric heater, and the secondary heating quantity in winter should be accounted for separately.
7. Piping condition of unit performance test: Equivalent refrigerant length 7.5 m (horizontal).
8. R22 has been charged in the ODU. For the charge quantity, refer to the nameplate.
9. Ambient temperature range for operation of the ODU: TSAX008BR cooling: 0°C≤T≤46℃; heating: -10℃≤T≤25℃.
   TSAX025~062C(R) cooling: 0°C≤T≤46℃; heating: -15℃≤T≤25℃.
   TSAX290~330B(R) cooling: -10℃≤T≤46℃; heating: -10℃≤T≤30℃.

★ Note: ODUs include:

one set of TSD008BM, TSD025CM, TSD030CM, TSD041CM, TSD052CM, TSD062CM, TSD290BM, or TSD330BM ODU;

The TSD016BM ODU consists of two TSAX008BR ODUs;

The TSD082CM ODU consists of two TSAX041C(R) ODUs;

The TSD104CM ODU consists of two TSAX052C(R) ODUs;

The TSD124CM ODU consists of two TSAX062C(R) ODUs;

The TSD156CM ODU consists of three TSAX052C(R) ODUs;

The TSD186CM ODU consists of three TSAX062C(R) ODUs.

Specifications of Air-cooled Cabinet Type Thermostatic and Humidistatic AHU & Air-Cooled Purifying Type Air Conditioning Unit (R410A)

Model		IDU	TAC	1218	1521	1622	1923	2026	2528	2528
			TBC							
		IDU fluorine coil	TSD	082CM	104CM	124CM	156CM	186CM	290BM	330BM
		ODU	TSAX	041C(R)*2	052C(R)*2	062C(R)*2	052C(R)*3	062C(R)*3	290BR	330BR
System parameters	Rated cooling capacity 1 (cooling-only type/heat pump type)		kW	79	104	124	156	186	250	286
	Rated cooling capacity 2 (cooling-only type/heat pump type)		kW	84.5	111.3	132.7	166.9	199.0	270	310
	Heating capacity (heat pump type)		kW	83	110	136	165	204	270	310
IDU	Air flow		m^3/h	15000	18500	23500	28000	34500	47000	52000
	Cooling coil section length for reference		mm	600	600	600	800	800	900	900
	Temperature setting range and precision		-	20℃~26℃ (Cooling only constant temperature and humidity type: ±1℃; heat pump/other type: ±2℃)						
	Humidity setting range and precision		-	45%~65% (Constant temperature and humidity, cooling only: ±5%; heat pump: ±10%; other types: no precision)						
	Power supply		-	380V 3N～ 50Hz						
	Electric heater	Power	kW	48	60	80	90	120	120	120
	Humidifier	Type	-	Electrode humidifier (Electric heating humidifier is optional)						
		Power	kW	18.8	26.3	33.8	49	49	49	49
		Humidifying capacity	kg/h	25	35	45	65	65	65	65
ODU	Compressor type			Hermetic scroll compressor						
	Outer dimensions (single set)	Length	mm	1403	1808	1808	1808	1808	2200	2200
		Width	mm	821	1090	1090	1090	1090	2400	2400
		Height	mm	1200	1214	1214	1214	1214	2235	2235
	Weight (single set)		kg	280	415	455	415	455	1570	1570
	Power supply			380V 3N～ 50Hz						
	Power input		kW	25.89	33.96	39.30	51.78	58.95	84	92.4
	Rated current		A	49.10	63.86	73.60	98.20	110.40	150.6	165.9
Refrigerant	Charge amount		kg	4.35*4	6.7*4	7.2*4	6.7*6	7.2*6	13.5*4	13.5*4
Connection pipe	ODU connection mode			Pipe socket	Welding					
	Dimensions	Liquid pipe	φmm	12.7*4	12.7*4	12.7*4	12.7*6	12.7*6	19.05*4	19.05*4
		Gas pipe	φmm	19.05*4	22.23*4	25.4*4	22.23*6	25.4*6	34.92*4	34.92*4

★ Remarks:

1. The rated cooling capacity 1 is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 24/17°C and the outdoor dry/wet bulb temperature is 35/24°C. The rated cooling capacity 2 is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 27/19°C and the outdoor dry/wet bulb temperature is 35/24°C.
2. The rated heating capacity is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 20/15°C and the outdoor dry/wet bulb temperature is 7/6°C.
3. The rated cooling capacity does not take into account the heating loss of fan motor. The nominal air flow refers to the operating air flow under the standard condition.
4. The standard configuration of the unit includes an electric heater, and hot water or steam heating can be adopted according to the customer's requirements.
5. The ODU dimensions provided in the parameter table are the external dimensions of single unit.
6. The standard electric heater in the sample is an auxiliary electric heater, and the secondary heating quantity in winter should be accounted for separately.
7. Piping condition of unit performance test: Equivalent refrigerant length 7.5 m (horizontal).
8. R22 has been charged in the ODU. For the charge quantity, refer to the nameplate.
9. Ambient temperature range for operation of the ODU: TSAX008BR cooling: 0°C≤T≤46°C; heating: -10°C≤T≤25°C.
   TSAX025~062C(R) cooling: 0°C≤T≤46°C; heating: -15°C≤T≤25°C.
   TSAX290~330B(R) cooling: -10°C≤T≤46°C; heating: -10°C≤T≤30°C.

★ Note: ODUs include:

one set of TSD008BM, TSD025CM, TSD030CM, TSD041CM, TSD052CM, TSD062CM, TSD290BM, or TSD330BM ODU;

The TSD016BM ODU consists of two TSAX008BR ODUs;

The TSD082CM ODU consists of two TSAX041C(R) ODUs;

The TSD104CM ODU consists of two TSAX052C(R) ODUs;

The TSD124CM ODU consists of two TSAX062C(R) ODUs;

The TSD156CM ODU consists of three TSAX052C(R) ODUs;

The TSD186CM ODU consists of three TSAX062C(R) ODUs.

Specifications of Air-cooled DX All Fresh Air Unit (R410A)

Model	IDU		TAC	0610	0711	0813	0814	1015	1017	1119	1319	1924	1924
			TBC										
	ODU		TSAX	025C(R)	030C(R)	041C(R)	052C(R)	062C(R)	041C(R)*2	052C(R)*2	062C(R)*2	290BR	330BR
System parameters	Air flow		m^3/h	2450	3000	4000	5000	7000	8000	10000	14000	24000	26000
	Air flow range		m^3/h	Standard air flow ±5%									
	Cooling capacity		kW	25.5	30.0	41.0	51.0	61.0	82.0	105.0	121.0	290.0	332.0
	Heating capacity		kW	28.5	34.1	41.5	55.0	68.0	83.0	110.0	135.0	280.0	320.0
IDU	Cooling coil section length for reference		mm	600	700	700	800	800	800	800	800	800	800
	IDU coil		TSD	025CFM	030CFM	041CFM	052CFM	062CFM	082CFM	104CFM	124CFM	290BFM	330BFM
	Fan form		-	Belt-driven low noise centrifugal type									
	Power supply		-	380V 3N~50Hz									
ODU	Compressor type		-	Hermetic scroll compressor									
	Outer dimensions (single set)	Length	mm	1403	1403	1403	1808	1808	1403	1808	1808	2200	2200
		Width	mm	821	821	821	1090	1090	821	1090	1090	2400	2400
		Height	mm	1200	1200	1200	1214	1214	1200	1214	1214	2235	2235
	Weight (single set)		kg	245	270	280	415	455	280	415	455	1570	1570
	Power supply		-	380V 3N～ 50Hz									
	Power input	Cooling	kW	8.71	10.04	13.85	16.98	19.65	25.89	33.96	39.30	89.30	98.30
		Heating	kW	8.25	9.96	13.00	16.13	19.00	23.60	32.26	38.00	80.30	88.30
	Rated current	Cooling	A	19.03	22.01	25.45	31.93	36.80	49.10	63.86	73.60	156.50	172.40
		Heating	A	18.03	21.81	23.95	29.63	34.90	43.40	59.26	69.80	144.20	158.80
Refrigerant	Model		-	R410A									
	Charge quantity (cooling-only type/ heat pump type)		kg	3.4*2	3.6*2	4.35*2	6.7*2	7.2*2	4.35*4	6.7*4	7.2*4	13.5*4	13.5*4
Connection pipe	Connection mode		-	Pipe socket			Welding						
	Dimensions	Liquid pipe	φmm	9.52*2	9.52*2	12.7*2	12.7*2	12.7*2	12.7*4	12.7*4	12.7*4	19.05*4	19.05*4
		Gas pipe	φmm	15.88*2	15.88*2	19.05*2	22.23*2	25.4*2	19.05*4	22.23*4	25.4*4	34.92*4	34.92*4

★ Remarks:

1. The rated cooling capacity is tested under the nominal air flow, when the outdoor dry/wet bulb temperature is 34/28°C.
2. The rated heating capacity is tested under the nominal air flow, when the outdoor dry/wet bulb temperature is 7/6°C.
3. Piping condition of unit performance test: Equivalent refrigerant length 7.5 m (horizontal).
4. When the electric heater is used to pre-heat fresh air, the IDU length should be added by 300 mm.
5. R410A refrigerant has been charged into the ODU. For the charge quantity, refer to the nameplate.
6. The fresh air unit is used for handling fresh air only.
7. The specification parameters may be changed due to product improvement without a prior notice. The parameters indicated on the unit nameplate should prevail.
8. When the heat pump type is used for heating at a temperature below 0°C, a preheating section needs to be configured to implement preheating to a temperature above 0°C.
9. Ambient temperature range for operation of the ODU: TSAX025C(R)~TSAX062C(R) cooling: 20°C≤T≤43°C; heating: -15°C≤T≤15°C; TSAX290B(R)~TSAX330B(R) cooling: 17°C≤T≤46°C; heating: -10°C≤T≤21°C.

Control System Specification (Parameters and Configuration)

Model			EHH/EVH/ECH	EHX/EVX/ECX	EHU/EVU/ECU	CHX/CVX/CCX	BHS
Product features			Standard constant temperature and humidity	Purification type	Open energy-demand control	Fresh air pre-handling	Deep dehumidification fresh air handling unit
Cooling/heating type			Cooling-only/heat pump	Cooling-only/heat pump	Cooling-only/heat pump	Cooling-only/heat pump	Cooling only
Control object			Air return	Air return	Air return	Fresh air	Fresh air
Control precision	Temperature	Scope	20℃~26℃	20℃~26℃	/	/	/
		Precision	Cooling-only: ±1℃; heat pump: ±2℃	±2℃	/	/	/
	Humidity	Scope	45%~65%	45%～65%	/	/	/
		Precision	Cooling-only: ±5%; heat pump: ±10%	±10%	/	/	/
Control cabinet	Main controller type		Single-chip microcomputer	Single-chip microcomputer	Single-chip microcomputer	Single-chip microcomputer	Single-chip microcomputer (section)
	Operating mode		Auto/Cooling/Heating/Ventilation	Auto/Cooling/Heating/Ventilation	/	Cooling/Heating/Ventilation	/
	Timed on/off		Yes	Yes	No	Yes	Yes
	RS485 monitoring interface		Yes	Yes	Yes	Yes	Yes
	ODU power air switch		Yes	Yes	No	No	No
	Sterilizing device		Optional	No	No	No	No
	Man-machine interface	Type	Capacitive touch screen 	LCD wired controller 	No	LCD wired controller with mechanical buttons 	LCD wired controller with mechanical buttons 
		Local touch screen	7 inches (default)	No	No	No	No
		External touch screen	Optional	No	No	No	No
	Monitoring dry contact	Remote start/stop	Yes	Yes	No	Yes (7.5 HP and above)	No
		Operating status indicator	Yes	Yes	No	No	Available in split-type units
		Fault status indicator	Yes	Yes	No	No	Available in split-type units
	Interlocking passive dry contact	Fire valve interlock	Yes	Yes	No	Yes	Yes
		Firefighting monitoring interlocking	Yes	Yes	No	Yes	No
		Discharge fan	Yes	Yes	No	No	No
		Rotary heat recovery interlocking	No	No	No	No	No
		Rotary dehumidifier interlocking	No	No	No	No	No
		Ozone sterilization	Optional	No	No	No	No
		Ultraviolet disinfection	Optional	No	No	No	No
		Electrostatic precipitator	No	No	No	No	No
	Protection functions	Air loss protection(Including differential pressure switch)	Yes	Yes	Yes	Yes	Yes
		Over-temperature power-off protection of electric heater	Yes	Yes	No	Yes (Configured when an electric heater is available)	No
		Primary/medium/high efficiency filter alarm (excluding the differential pressure switch)	Yes	Yes	No	No	No
		Antifreeze switch of the hot water coil	No	No	No	No	No
		Overheat protection of steam heating	No	No	No	No	No
		Emergency stop button	Cabinet door + IDU cabinet	Cabinet door + IDU cabinet	No	No	No

★ Remarks:

The above configuration is the standard configuration for product control. For other requirements of non-standard control items, the customer can consult TICA.

Specifications of Deep Dehumidification Fresh Air Handling Unit (Integral)

Model		TAC / TBC	1013	1015	1116	1317
Air flow		m^3/h	6500	8000	10000	12500
Air flow range		m^3/h	Standard air flow * 60%≤Air flow≤Standard air flow * 110%			
Number of optional rows of water coil			6 to 8 rows			
Deep dehumidification module	Compressor HP	-	4Hp	5Hp	6Hp	8Hp
	Cooling capacity of the evaporator	kW	12	14.5	18.5	23.2
	Heating capacity of the condenser	kW	15.2	18.2	22.7	28.7
	Dew-point temperature range of the air inlet machine of the evaporator	℃	12℃～18℃			
	Compressor type	-	Hermetic scroll compressor			
	Rated power input of the compressor	kW	2.70	3.5	3.7	4.2
	Rated current of the compressor	A	4.9	6.6	7.1	8.1
	Refrigerant	Model	R410A			
		Charge amount	2.6	2.8	3.2	3.8
	Module section length	mm	1200			
Fan form		-	Belt-driven low noise centrifugal type			
Power supply of the unit		-	380V 3N~50Hz			
Connected water diameter of condensed water tray			DN32			

Specifications of Deep Dehumidification Fresh Air Handling Unit (Split-type)

Model	IDU		TAC / TBC	0813	1013	1015	1116	1317	1420
	ODU		TSA(X)	075N	025C	030C	041C	052C	062C
Air flow range			m^3/h	4950~6120	6120~7920	7650~9700	9700~12100	12100~15300	15300~18700
Number of optional rows of water coil				6 to 8 rows					
Deep dehumidification module IDU	Cooling capacity of the evaporator		Kw	19.5	25.5	30	41	52	62
	Dew-point temperature range of the air inlet machine of the evaporator		℃	12~18℃					
	Module section length		mm	800					
ODU	Power supply		-	380V 3N~50HZ					
	Outer dimensions (single set)	Length	mm	1403	1403	1403	1403	1808	1808
		Width	mm	821	821	821	821	1090	1090
		Height	mm	1200	1200	1200	1200	1214	1214
	Weight (single set)		kg	220	245	270	280	415	455
	Compressor form		-	Hermetic scroll compressor					
	Rated power input of the compressor		kW	8	10	11.9	15	20.8	24.5
	Rated current of the compressor		A	17.2	18.87	22.45	28.3	39.25	46.23
Refrigerant	Model		-	R410A					
	Charge amount		kg	3.0*2	3.4*2	3.6*2	4.35*2	6.7*2	7.2*2
Connection pipe	Connection mode			Pipe socket				Welding	
	Dimensions	Liquid pipe	φmm	9.52*2	9.52*2	9.52*2	12.7*2	12.7*2	12.7*2
		Gas pipe	φmm	15.88*2	15.88*2	15.88*2	19.05*2	22.23*2	25.4*2

★ Remarks:

1. The cooling capacity of the integral deep dehumidification module is measured when air inlet dry/wet bulb temperature of the evaporator is 14/13.5°C under nominal air flow.
   The cooling capacity of the split-type deep dehumidification module is measured when air inlet dry/wet bulb temperature of the evaporator is 16/15.5°C under nominal air flow.
2. Before delivery, the integral deep dehumidification module has been charged with refrigerant, while the ODU of the split-type deep dehumidification module has been charged with refrigerant and uses nitrogen to hold pressure.
3. The compressor of the integral deep dehumidification module is located inside the cabinet, without an ODU.
4. The specification parameters may be changed due to product improvement without a prior notice. The parameters indicated on the unit nameplate should prevail.

1. Impact on cooling operation by indoor and outdoor conditions Air-cooled cabinet type thermostatic and humidistatic AHUs/Air-cooled purifying type air conditioning unit

Correction coefficient / Indoor wet bulb temperature (°C) / Outdoor dry bulb temperature (°C)	15	16	17	18	19	20	21	22
25	1.041	1.095	1.121	1.137	1.153	1.165	1.179	1.181
30	1.000	1.039	1.071	1.095	1.119	1.165	1.163	1.171
35	0.925	0.961	1.000	1.039	1.076	1.086	1.092	1.102
40	0.831	0.875	0.911	0.954	1.000	1.056	1.076	1.095
43	0.782	0.823	0.887	0.916	0.971	0.988	1.028	1.034

★ Remarks:

1. During cooling operation, the main factors affecting the cooling capacity are the indoor wet bulb temperature and outdoor dry bulb temperature. The outdoor wet bulb temperature and indoor dry bulb temperature affect the cooling capacity slightly. Therefore, the indoor dry bulb temperature and outdoor wet bulb temperature are ignored in the above table.
2. The above table reflects the approximate change trend of air conditioning unit with the indoor and outdoor conditions. It can be used a reference only during model selection by the customer.

2. Impact on cooling operation by indoor and outdoor conditions Air-cooled cabinet type thermostatic and humidistatic AHUs/Air-cooled purifying type air conditioning unit

Correction coefficient / Indoor wet bulb temperature (°C) / Outdoor dry bulb temperature (°C)	14	12	10	8	6	4	2	0	-2	-4	-6	-8	-11	-13	-15
10	1.241	1.192	1.157	1.119	1.081	1.052	0.984	0.921	0.862	0.807	0.757	0.712	0.671	0.634	0.602
15	1.196	1.159	1.131	1.085	1.043	0.998	0.930	0.867	0.808	0.753	0.703	0.658	0.617	0.580	0.548
20	1.172	1.136	1.095	1.053	1.000	0.964	0.897	0.834	0.775	0.720	0.669	0.622	0.579	0.540	0.505
25	1.139	1.099	1.052	1.016	0.967	0.898	0.833	0.772	0.716	0.663	0.615	0.570	0.530	0.494	0.462

★ Remarks:

1. During cooling operation, the main factors affecting the cooling capacity are the indoor wet bulb temperature and outdoor dry bulb temperature. The outdoor wet bulb temperature and indoor dry bulb temperature affect the cooling capacity slightly. Therefore, the indoor dry bulb temperature and outdoor wet bulb temperature are ignored in the above table.
2. The above table reflects the approximate change trend of air conditioning unit with the indoor and outdoor conditions. It can be used a reference only during model selection by the customer.

3. Impact on the cooling capacity by IDU air flow changes

IDU rated air flow (%)	80	90	100	110	120
Cooling capacity correction coefficient	0.91	0.96	1	1.02	1.04

4. When the IDU and ODU connecting pipe is too long or the height difference of IDU and ODU is too large, the cooling capacity will be affected (for the maximum pipe length, refer to the attached table). The cooling capacity correction coefficient is provided below:

Influence factor		Cooling capacity correction coefficient									
Equivalent total length of connecting pipe (m)		5	10	15	20	25	30	35	40	45	50
Height difference between the ODU and IDU	0m	1.00	0.99	0.97	0.95	0.93	0.91	0.89	0.87	0.85	0.83
	5m	1.00	0.98	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.82
	10m	-	0.97	0.95	0.93	0.91	0.89	0.87	0.85	0.83	0.81
	15m	-	-	0.94	0.92	0.90	0.88	0.86	0.84	0.82	0.80
	20m	-	-	-	0.91	0.89	0.87	0.85	0.83	0.81	0.79
	25m	-	-	-	-	0.88	0.86	0.84	0.82	0.80	0.78

★ Remarks:

1. The equivalent pipe length refers to the length of the straight pipe section of the pipeline plus the equivalent length of the elbow and the oil trap.

5. Equivalent lengths of elbow and oil trap

Outer diameter of gas connection pipe (mm)	Φ9.52 (3/8")	Φ12.7 (1/2")	Φ15.88 (5/8")	Φ19.05 (3/4")	Φ28.6 (1-1/8")	Φ34.9 (1-3/8")	Φ38.09 (1-1/2")
Elbow (m)	0.2	0.25	0.3	0.35	0.55	0.55	0.55
Oil trap (m)	1.4	1.8	2	2.4	3.7	4.1	4.1

6. Allowed maximum pipeline length and maximum number of elbows

ODU model	Refrigerant pipeline size		Limit length/height difference (m) of connecting pipe	Maximum number of elbows
	Gas pipe (mm)	Liquid pipe (mm)		
TSAX012(R22)	Φ19.05	Φ12.7	35/20	10
TASX020(R22)	Φ19.05*2	Φ12.7*2	35/20	10
TASX025(R22)	Φ19.05*2	Φ12.7*2	35/20	10
TSAX030(R22)	Φ19.05*2	Φ12.7*2	35/20	10
TSAX041(R22)	Φ25.4*2	Φ15.88*2	35/20	10
TSAX052(R22)	φ28.6*2	Φ15.88*2	50/25	15
TSAX062(R22)	Φ28.6*2	Φ15.88*2	50/25	15
TSAX008(R410A)	Φ15.88	Φ6.35	15/10	6
TASX025(R410A)	Φ15.88*2	Φ9.52*2	25/15	6
TSAX030(R410A)	Φ15.88*2	Φ9.52*2	25/15	6
TSAX041(R410A)	Φ19.05*2	Φ12.7*2	35/20	10
TSAX052(R410A)	Φ19.05*2	Φ12.7*2	35/20	10
TSAX062(R410A)	Φ25.4*2	Φ12.7*2	35/20	10
TSAX290(R410A)	Φ34.9	Φ19.5	40/20	10
TSAX330(R410A)	Φ34.9	Φ19.5	40/20	10

7. Electrical Parameter Table of Air-cooled Air Conditioning Unit ODU — Heat Pump

Model	ODU TSAX	008BR	012*R	020*R	025*R	030*R	041*R	052*R	062*R
Power supply		220V~50Hz	380V 3N~50Hz						
Power cord	Type	ODU	ODU	ODU	ODU	ODU	ODU	ODU	ODU
	Sectional area mm^2	2.5	4	6	6	6	10	10	10
	Pieces	3	5	5	5	5	5	5	5
Unit connecting wire	Sectional area mm^2	2.5	2.5*2+1.5*5	1.5	1.5	1.5	1.5	1.5	1.5
	Pieces	6	7	2	2	2	2	2	2

Model	ODU TSAX	290BR			330BR		
Power supply		380V 3N~50Hz					
Power cord	Type	ODU			ODU		
		Live wire	Neutral line	GND	Live wire	Neutral line	GND
	Sectional area mm^2	150	95	95	150	95	95
	Pieces	3	1	1	3	1	1
Unit connecting wire	Sectional area mm^2	1.5 (shielded cable)			1.5 (shielded cable)		
	Pieces	2			2		

8. Electrical Parameter Table of Air-cooled Air Conditioning Unit ODU — Cooling-only Type

Model	ODU TSA	012*	020*	025*	030*	041*	052*	062*
Power supply		380V 3N~50Hz						
Power cord	Type	ODU	ODU	ODU	ODU	ODU	ODU	ODU
	Sectional area mm^2	4	6	6	10	10	10	16
	Pieces	5	5	5	5	5	5	5
Unit connecting wire	Sectional area mm^2	2.5*2+1.5*3	1.5	1.5	1.5	1.5	1.5	1.5
	Pieces	5	2	2	2	2	2	2

★ Remarks:

1. The unit power cord must be a copper core cable, the operating temperature cannot exceed the defined value, and the recommended diameter is the specification selected when the ambient temperature of application is 40°C.
2. If the power cord is longer than 15 m, increase the cross section of power cord properly to prevent accidents caused by overloading.
3. The auxiliary electric heater is not considered for the recommended power cord diameter. If an auxiliary electric heater is selected for the unit, the copper core cable with the diameter meeting the national standard should be selected according to the power of auxiliary electric heater, lest an accident would take place. Meanwhile, when the actual installation conditions have been changed on the field, consider reducing the capacity according to the power cord and circuit breaker specifications provided by the manufacturer.

DIGITAL VARIABLE-CAPACITY DX AIR HANDLING UNIT

Cutting-edge digital variable-capacity technology

The unit is equipped with Emerson's world-leading digital variable-capacity compressor that won the innovation award from ARI. The compressor controls the movement of its scroll within a very narrow range via control of the action and time of PWM valve, and changes the rise and engagement of the fixed scroll to regulate the cycle time of "load" and "unload" and therefore to implement varying capacity and control of the capacity output (continuously adjustable in the range of 10-100%).

Precise regulation with small fluctuation

For an average direct expansion unit with Boolean controls, the supply air temperature is likely to deviate from the setpoint at partial load, thus resulting in undesired temperature and humidity indoors. In contrast, the digital compressor features stepless capacity regulation with the range of 10-100%, and therefore ensures precise control of supply air temperature. Even under the worst operating conditions, such as fluctuating fresh air conditions, variable air flow and low load, the unit is able to operate reliably and maintain stable control of temperature and humidity.

Airflow variable operation

In some scenarios, the air conditioning system should operate at variable air flow. When air volume varies, the digital scroll compressor rapidly changes the cycle time of "load" and "unload" to regulate capacity output and keep indoor temperature and humidity stable. But the average direct expansion unit cannot ensure the stable temperature and humidity at variable air flow. (Please state that the variable air flow device of the IDU is optional when an order is placed)

Easy maintenance

The adoption of a simple system features IDU, ODU, and the refrigerant pipe and control cable between them. It requires no water pump, valve, filter, or water tank, greatly reducing the maintenance workload. The simpler the system, the easier the performance is guaranteed.

Nomenclature

IDU

TBC XX YY D H D

- D — Application characteristics
  D: Digital variable-capacity DX air handling unit (IDU)
- H — Feature code
  H – Horizontal type; V – Vertical type; C – Ceilingtype
- D — Design S/N
- YY — Specifications: Width modulus, 100 mm per modulus
- XX — Specifications: Height modulus, 100 mm per modulus
- TBC — TICA's modular AHU
  TBC box plate thickness: 50 mm

ODU

TDMV 120 V6 H4AC D

- D — D – Digital variable-capacity DX air handling unit
  F – Fresh air pre-handling unit (only including models 120 and 160)
- H4AC — Feature code
- V6 — Design S/N
- 120 — Specifications: 080, 100, 120, 140 and 160
- TDMV — Digital variable-capacity DX air handling unit (ODU)

Model selection of fresh air, constant temperature and constant humidity air conditioner

Air flow	ESP	Model				Refrigerant	Cooling capacity	Heating capacity (Heat pump type)	Humidifier		Electrical heating capacity							Applicable area
		IDU	ODU						Humidifying capacity	Type	Electric heating capacity of a cooling-only unit (at different lowest air inlet temperatures in winter)					Preheating capacity in winter	Electric heating capacity of a heat pump unit (in the case of winter, winter preheating and summer reheating are both used for defrosting compensation)	
											-15°C		-5°C		0°C			Air exchanged 15 times/hour
											Preheating capacity in winter	Reheating capacity in summer	Preheating capacity in winter	Reheating capacity in summer	Heating capacity shared by winter and summer		Reheating capacity in summer	
m^3/h	Pa	TBC	TDMV*** V6H4ACF		TDMV*** V6H4ACD	–	kW	kW	kg/h	–	kW	kW	kW	kW	kW	kW	kW	m^2
1700	600	0711	–	+	080	R410A	25	–	17	Electrode humidification	12	12	9	9	15	–	–	40
1900		0711	–		100		29	–	19		14	14	10	10	17	–	–	45
2250		0711	–		120		35	–	22		16	16	12	12	20	–	–	54
2500		0711	–		140		41	–	25		18	18	13	13	23	–	–	60
3000		0711	–		160		47	–	30		21	21	16	16	27	–	–	71
3900		1012	–		100*2		58	46	39		28	28	21	21	35	13	13	93
4500		1012	–		120*2		70	53	45		32	32	24	24	41	15	15	107
5200		1012	–		140*2		82	61	52		37	37	28	28	47	18	18	124
6000		1012	–		160*2		94	71	60		42	42	32	32	55	20	20	143
6700		1012	120*2		120		105	79	67		47	47	36	36	61	23	23	160
7500		1012	120*2		160		117	88	75		53	53	40	40	68	25	25	179
8000		1012	160*2		160		141	94	80		57	57	43	43	73	27	27	190
10500		1115	160*2		120*2		164	124	105		74	74	57	57	95	35	35	250
11500		1115	120*3		120*2		175	136	115		81	81	62	62	105	39	39	274
13500		1317	160*3		120*2		211	159	134		95	95	73	73	123	45	45	321
15500		1317	160*3		160*2		235	183	154		110	110	83	83	141	52	52	369
18500		1319	160*3		160*3		282	218	184		131	131	100	100	168	62	62	440

Typical function section configuration 1: air inlet, primary efficiency filter, (preheating in winter), fan, flow equalization, medium efficiency filter, direct expansion, reheating, humidification, and air outlet;
Typical function section configuration 2: air inlet, primary efficiency filter, (preheating in winter), direct expansion pre-cooling/heating, fan, flow equalization, medium efficiency filter, direct expansion re-cooling/heating, reheating, humidification, and air outlet;

★ Note:

1. Rated outdoor parameters: ambient dry bulb temperature in summer of 34°C and wet bulb temperature of 28°C; outdoor dry bulb temperature in winter of 5°C;
Rated indoor parameters: indoor dry bulb temperature of 25°C and relative humidity of 55% (temperature setting range at 16-26°C and humidity setting range at 35-70%);
2. The heating capacity set forth in the table is the actual capacity required to reach the desired indoor temperature in winter;
3. In heating mode, inlet air temperature should be preheated to at least 0°C;
4. During winter, a heat pump unit is likely to undergo temporary fluctuations on temperature and humidity; When the dry bulb temperature of fresh air is below -10°C or when only one ODU is implemented, it is not recommended to use heat pump unit;
5. The above table is for reference only. If there are any discrepancies relating to specific functions and parameters, please contact TICA.

Specifications of digital variable-capacity constant temperature and humidity control system (parameters and configuration)

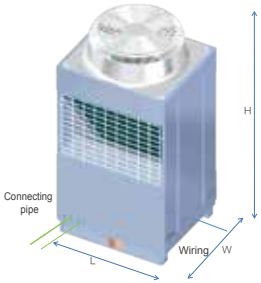
Product Type				Digital Variable-capacity Direct Expansion Unit
IDU	Model			DHD
	Cooling capacity range (kW)			25~282
ODU	Model code			TDMV
	Cooling and heating type			Cooling-only/heat pump
Temperature		Scope		16-26°C
		Precision		±1°C
Humidity		Scope		35% to 70%
		Precision		±5%
Unit configuration	Refrigerant			R410A
	Electric heater			Standard
	Electrode humidifier			Standard
	Humidification signal			Analog (0-10V)
Control cabinet	Man-machine interface	Type		Capacitive touch screen
		Local touch screen		Standard, external placement allowed
	Main controller type			Single-chip microcomputer
	Operating mode			Cooling/heating
	Timed on/off			Yes
	RS485 monitoring interface			Yes
	Monitoring dry contact	Remote start/stop		Yes
		Operating status		Yes
		Fault state		Yes
	Control cabinet housing type			Standard indoor type, outdoor type optional
	Fan motor control function	Blower motor		Yes
	Heating/humidifying control functions	Electric heating control	Yes	Electric reheater -- 1:2:4
		Electrode humidification control	Yes	Analog 0-10V With power air switch for humidification
		Electrode humidification changed to electric heating humidification		Yes
	Interlocking passive dry contact	Exhaust fan interlock		Yes
		Fresh air valve interlock		Yes
		Fire valve interlock		Yes
		Firefighting monitoring interlocking		Yes
	Protection functions	Wind break protection (including the differential pressure switch)		Yes
		Over-temperature power-off protection of electric heater		Yes
		Primary/medium/high efficiency filter alarm (excluding the differential pressure switch)		Yes
		Emergency stop button		Yes

★ Note:

1. The above table lists the standard configuration of digital variable-capacity constant temperature and humidity control system. For custom-made requirements, please consult TICA.
2. The above table lists the control precision of temperature and humidity under standard air return condition. For the control precision under fresh air condition, please consult TICA.

ODU specifications for standard module

Model	TDMV	080 V6H4ACD	100 V6H4ACD	120 V6H4ACD/F	140 V6H4ACD	160 V6H4ACD/F
Cooling capacity	kW	25	29	35	41	47
Heating capacity	kW	27	32	38	45	51
Power input (cool)	kW	7.8	9.2	11	13.6	15.6
Maximum operating current	A	28.4	28.4	28.4	45.2	45.2
Cooling/heating capacity range		10%-100%				
Ambient temperature for operating		Cooling: -5-45°C; Heating: -10-24°C				
Size per unit	L×W×H	992×845×1840			1292×845×1840	
Net weight per unit	kg	300			395	
Refrigerant charge per unit (R410A)	kg	10.6			12	
Connecting pipe: liquid/gas pipe diameter	φ mm	12.7/28.58 (one liquid pipe and one gas pipe for each ODU)				



1. Cooling capacity test conditions: ambient dry bulb temperature: 35°C; air inlet dry/wet bulb temperature of IDU: 27/19.5°C; 100% output;
2. Heating capacity test conditions: ambient dry/wet bulb temperature: 7/6°C; air inlet dry bulb temperature of IDU: 20°C; 100% output;
3. One ODU from a single module can connect up to three IDUs at most.

Standard modules can be combined to form larger cooling capacity as follows:

Methods of combination	TDMV-V6×Qty	100×2	120×2	140×2	160×2	120×3	160×3
Total cooling capacity	kW	58	70	82	94	105	141
Total heating capacity	kW	64	76	89	102	114	153

1. When ODUs adopt combination mode, the IDUs should accordingly adopt multi-system design. The number of IDU and ODU connecting pipes should be consistent with that of ODUs. For example, for TDMV360, which is composed of 3 sets of TDMV120, three sets of connecting pipes between IDU and ODU are required.
2. When ODUs adopt combination mode, they should not connect to multiple IDUs.

When the ambient temperature or the supply air temperature has deviated from the rated value, the ODU will be revised according to the cooling capacity correction factor for ODU as set forth in the table below:

ODU ambient temperature (°C)	26	28	30	35	38	40	43
Cooling capacity correction coefficient K1	1.11	1.08	1.06	1	0.96	0.94	0.88

Air outlet temperature of IDU evaporator (°C)	5	7	9	11	13	15	18	20
Cooling capacity correction coefficient K2	0.65	0.7	0.78	0.86	0.95	1	1.12	1.2

E.g.: If one unit operates at an actual ambient temperature of 30°C, and the IDU requires an air supply temperature at 18°C, then ODU's cooling capacity correction coefficient =K1*K2=1.06*1.12=1.19.

When the IDU and ODU connecting pipe is too long or the height difference of IDU and ODU is too large, the cooling capacity will be affected and shall be corrected according to the table below.

Correction coefficient		One-way piping length (m)					
		50	60	70	80	90	100
Level difference between IDU and ODU (m) (ODU is above the IDU)	50	93.30%	91.70%	90.40%	89.10%	88.10%	87.50%
	40	93.40%	91.80%	90.50%	89.20%	88.20%	87.60%
	30	93.60%	91.90%	90.60%	89.30%	88.30%	87.70%
	20	93.70%	92.00%	90.70%	89.40%	88.40%	87.80%
	0	94%	92.50%	91.2%	90%	88.50%	89%
Level difference between IDU and ODU (m) (IDU is above the ODU)	20	93.20%	91.90%	90.50%	89.40%	88%	88.40%
	30	93.00%	91.60%	90.20%	89.10%	87.80%	88.20%
	40	92.70%	91.40%	90.00%	88.90%	87.60%	88%

1. For TDMV120 and smaller models, when main piping length is smaller than or equal to 100m, liquid pipe diameter is 12.7 and gas pipe diameter is 28.58;
2. For TDMV140 and TDMV160, when main piping length is smaller than or equal to 40m, liquid pipe diameter is 12.7 and gas pipe diameter is 28.58; when main piping length is greater than 40m, liquid pipe diameter is 15.88 and gas pipe diameter is 31.7.

MODULAR AIR-COOLED CHILLER (HEAT PUMP)

Nomenclature

TCA 201 X H

- H: Feature code: H - Heat pump
  - C - Cooling only
  - HA - Year-round cooling
  - HR - Total heat recovery
  - HE - High-heat efficiency
- X: Design code
- 201: Specification code
- TCA: Modular air-cooled chiller(Heat pump)

Specifications

Specifications - Total Heat Recovery Type (TCA-XHR/1)
380V-3N-50Hz/460V-3N-60Hz/380V-3N-60Hz

Model			TCA201XH	TCA301XH	TCA401XH	TCA201XC	TCA401XC	TCA301XC/B	TCA401XC/A
Power supply		V-ph-Hz	380-3-50	380-3-50	380-3-50	380-3-50	380-3-50	460-3-60	380-3-60
Cooling	Cooling capacity	kW	66	100	130	66	130	100	130
	Cooling power input	kW	21.29	32.25	41.9	21.29	41.9	32.25	41.9
	Cooling current	A	40.3	59.9	75.5	37.9	75.5	54.1	73.5
Heating	Heating capacity	kW	70	110	140	/	/	/	/
	Heating power input	kW	21.85	34.37	43.7	/	/	/	/
	Heating current	A	41.4	61.9	76.5	/	/	/	/
Maximum power input		kW	30.2	43.6	57.6	30.2	57.6	42	55
Maximum input current		A	50	80	100	50	100	65	100
Starting current		A	140	125	266.1	172	266.1	185.6	300
Energy regulation		%	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100	0-50-100
Compressor	Type	-	Hermetic scroll compressor						
	Brand	-	Emerson	Emerson	Emerson	DAIKIN	Emerson	Emerson	Emerson
	Qty	-	2	4	2	2	2	2	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger						
	Water flow	m^3/h	11.4	17.2	22.4	11.4	22.4	17.2	22.4
	Water pressure drop	kPa	45	30	45	45	45	50	60
	Connection pipe dimension	-	DN65(Flange)						
Fan	Qty	-	2	2	2	2	2	2	2
	Air flow	m^3/h	28000	43000	48000	28000	48000	36000	47000
	Current	A	2.35	4.5	5.3	2.35	5.3	3.3	5
	Power	kW	1.13	1.8	2.2	1.13	2.2	1.5	2
Unit dimensions (L*W*H)		mm	2200×860×2000	2200×1100×2205	2200×1100×2205	2200×860×2000	2200×1100×2205	2200×1100×2205	2200×1100×2205
Packaging dimensions (L*W*H)		mm	2260×920×2000	2260×1160×2205	2260×1160×2205	2260×920×2000	2260×1160×2205	2260×1160×2205	2260×1160×2205
Net weight		kg	580	850	900	570	850	820	850
Operating weight		kg	640	930	1000	630	950	900	950
Refrigerant	Type	-	R410A	R410A	R410A	R410A	R410A	R410A	R410A

★ Note:

1. The nominal cooling capacity and nominal cooling input power are tested at the rated water flow, water outlet temperature of 7°C, and outdoor dry-bulb temperature of 35°C.
   The nominal heating capacity is tested at the rated water flow, water outlet temperature of 45°C, outdoor dry-bulb temperature of 7°C or outdoor web-bulb temperature of 6°C.
2. The operating range is 5°C to 48°C for cooling and -15°C to 48°C for heating. If the unit needs to run in cooling mode at an ambient temperature lower than
   5°C, please contact TICA factory.
3. As a separate item, control accessory box contains a wired controller, a wired controller communication cable, user manual, and temperature sensor. The configuration is subject to changes, so please refer to actual unit upon delivery.
4. The specifications above are based on a single module. Multiple modules can be used in combination. A maximum of 16 modules can be combined.
5. About 6% loss caused by system pipelines, water pumps, valves, and dirt after unit installation shall be considered for the cooling (heating) capacity in actual application.

Specifications

Specifications - Total Heat Recovery Type (TCA-XHR)
380V-3N-50Hz

Model			TCA201XHR/1
Power supply		V-ph-Hz	380-3-50
Cooling	Cooling capacity	kW	66
	Cooling power input	kW	20
	Cooling current	A	40.3
Heating	Heating capacity	kW	70
	Heating power input	kW	21
	Heating current	A	41.4
Maximum power input		kW	30.2
Maximum input current		A	50
Starting current		A	140
Energy regulation		%	0-100
Compressor	Type	-	Hermetic scroll compressor
	Brand	-	Emerson
	Qty	-	1
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger
	Water flow	m^3/h	11.4
	Water pressure drop	kPa	18
	Connection pipe dimension	-	DN65 flange connection
Fan	Qty	-	2
	Air flow	m^3/h	26000
	Current	A	2.35
	Power	kW	1.13
Unit dimensions (L*W*H)		mm	2200×860×2000
Packaging dimensions (L*W*H)		mm	2260×920×2000
Net weight		kg	650/710
Operating weight		kg	650/710
Refrigerant	Type	-	R410A
Domestic hot water mode	Rated water flow	m^3/h	13.1
	Nominal heating capacity	kW	76
	Heating power input	kW	18.4
	Current	A	40.6
	Nominal water output	m^3/h	1.63
Cooling+heat recovery mode	Nominal cooling capacity	kW	60
	Nominal heat recovery capacity	kW	76
	Nominal input power	kW	16.5
	Current	A	35.6
	Nominal water output	m^3/h	1.63
	Water flow at air conditioner side	m^3/h	10.3
	Water flow at hot water side	m^3/h	13.1

★ Note:

1. Cooling mode: Nominal cooling operating conditions: water flow volume 11.4m^3/h, chilled water outlet temperature 7°C, ambient temperature 35°C Nominal heating operating conditions: water flow 11.4m^3/h, hot water outlet temperature 45°C, ambient dry/wet bulb temperature 7°C/6°C.
2. Heating water mode: Nominal conditions: water flow volume 13.1m^3/h, hot water outlet temperature 45°C, ambient dry/wet bulb temperature 20/15°C.
3. Cooling + heat recovery mode: Cooling mode cooling water flow volume 10.3m^3/h, LWT 7°C, heat recovery mode: hot water water flow volume 13.1m^3/h, hot water outlet temperature 45°C
4. Nominal heating operating conditions: initial water temperature 15°C, cadence water temperature 55eC, ambient dry/wet bulb temperature 20/15°C.
5. In actual use, the cooling/heating loss should be considered after the installation of the system piping, pumps, valve, dirt, etc. about 6%.
6. The units can be combined freely. Each system can combine up to 16 modules.
7. There will be no further notice if the parameters changes due to product optimization.
8. The controllers need to be ordered separately, including wired controller, communication line, IOM, temperature sensor. Manufacturer reserves the right to make changes to above specifications without prior notice, please refer to the factory configuration when purchasing.

Specification(Year-round Cooling)

Specifications - Year-round Cooling Type (TCA-XHA)
380V-3N-50Hz

Model			TCA201XHA
Power supply		V-ph-Hz	380-3-50
Cooling	Cooling capacity	kW	66
	Cooling power input	kW	21.29
	Cooling current	A	40.3
Heating	Heating capacity	kW	70
	Heating power input	kW	21.85
	Heating current	A	41.4
Maximum power input		kW	30.2
Maximum input current		A	50
Starting current		A	140
Energy regulation		%	0-50-100
Compressor	Type	-	Hermetic scroll compressor
	Brand	-	Emerson
	Qty	-	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger
	Water flow	m^3/h	11.4
	Water pressure drop	kPa	45
	Connection pipe dimension	-	DN65 flange connection
Fan	Qty	-	2
	Air flow	m^3/h	26000
	Current	A	2.6/1.2
	Power	kW	0.9/0.25
Unit dimensions (L*W*H)		mm	2200×860×1980
Packaging dimensions (L*W*H)		mm	2260×920×1980
Net weight		kg	620
Operating weight		kg	680
Refrigerant	Type	-	R410A

★ Notes:

1. Nominal cooling operating conditions:leaving water temperature 7℃, ambient temperature 35℃;
2. In actual use, the cooling/heating loss should be considered after the in stallation of the system piping, pumps, valve, dirt, etc. about 6%;
3. For other working conditions or capacity parameters, Please contact TICA ;
4. There will be no further notice if the parameters changes due to product optimization.
5. The units can be combined freely. Each system can combine up to 12 modules.
6. The controllers need to be ordered separately, including wired controller, communication line, IOM, temperature sensor. Manufacturer reserves the right to make changes to above specifications without prior notice, please refer to the factory configuration when purchasing.

Specification(High-Heat Efficiency)

Specifications - High-heat Efficiency Type (TCA-XHE)
380V-3N-50Hz

Model			TCA201XHE	TCA401XHE
Power supply		V-ph-Hz	380-3-50	380-3-50
Cooling	Cooling capacity	kW	70	150
	Cooling power input	kW	21.87	43.8
	Cooling current	A	41.4	77.5
Heating	Heating capacity	kW	78	160
	Heating power input	kW	22.28	44
	Heating current	A	41.3	78.3
Maximum power input		kW	31	58
Maximum input current		A	60	105
Starting current		A	126.6	260.2
Energy regulation		%	0-50-100	0-50-100
Compressor	Type	-	Hermetic EVI scroll compressor	
	Brand	-	Emerson	Emerson
	Qty	-	2	2
Evaporator	Type	-	High-efficiency shell-and-tube heat exchanger	
	Water flow	m^3/h	12	25.8
	Water pressure drop	kPa	50	54
	Connection pipe dimension	-	DN65 flange connection	DN80 flange connection
Fan	Qty	-	2	4
	Air flow	m^3/h	30000	60000
	Current	A	2.6	2.6
	Power	kW	0.9	0.9
Unit dimensions (L*W*H)		mm	2200×860×2135	2200×1720×2135
Packaging dimensions (L*W*H)		mm	2260×920×2135	2260×1780×2135
Net weight		kg	665	1150
Operating weight		kg	710	1250
Refrigerant	Type	-	R410A	R410A

★ Notes:

1. Nominal cooling operating conditions:leaving water temperature 7℃, ambient temperature 35℃; Nominal heating operating conditions: leaving water temperature 45℃,outdoor dry bulb temperature 7℃, wet bulb temperature 6℃;
2. In actual use, the cooling/heating loss should be considered after the in stallation of the system piping, pumps, valve, dirt, etc. about 6%;
3. For other working conditions or capacity parameters, Please contact TICA offices for cooling ambient condition under 5℃;
4. There will be no further notice if the parameters changes due to product optimization.
5. The units can be combined freely. Each system can combine up to 12 modules.
6. The controllers need to be ordered separately, including wired controller, communication line, IOM, temperature sensor. Manufacturer reserves the right to make changes to above specifications without prior notice, please refer to the factory configuration when purchasing.

Performance Parameters (4-Pipe Units)

Model				TCA201XHF
Cooling only	Nominal cooling capacity		kW	66
	Rated input power for cooling		kW	20
	Water flow		m^3/h	11.4
	COP		–	3.3
Heating only	Nominal heating capacity		kW	70
	Rated input power for heating		kW	20
	Water flow		m^3/h	13.9
Cooling and heating	Nominal cooling capacity		kW	63
	Nominal heating capacity		kW	81
	Total nominal power		kW	18.5
	Rated water flow	Cold water side	m^3/h	11.4
		Hot water side	m^3/h	13.9
Power supply			–	380 V 3N ~ 50 Hz
Water resistance	Cold water side		kPa	40
	Hot water side		kPa	60
Water inlet/outlet pipe diameter	Cold water side		–	DN65 (flange connection)
	Hot water side		–	DN65 (internal thread)
Fan	Type		–	Low-noise axial fan
	Qty		Set	2
	Air flow		m^3/h	26000
Compressor	Type		–	Hermetic scroll compressor
	Qty		Set	1
Operating mode			–	Automatic operation controlled by microcomputers
Refrigerant	Type		-	R410A
Unit weight			kg	650
Operating weight			kg	710
Dimensions	Length		mm	2200
	Width		mm	860
	Height		mm	1980

Capacity Parameters of Combined Units

Model and Quantity		TCA201XHF	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Cooling only	Cooling capacity	kW	66	132	198	264	330	396	462	528	594	660	726	792	858	924	990	1056
	Water flow at cold water side	m^3/h	11.4	22.8	34.2	45.6	57	68.4	79.8	91.2	102.6	114	125.4	136.8	148.2	159.6	171	182.4
Heating only	Heating capacity	kW	70	140	210	280	350	420	490	560	630	700	770	840	910	980	1050	1120
	Water flow at hot water side	m^3/h	13.9	27.8	41.7	55.6	69.5	83.4	97.3	111.2	125.1	139	152.9	166.8	180.7	194.6	208.5	222.4
Cooling and heating	Cooling capacity	kW	63	126	189	252	315	378	441	504	567	630	693	756	819	882	945	1008
	Heating capacity	kW	81	162	243	324	405	486	567	648	729	810	891	972	1053	1134	1215	1296

★ Remarks:

1. The nominal cooling capacity is tested under the following conditions: water flow of 11.4 m^3/h; water outlet temperature of 7°C; outdoor environment DB temperature of 35°C.
The nominal heating capacity is tested under the following conditions: water flow of 13.9 m^3/h; water outlet temperature of 45°C; outdoor environment DB/WB temperature of 7°C/6°C.
2. The nominal cooling+heating capacity is tested under the following conditions: water flow at cold water side of 11.4 m^3/h; water outlet temperature of 7°C; water flow at hot water side of 13.9 m^3/h; water outlet temperature of 45°C.
3. The operation range in cooling mode, heating mode, and cooling+heating mode is -15°C to +48°C.
4. About 6% loss caused by system pipelines, water pumps, valves, and dirt after unit installation shall be considered for the cooling (heating) capacity in actual applications.
5. Parameters listed in the above tables are for a single module. Up to 16 modules can be used together.
6. The specifications are subject to change due to product improvement without prior notice.
7. The control accessory box needs to be purchased separately, which contains the wired controller, wired controller communication cable, user manual, temperature sensor, etc. The box content may change. Please refer to the actual factory configurations.

MODULAR AIR-COOLED CHILLER (HEAT PUMP)

Nomenclature

TAS 165 A H

- H: Feature code: C – Cooling only; H – Heat pump
- A: Design code: A, B…
- 165: Specification code: 165, 260
- TAS: Air-cooled Scroll Chiller

Model			TAS165AH	TAS260AH	TAS330AH	TAS440AH
Capacity	Cooling	kW	165	260	330	440
	Heating	kW	180	280	360	475
Power Input	Cooling	kW	53.2	83.8	106.4	141.9
	Heating	kW	56.2	87.4	112.5	148.4
Running Current	Cooling	A	100.8	158.7	184.5	245.6
	Heating	A	102.67	165.11	196.11	266.4
Power supply		V/N/HZ	380-3-50			
Maximum Input Power		kW	73.2	123.416	137.2	192
Maximum Input Current		A	135	220	240	330
Starting Current		A	203	274	319	417
Energy Regulation		%	0-25-50-75-100			
Water Side Heat Exchanger	Type	-	High efficient shell & Tube heat exchanger			
	Water flow	m^3/h	28.4	44.8	56.8	75.7
	Pressure drop	kPa	45	45	40	52
	Inlet/Outlet DN	DN	80	100	125	125
	Connection method	-	Victaulic connection			
Compressor	Brand	-	Danfoss		Copeland	
	Type	-	Scroll			
	Quantity	-	4	4	4	4
Fan	Type	-	Axial fan			
	Air flow	m^3/h	60000	112000	120000	172000
	Quantity	-	4	4	8	8
Refrigerant	Type	-	R410A			
Unit Dimensions (L*W*H)		mm	2200×1720×2000	2200×2400×2235	4440×2260×2460	4440×2260×2460
Packaging Dimensions (L*W*H)		mm	2260×1780×2000	2260×2460×2235	4440×2260×2460	4440×2260×2460
Net weight		kg	1460	2050	2930	3700
Running weight		kg	1590	2250	3380	4200
Sound Level		dB	72	75	74	74

★ Remarks:

1. The nominal cooling capacity and nominal cooling input power are tested at the rated water flow, water outlet temperature of 7°C, and outdoor dry-bulb temperature of 35°C.
   The nominal heating capacity is tested at the rated water flow, water outlet temperature of 45°C, outdoor dry-bulb temperature of 7°C or outdoor wet-bulb temperature of 6°C.
2. About 6% loss caused by system pipelines, water pumps, valves, and dirt after unit installation shall be considered for the cooling (heating) capacity in actual application.
3. The operating range is 5°C to 48°C for cooling and -15°C to 48°C for heating. If the unit needs to run in cooling mode at an ambient temperature lower than 5°C, please contact TICA factory.
4. The specifications are subject to change due to product improvement without a prior notice;
5. The specifications above are based on a single module. Multiple modules can be used in combination. A maximum of 8 modules can be combined.
6. As a separate item, control accessory box contains a wired controller, a wired controller communication cable, user manual, and temperature sensor. The configuration is subject to changes, so please refer to actual unit upon delivery.

Air-cooled Ducted Type Air Conditioner (R410A)

Product Features

Professional industrial design ensures elegant appearance

Eco-friendly refrigerant boasts high performance

Electronic expansion valve implements throttling to ensure optimal operation of the unit under various harsh operating conditions

Perfect after-sales service system provides you with considerate services

Optimized control logic ensures precise running of the unit

Compressors of famous brands undergo long-term running test under various harsh operating conditions exceeding national standards to ensure unit stability and reliability

Performance Specifications (Eco-friendly Type)

Model			ODU TSA	75N(R)	100N(R)	125N(R)	150N(R)	200N(R)	250N(R)	150N(R)×2
ODU	Compressor type			Hermetic scroll compressor						
	Dimensions (single set)	Length	mm	1403	1403	1403	1403	1808	1808	1403
		Width	mm	821	821	821	821	1090	1090	821
		Height	mm	1200	1200	1200	1200	1214	1214	1200
	Weight (single set)		kg	220	245	270	280	415	455	280
	Power supply			380V 3N~50Hz						
Refrigerant	Model			R410A						
	Charge amount		kg	3.0*2	3.4*2	3.6*2	4.35*2	6.7*2	7.2*2	4.35*4
Connection pipe	Connection mode (outdoor)			Pipe socket				Welding		Pipe socket
	Dimensions	Liquid pipe	φmm	9.52*2	9.52*2	9.52*2	12.7*2	12.7*2	12.7*2	12.7*4
		Gas pipe	φmm	15.88*2	15.88*2	15.88*2	19.05*2	22.23*2	25.4*2	19.05*4

★ Notes:

1. R410A has been charged in the ODU. For the charge quantity, refer to the nameplate. The IDU uses nitrogen for holding pressure.
2. The specification parameters may be changed due to product improvement without a prior notice. The parameters indicated on the unit nameplate should prevail.

Performance Specifications (Standard Type)

Model			IDU TSD	75N(R)	100N(R)	125N(R)	150N(R)I	200N(R)I	250N(R)I	300N(R)I
			ODU TSA	75N(R)	100N(R)	125N(R)	150N(R)	200N(R)	250N(R)	150N(R)×2
Rated cooling capacity			kW	20.00	25.50	30.00	40.00	52.00	62.00	79.00
Rated heating capacity			kW	23.00	30.00	35.00	43.00	60.00	72.00	83.00
IDU	Dimensions	Length	mm	1411	1617	1805	1859	1988	2298	2255
		Width	mm	700	700	700	1000	1100	1100	1306
		Height	mm	540	540	540	690	780	820	997
	Weight		kg	93	125	147	200	240	298	340
	Fan motor	Air flow	m^3/h	4300	4800	6000	7500	9000	11000	13000
		ESP	Pa	100	100	120	120	150	150	180
		Power supply		220V - 50Hz			380V 3N~50Hz			
		Output shaft power	kW	0.375*2	0.375*2	0.375*3	1.5	2.2	3	3
	*Optional auxiliary electric heater		kW	6	9	10.2	12	18	20.4	24
	Condensing water drainage pipe			DN25 (R1)						
	Return air inlet dimensions		mm	965*425	1172*425	1470*447	1635*580	1764*670	2074*710	1981*887
	Air outlet dimensions		mm	745*295	820*295	1216*295	930*291	864*343	1116*343	1044*409
Input power of the entire unit		Cooling	kW	8.00	10.00	11.90	15.00	20.80	24.50	30.89
		Heating	kW	8.50	10.50	12.90	14.50	19.80	23.50	28.60
Rated current of the entire unit		Cooling	A	17.20	18.87	22.45	28.30	39.25	46.23	58.28
		Heating	A	18.28	19.81	24.34	27.36	37.36	44.34	53.96
Connection pipe	Connection mode (indoor)			Pipe socket			Welding			

Performance Specifications (Purifying Type)

Model			IDU TSD	75N(R)I	100N(R)I	125N(R)I	150N(R)I	200N(R)I	250N(R)I	300N(R)I
			ODU TSA	75N(R)	100N(R)	125N(R)	150N(R)	200N(R)	250N(R)	150N(R)×2
Rated cooling capacity			kW	20.00	25.50	30.00	40.00	52.00	62.00	79.00
Rated heating capacity			kW	23.00	30.00	35.00	43.00	60.00	72.00	83.00
IDU	Dimensions	Length	mm	1380	1586	1884	1859	1988	2298	2218
		Width	mm	620	620	620	620	620	620	620
		Height	mm	630	630	630	690	780	820	997
	Weight		kg	63	78	80	100	110	120	140
	Rated air flow		m^3/h	4300	4800	6000	7500	9000	11000	13000
	Power supply			220V - 50Hz						
	*Optional auxiliary electric heater		kW	6	9	10.2	12	18	20.4	24
	Condensing water drainage pipe			DN25 (R1)						
	Return air inlet dimensions		mm	1111*530	1317*530	1615*530	1635*580	1764*670	2074*710	1980*887
	Air outlet dimensions		mm	1111*530	1317*530	1615*530	1635*580	1764*670	2074*710	1980*887
Input power of the entire unit		Cooling	kW	8.00	10.00	11.90	15.00	20.80	24.50	30.89
		Heating	kW	8.50	10.50	12.90	14.50	19.80	23.50	28.60
Rated current of the entire unit		Cooling	A	17.20	18.87	22.45	28.30	39.25	46.23	58.28
		Heating	A	18.28	19.81	24.34	27.36	37.36	44.34	53.96
Connection pipe	Connection mode (indoor)			Welding						

★ Notes:

1. The IDUs of this series of units are not equipped with fan motor. Contacts of IDU electric control are reserved for on-site fans, and the on-site fans must be connected to the IDU electric control.
2. The airflow of the on-site fans must be in the 80% to 120% range of the nominal airflow of the unit. Otherwise, the unit cannot reliably run.

All Fresh Air Unit (Air-cooled Ducted Type)

Model			IDU TSD	75N(R)IF	100N(R)IF	125N(R)IF	150N(R)IF	200N(R)IF	250N(R)IF	300N(R)IF
			ODU TSA	75N(R)	100N(R)	125N(R)	150N(R)	200N(R)	250N(R)	150N(R)×2
Rated cooling capacity			kW	20.00	25.50	30.00	40.00	52.00	62.00	79.00
Rated heating capacity (heating-only)			kW	23.00	30.00	35.00	43.00	60.00	72.00	83.00
IDU	Dimensions	Length	mm	1251	1451	1551	1901	1951	2051	2265
		Width	mm	1204	1204	1204	1504	1604	1604	1604
		Height	mm	608	608	708	708	808	908	1008
	Weight		kg	130	150	188	230	275	325	390
	Fan motor	Air flow	m^3/h	1850	2450	3000	4000	5000	7000	8000
		ESP	Pa	100	200	200	200	250	250	300
		Power supply		220V - 50Hz			380V 3N~50Hz			
		Output shaft power	kW	0.375	0.375*2	0.375*2	1.1	1.5	2.2	3.0
	Condensing water drainage pipe			DN32						
	Return air inlet dimensions		mm	1008*508	1208*508	1308*608	1658*608	1708*708	1808*808	2008*908
	Air outlet dimensions		mm	270*295	745*295	745*295	333*292	651*265	748*292	930*292
Input power of the entire unit		Cooling	kW	8.00	10.00	11.90	15.00	20.80	24.50	30.89
		Heating	kW	8.50	10.50	12.90	14.50	19.80	23.50	28.60
Rated current of the entire unit		Cooling	A	17.20	18.87	22.45	28.30	39.25	46.23	58.28
		Heating	A	18.28	19.81	24.34	27.36	37.36	44.34	53.96
Connection pipe	Connection mode (indoor)			Welding						

★ Notes:

1. When outdoor temperature is lower than 0°C, you are recommended to use the electric heater to pre-heat fresh air. In this case, the IDU width should be increased by 300 mm.
2. This type of unit only processes fresh air without keeping constant indoor temperature, which needs to be kept by standard air conditioning device.

Performance Specifications (Air-cooled Packaged Type)

Model			IDU TSD	100N(R)VD(VB)	125N(R)VD(VB)	150N(R)VD(VB)	200N(R)VD(VB)	250N(R)VD	300N(R)VD
			ODU TSA	100N(R)	125N(R)	150N(R)	200N(R)	250N(R)	150N(R)×2
Rated cooling capacity			kW	25.50	30.00	40.00	52.00	62.00	79.00
Rated heating capacity			kW	30.00	35.00	43.00	60.00	72.00	83.00
IDU	Dimensions	Length	mm	1470	1470	1810	1810	1873	1873
		Width	mm	500	700	700	700	1240	1240
		Height	mm	1670 (1870)	2010 (2260)	2010 (2260)	2010 (2260)	1764	1764
	Weight		kg	200(220)	280(310)	300(320)	360(380)	400	410
	Fan motor	Air flow	m^3/h	5000	6800	7500	10000	12000	15000
		ESP	Pa	100 (0)	120 (0)	150 (0)	200 (0)	250	250
		Power supply		380V 3N~50Hz (220V ~ 50Hz)	380V 3N~50Hz				
		Output shaft power	kW	1.5(0.375*2)	2.2 (0.75)	2.2 (1.1)	3.0 (2.2)	3	4
	*Optional auxiliary electric heater		kW	9	10.2	12	18	20.4	24
	Condensing water drainage pipe			DN25 (R1)					
Input power of the entire unit		Cooling	kW	10.00 (9.10)	11.90 (10.7)	15.00 (14.20)	20.80 (18.50)	24.65	30.89
		Heating	kW	10.50 (9.70)	12.90 (11.10)	14.50 (13.80)	19.80 (18.30)	24.00	28.60
Rated current of the entire unit		Cooling	A	18.87 (17.17)	22.45 (20.19)	28.30 (26.79)	39.25 (34.91)	46.30	58.60
		Heating	A	19.81 (18.30)	24.34 (20.94)	27.36 (26.04)	37.36 (34.53)	44.40	52.90
Connection pipe	Connection mode (indoor)			Pipe socket		Welding			

★ Notes:

1. The rated cooling capacity is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 27°C/19°C and the outdoor dry/wet bulb temperature is 35°C/24°C.
2. The rated heating capacity is tested under the nominal air flow, when the indoor dry/wet bulb temperature is 20°C/15°C and the outdoor dry/wet bulb temperature is 7°C/6°C.
3. The nominal air flow is the air flow generated when the unit (except for the purifying type) works at the high speed under the standard condition.
4. Piping length of the standard unit for performance test: 7.5 m (horizontal).
5. The items marked with * are optional accessories. For more information, please inquire TICA.
6. When the unit is equipped with an optional electric heater, the power supply of the unit must meet the specification 380V 3N ~ 50Hz.

Water-cooled package air conditioner

(R410A)

Nomenclature

TPW 030 F D Z

- Z: Z-blowing type F-duct type
- D: D-auxiliary electric heater Not selected-omitted
- F: Design S/N: F
- 030: Specification code: 030-29000W 050-46000W 065-61000W 085-85000W … …
- TPW: TICA water-cooled package unit

Model		TPW	TPW030FF(Z)	TPW050FF	TPW065FF	TPW085FF	TPW130FF	TPW165FF
Rated cooling capacity		W	29000	46000	61000	85000	127000	165000
Cooling capacity range		%	0,50,100	0,100	0,30,70,100	0,50,100	0,33,66,100	0,25,50,75,100
Air flow		m^3/h	5300	8000	11000	17000	22000	28800
ESP		Pa	100(0)	150	150	200	300	350
Power supply		-	380V 3N~ 50Hz					
Power input		W	8300	13800	17500	23700	37200	45900
Maximum power input		W	10600	17400	20300	28000	43900	54500
Maximum operating current		A	20.07	32.95	40.42	53.03	83.14	103.22
Charge amount	R410A	kg	1.5*2	3.5	3.0+1.3	3.1*2	3.1+3.4*2	3.4*4
Compressor type		-	Scroll compressor					
Evaporator type		-	Finned copper tube type					
Condenser	Type	-	Efficient tube					
	Water flow	m^3/h	6.24	9.89	13.12	18.28	27.31	35.48
	Water pressure drop	mH_2O	3.8	8.5	7.4	9.5	10.5	11.5
Fan	Type	-	Centrifugal fan					
	Drive mode	-	Belt drive					
Air filter	Qty	Pcs	2	2	2	6	6	6
	Dimensions	mm	665*595	720*648	825*720	514*650	675*644	690*815
Condensing water drainage pipe	Diameter of intermediate drainage pipe	DN	DN25(R1)					
	Diameter of bottom drainage pipe	DN	DN25(R1)					
Size of cooling water connecting pipe (Inner-threaded tube)			Rc1-1/4	Rc1-1/2	Rc2	Rc2-1/2	Rc2-1/2	Rc2-1/2
Dimensions	Length	mm	1470	1470	1810	2028	2420	2560
	Width	mm	500	700	700	1100	1263	1263
	Height	mm	1700	2000	2000	2030	2080	2360
Weight	Cooling-only	kg	280	350	440	900	1060	1280
Energy efficiency grade		-	1	1	1	1	1	1

★ Notes:

1. The cooling capacity test is based on the following conditions: indoor dry bulb temperature 27°C, wet bulb temperature 19°C; inlet water temperature 30°C, Water flow = Nominal cooling capacity * 0.215 ($m^3/(h \cdot kW)$).
2. The cooling capacity does not take into account the heating loss of fan motor.
3. The external static pressure refers to the static pressure measured under normal air flow condition of standard configuration.
4. The numbers in brackets are applicable to the direct-blow fan type.
5. Specifications may be changed due to product improvement. Please refer to the nameplate label on the unit.
6. For the unit energy efficiency grade, refer to GB19576 The Minimum Allowable Values of the Energy Efficiency and Energy Efficiency Grades for Unitary Air Conditioners.

Cooling Capacity Dynamics

Model	Air flow (m^3/h)	Air return temperature of evaporator (°C)		Water inlet temperature of condenser (°C)					
		Dry bulb temperature (°C)	Wet bulb temperature (°C)	18		30		34	
				Total cooling capacity	Sensible cooling capacity	Total cooling capacity	Sensible cooling capacity	Total cooling capacity	Sensible cooling capacity
TPW030FF	5300	32	23	114%	118%	108%	104%	106%	99%
		27	19	105%	105%	100%	100%	98%	98%
		21	15	95%	90%	90%	96%	89%	98%
TPW050FF	8000	32	23	123%	116%	105%	104%	99%	100%
		27	19	112%	105%	100%	100%	96%	98%
		21	15	98%	92%	94%	95%	92%	97%
TPW065FF	11000	32	23	115%	128%	109%	121%	107%	119%
		27	19	107%	119%	100%	100%	98%	94%
		21	15	96%	108%	89%	75%	87%	64%
TPW0850FF	17000	32	23	116%	147%	109%	136%	107%	132%
		27	19	107%	133%	100%	100%	98%	89%
		21	15	95%	116%	89%	57%	87%	38%
TPW130FF	22000	32	23	120%	115%	113%	105%	110%	101%
		27	19	110%	107%	100%	100%	97%	98%
		21	15	99%	97%	85%	94%	80%	93%
TPW165FF	28800	32	23	110%	110%	109%	102%	109%	100%
		27	19	107%	103%	100%	100%	98%	99%
		21	15	104%	96%	89%	97%	84%	97%

★ Notes:

1. The cooling capacity test is based on the following conditions: indoor air dry bulb temperature 27°C, wet bulb temperature 19°C; inlet water temperature 30°C, Water flow = Nominal cooling capacity * 0.215 ($m^3/(h \cdot kW)$).
2. The cooling capacity does not take into account the heating loss of fan motor.
3. The external static pressure refers to the static pressure measured under normal air flow condition of standard configuration.
4. The numbers in brackets are applicable to the direct-blow fan type.
5. Specifications may be changed due to product improvement. Please refer to the nameplate label on the unit.
6. Heating capacity is the heating capacity of the electric heater. The electric heater is an optional accessory that is not included in a standard unit.
7. For the unit energy efficiency grade, refer to GB19576 The Minimum Allowable Values of the Energy Efficiency and Energy Efficiency Grades for -2004 Unitary Air Conditioners.

TICA Central Air Conditioner Integrated Product –

Air source heat pump water heater

Nomenclature

TCAH 100 F C

- C: Feature code: C – circulating heating
- F: Design S/N: A, B, C, D, E, F...
- 100: Specifications: 30, 50, 100...
- TCAH: Air source heat pump water heater

Direct-heating Circulating Air Source Heat Pump Water Heater

Features

1. The eco-friendly R410A refrigerant does not contribute to ozone depletion.
2. The unit works between direct-heating and circulating mode, which improves reliability.
3. Directly heating of cold water and continuous supply of hot water – fast heating and constant temperature, ensure sufficient hot water supply in winters.
4. Five anti-freezing protections reassure you of continuous hot water supply.
5. Professional hot water system integration solution reduces energy consumption during system running.

Solenoid valve

Coming from an international brand supplier, the solenoid valve maintains smooth pipeline of hot water, and protects stable running of the unit.

Fan

The low noise axial-flow fan boasts low power consumption and high efficiency. With special waterproof design, it meets requirements for outdoor use and comes with durability and reliability.

Evaporator

The fin coil evaporator uses hydrophilic aluminum fin and inner-threaded copper tube to ensure sufficient heat exchange between refrigerant and air and guarantee efficient heat exchange at the air side.

EXV

The EXV comes from a well-known brand and it is used as a throttling element to ensure precise and reliable running of the unit when the unit faces ever-changing load, defrosts, starts, or stops.

Water valve with constant temperature

Coming from an international supplier, the water valve regulates based on water temperature and water flow. It can supply hot water immediately when it is started and keep the water temperature constant, giving superb user experience.

Motor

The stepped motor applies to different application environments.

Compressor

The compliant scroll compressor comes from an international renowned brand. The compressor is specially designed for the high-temperature and high-pressure conditions of the water heater so that the water heater can handle the conditions with ease and keep stable and reliable.

Performance Specifications (Direct-heating Circulating Type)

Model		TCAH100F	TCAH50F	TCAH30F
Direct heating	Nominal heating capacity (kW)	42	21	14
	Rated power input (kW)	9.54	4.88	3.25
	Rated current (A)	17.6	8.8	15.5
	COP (W/W)	4.4	4.3	4.3
	Nominal water output (m^3/h)	0.902	0.451	0.301
	Maximum water outlet temperature (°C)	60	60	60
Circulating heating	Nominal heating capacity (kW)	38	19.8	10.8
	Rated power input (kW)	10.3	6.02	3.3
	Rated water flow (m^3/h)	6.5	3.4	1.86
	Maximum temperature of water inlet (°C)	50	50	50
	Circulating water side pressure loss (kPa)	45	80	80
Entire unit	Power supply	380V 3N~50Hz	380V 3N~50Hz	220V 1N~50Hz
	Operating voltage range	380±10%	380±10%	220±10%
	Maximum total power (kW)	13.2	6.8	4.4
	Maximum operating current (A)	23.3	11.7	21
	Applicable ambient temperature (°C)	-10 - 48	-10 - 48	-10 - 48
	Sound level (dB(A))	65	60	60
	Maximum permissible pressure on high pressure side (MPa)	4.2	4.2	4.2
	Maximum permissible pressure on low pressure side (MPa)	3.1	3.1	3.1
	Maximum bearing pressure in water system (MPa)	1.0	1.0	1.0
	Refrigerant/Charge quantity	R410A/5.2 kg	R410A/2.4kg	R410A/1.5kg
	IP rating	IPX4, and applies to outdoor applications	IPX4, and applies to outdoor applications	IPX4, and applies to outdoor applications
	Protection class	Class I	Class I	Class I
	Climate type	Ordinary	Ordinary	Ordinary
	Cold water inlet pipe diameter (External thread)	DN20 (R3/4")	DN20 (NPT 3/4")	DN20 (NPT 3/4")
	Hot water outlet pipe diameter (External thread)	DN40 (R1 1/2")	DN32 (R1 1/4")	DN32 (R1 1/4")
	Circulating water inlet pipe diameter (External thread)	DN40 (R1 1/2")	DN32 (R1 1/4")	DN32 (R1 1/4")
	Net weight (kg)	287	170	153
	Gross weight (kg)	310	195	178

★ Notes:

1. Test conditions for one-time nominal heating capacity: outdoor humidity and temperature 20°C/15°C, inlet water temperature 15°C, and outlet water temperature 55°C.
2. Test conditions for circulating nominal heating capacity: outdoor humidity and temperature 20°C/15°C, inlet water temperature 47°C, and outlet water temperature 52°C. The parameter values are for references only.
3. Due to the continuous improvement and innovation of TICA products, the product models, parameters and performance in this document are subject to changes without prior notice. The parameters indicated on the nameplate should prevail.

Circulating Air Source Heat Pump Water Heater

Feature

I. Eco-friendly

The unit is the first product in the industry that uses R410A. The heat pump unit does not discharge pollutant during running, which complies with Chinese requirement for energy use and environmental protection.

II. Stable and reliable

1. The effective heat exchange area of the condenser and evaporator are increased to reduce low-temperature attenuation.
2. Special compressor coming from international renowned brand boasts high water temperature design to ensure high performance and high compression ratio.
3. The EXV regulates circulating speed of refrigerant according to different conditions and controls superheat degree at the evaporator outlet to ensure reliable running of the system.
4. The stepped design of the fan enables the fan to automatically switch according to different conditions and ensures efficiency and reliability.
5. Intelligent defrosting guarantees efficiency no lower than 95% in heating mode at temperature lower than 2°C.

III. Multi-protection design

1. In the heating mode, heat exchange occurs between refrigerant and living water, which means separation of water from electricity, and eliminates risks of inflammation, explosion, electric shock and gas poisoning incurred from traditional water heater.
2. A leakage protector is embedded to guarantee running safety and reliability.

Performance Specifications (Circulating Type)

Model	TCAH100FC	TCAH50FC
Nominal heating capacity (kW)	38.5	18.6
Rated power input (kW)	8.85	4.24
COP (W/W)	4.35	4.39
Water output (L/h)	828	400
Rated water flow (m^3/h)	6.6	3.2
Water pressure drop (kPa)	50	60
Power supply	380V 3N~50Hz	380V 3N~50Hz
Operating voltage range	380±10%	380±10%
Maximum total power (kW)	13.2	6.8
Maximum operating current (A)	23.3	11.7
Applicable ambient temperature (℃)	-10 - 48	-10 - 48
Sound level (dB(A))	65	60
Maximum permissible pressure on high pressure side (MPa)	4.4	4.4
Maximum permissible pressure on low pressure side (MPa)	3.1	3.1
Maximum bearing pressure in water system (MPa)	1	1
Refrigerant/Charge quantity	R410A/5.2 kg	R410A/2.4kg
IP rating	IPX4, and applies to outdoor applications	IPX4, and applies to outdoor applications
Protection class	Class I	Class I
Hot water outlet pipe diameter (External thread)	DN40 (R1 1/2")	DN32 (R1 1/4")
Circulating water inlet pipe diameter (External thread)	DN40 (R1 1/2")	DN32 (R1 1/4")
Net weight (kg)	287	170
Gross weight (kg)	310	195

★ Notes:

1. Test conditions for nominal heating capacity: outdoor dry/wet bulb temperature 20°C/15°C, initial temperature 15°C, and end temperature 55°C.
2. Due to the continuous improvement and innovation of TICA products, the product models, parameters and performance in this document are subject to changes without prior notice. The parameters indicated on the nameplate should prevail.

Meteorological Parameters of Major Cities in China

City	Geographic Location			Average Annual Temperature (°C)	Outdoor Calculated Dry Bulb Temperature (°C)								Outdoor Calculated Wet Bulb Temperature (°C) in Summer	Average Temperature of the Hottest Month (°C)	Outdoor Calculated Relative Humidity (%)		
					Winter				Summer								
	Latitude	Longitude	Altitude (m)		Heating	Air Regulation	Average Temperature of the Day with the Lowest Temperature	Ventilation	Ventilation	Air Regulation	Average Temperature of the Day with Air Regulation	Daily Temperature Difference			Average Humidity of the Coldest Month (%)	Average Humidity of the Hottest Month (%)	Average Humidity of the Hottest Month at 14:00:00 (%)
Beijing	39°48'	116°28'	31.2	11.4	-9	-12	-15.9	-5	30	33.2	28.6	8.8	26.4	25.8	45	78	64
Tianjin	39°06'	117°10'	3.3	12.2	-9	-11	-13.1	-4	29	33.4	29.2	8.1	26.9	26.4	53	78	65
Tangshan	39°38'	118°10'	25.9	11.1	-10	-12	-15.0	-5	29	32.7	28.0	9.0	26.2	25.5	52	79	64
Shijiazhuang	38°02'	114°25'	80.5	12.9	-8	-11	-17.1	-3	31	35.1	29.7	10.4	26.6	26.3	52	75	54
Taiyuan	37°47'	112°23'	777.9	9.5	-12	-15	-17.8	-7	28	31.2	26.1	9.8	23.4	23.5	51	72	54
Hohhot	40°49'	111°41'	1063.0	5.8	-19	-22	-25.1	-13	26	29.9	25.0	9.4	20.8	21.9	56	64	49
Shenyang	41°46'	123°26'	41.6	7.8	-19	-22	-24.9	-12	28	31.4	27.2	8.1	25.4	24.6	44	73	56
Jilin	43°57'	126°58'	183.4	4.4	-25	-28	-33.8	-18	27	30.3	26.1	8.1	24.5	22.9	72	79	64
Changchun	43°54'	125°13'	236.8	4.9	-23	-26	-29.8	-16	27	30.5	25.9	8.8	24.2	23.0	68	78	64
Qiqihar	47°23'	123°55'	145.9	3.2	-25	-28	-32.0	-20	27	30.6	26.1	8.7	22.9	22.8	71	73	54
Harbin	45°41'	126°37'	171.7	3.6	-26	-29	-33.0	-20	27	30.3	26.0	8.3	23.4	22.8	74	77	61
Shanghai	39°10'	121°26'	4.5	15.7	-2	-4	-6.9	3	32	34.0	30.4	6.9	28.2	27.8	75	83	67
Lianyungang	34°36'	119°10'	3.0	14.0	-5	-8	-11.4	0	31	33.5	31.0	4.8	27.9	26.5	66	81	67
Nanjing	32°00'	118°48'	8.9	15.3	-3	-6	-9.0	2	32	35.0	31.4	6.9	28.3	28.0	73	81	64
Hangzhou	30°14'	120°10'	41.7	16.2	-1	-4	-6.0	4	32	35.7	31.5	8.3	28.5	28.6	77	80	62
Ningbo	29°52'	121°34'	4.2	16.2	0	-3	-4.3	4	32	34.5	30.2	7.9	28.5	28.1	78	83	68
Wenzhou	28°01'	120°41'	6.0	17.9	3	-1	-1.8	8	31	32.8	29.6	6.9	28.7	27.9	75	84	73
Bengbu	32°57'	117°22'	21.0	15.1	-4	-7	-12.3	1	32	35.6	32.0	6.9	28.1	28.1	71	80	60
Hefei	31°52'	117°14'	29.8	15.7	-3	-7	-12.5	2	32	35.0	31.7	6.3	28.2	28.3	75	81	63
Fuzhou	26°05'	119°17'	84.0	19.6	6	4	1.6	10	33	35.2	30.4	9.2	28.0	28.8	74	78	61
Xiamen	24°27'	118°04'	63.2	20.9	8	6	4.9	13	31	33.4	29.9	6.7	27.6	28.4	73	81	70
Jiujiang	29°44'	116°00'	32.2	17.0	0	-3	-6.8	4	33	36.4	32.0	7.7	28.3	29.4	75	76	60
Nanchang	28°36'	115°55'	46.7	17.5	0	-3	-5.6	5	33	35.6	32.1	6.7	27.9	29.6	74	75	58
Yantai	37°32'	121°24'	46.7	12.4	-3	-9	-11.9	-2	27	30.7	28.2	4.8	25.8	25.2	60	80	74
Jinan	36°41'	116°59'	51.6	14.2	-7	-10	-13.7	-2	31	34.8	31.3	6.7	26.7	27.4	54	73	54
Qingdao	36°04'	120°20'	76.0	12.2	-6	-9	-12.5	-1	27	29.0	27.2	3.5	26.0	25.1	64	85	72
Luoyang	34°40'	112°25'	154.5	14.6	-5	-7	-11.6	0	32	35.9	30.9	9.6	27.4	27.5	57	75	45
Zhengzhou	34°43'	113°39'	110.4	14.2	-5	-7	-11.4	0	32	35.6	30.8	9.2	27.4	27.3	60	76	45
Wuhan	30°37'	114°08'	23.3	16.3	-2	-5	-11.3	3	33	35.5	31.9	6.3	28.2	28.8	76	79	63
Changsha	28°12'	113°15'	44.9	17.2	0	-3	-6.9	5	33	35.8	32.0	7.3	27.7	29.3	81	75	59
Shantou	23°24'	116°41'	1.2	21.3	9	6	5.1	13	31	32.8	29.8	5.8	27.7	28.2	79	84	73
Guangzhou	23°08'	113°19'	6.6	21.8	7	5	2.9	13	31	33.5	30.1	6.5	27.8	28.4	70	83	67
Zhanjiang	21°13'	110°24'	25.3	23.1	10	7	4.2	16	31	33.7	30.5	6.2	27.8	28.9	79	81	70
Haikou	20°02'	110°21'	14.1	23.8	12	10	6.9	17	32	34.5	29.9	8.8	27.9	28.4	85	83	67
Guilin	25°20'	110°18'	161.8	18.8	3	0	-2.9	8	32	33.9	30.5	6.5	27.0	28.3	71	78	61
Nanning	22°49'	108°21'	72.2	21.6	7	5	2.4	13	32	34.2	30.3	7.5	27.5	28.3	75	82	66
Beihai	21°29'	109°06'	14.6	22.6	8	6	2.6	14	31	32.4	30.1	4.4	27.9	28.7	77	83	74
Chengdu	30°41'	104°01'	505.9	16.2	2	1	-1.1	6	29	31.6	28.0	6.9	26.7	25.6	80	85	70
Chongqing	29°35'	106°28'	259.1	18.3	4	2	0.9	7	33	36.5	32.5	7.7	27.3	23.6	82	75	56
Guiyang	26°35'	106°43'	897.5	15.3	-1	-3	-5.9	5	28	30.0	26.6	7.1	23.0	24.0	78	77	64
Kunming	25°01'	102°41'	1891.4	14.7	3	1	-3.5	8	23	25.8	22.2	6.9	19.9	19.8	68	83	64
Lhasa	29°40'	91°08'	3658.0	7.5	-6	-8	-10.3	-2	19	22.8	18.1	9.0	13.5	15.1	28	54	44
Xi'an	34°18'	108°56'	396.9	13.3	-5	-8	-12.3	-1	31	35.2	30.7	8.7	26.0	26.6	67	72	55
Lanzhou	36°03'	103°53'	1517.2	9.1	-11	-13	-15.8	-7	26	30.5	25.8	9.0	20.2	22.2	58	61	44
Xining	36°37'	104°46'	2261.2	5.7	-13	-15	-20.3	-9	22	25.9	20.7	10.0	16.4	17.2	48	65	47
Yinchuan	34°61'	106°13'	1111.5	8.5	-15	-18	-23.4	-9	27	30.6	25.9	9.0	22.0	23.4	58	64	47
Urumqi	38°29'	87°37'	917.9	5.7	-22	-27	-33.3	-15	29	34.4	29.0	9.8	18.5	23.5	80	44	31
Taipei	25°02'	121°31'	9.0	22.1	11	9	7.0	15	31	33.6	30.5	6.9	27.3	28.6	82	77	-
Hualien	24°01'	121°37'	14.0	22.9	13	11	9.8	17	30	32.0	29.5	4.8	26.8	28.5	82	80	-
Hong Kong	22°18'	114°10'	32.0	22.8	10	8	6.0	16	31	32.4	30.0	4.6	27.3	28.6	71	81	73

The estimate of load index

Building		Cooling Capacity(W/m2)		Sojourner(m2/人)	Lighting(W/m2)	Supply air（i/sm2)
		Sensible cooling capacity	Total cooling capacity			
Office	Central region	65	95	10	60	5
	Surrounding	110	160	10	60	6
	Personal of office	160	240	15	60	8
	Meeting room	185	270	3	60	9
School	Classroom	130	190	2.5	40	9
	Library	130	190	6	30	9
	Cafeteria	150	260	1.5	30	10
Apartment	High floor, Southward	110	160	10	20	10
	High floor, Northward	80	130	10	20	9
Theater,hall		110	260	1	20	12
Lab		150	230	10	50	10
Library,Museum		95	150	10	40	8
Hospital	Operation room	110	380	6	20	8
	Public of place	50	150	10	30	8
Clinic		130	200	10	40	10
Barber,Beauty Salon		110	200	10	40	10
Supermarket	Underground	150	250	1.5	40	12
	Middle layer	130	225	2	60	10
	Upper layer	110	200	3	40	8
Pharmacy		110	210	3	30	10
Retail store		110	160	5	30	10
Boutique		110	160	5	30	10
Bar		130	260	2	15	10
Restaurant		110	320	2	17	12
Restaurant	Room	80	130	10	15	7
	Public of place	110	160	10	15	8
Industry	Assembly room	150	260	3.5	45	9
	light industry	160	260	15	30	10

The estimate of water chilling unit and Auxiliary equipment（△t=5℃）

Type	Water chilling unit		Chilled water pump		Cooling water pump		Cooling tower
	Ton	kW	i/s	kW	i/s	kW	kW
Scroll	25	23	4	2.2	5	2.2	0.75
	50	44	8	3.7	10	5.5	1.5
	60	52	10	5.5	13	7.5	1.5
Screw	80	68	13	7.5	17	7.5	2.2
	100	88	17	7.5	21	11	2.2
	150	125	25	11	32	11	3.7
	200	160	34	15	42	15	5.5
	250	200	42	19	52	30	7.5
	300	225	51	22	66	30	7.5
	400	280	67	30	82	37	11
		350	84	37	101	45	15

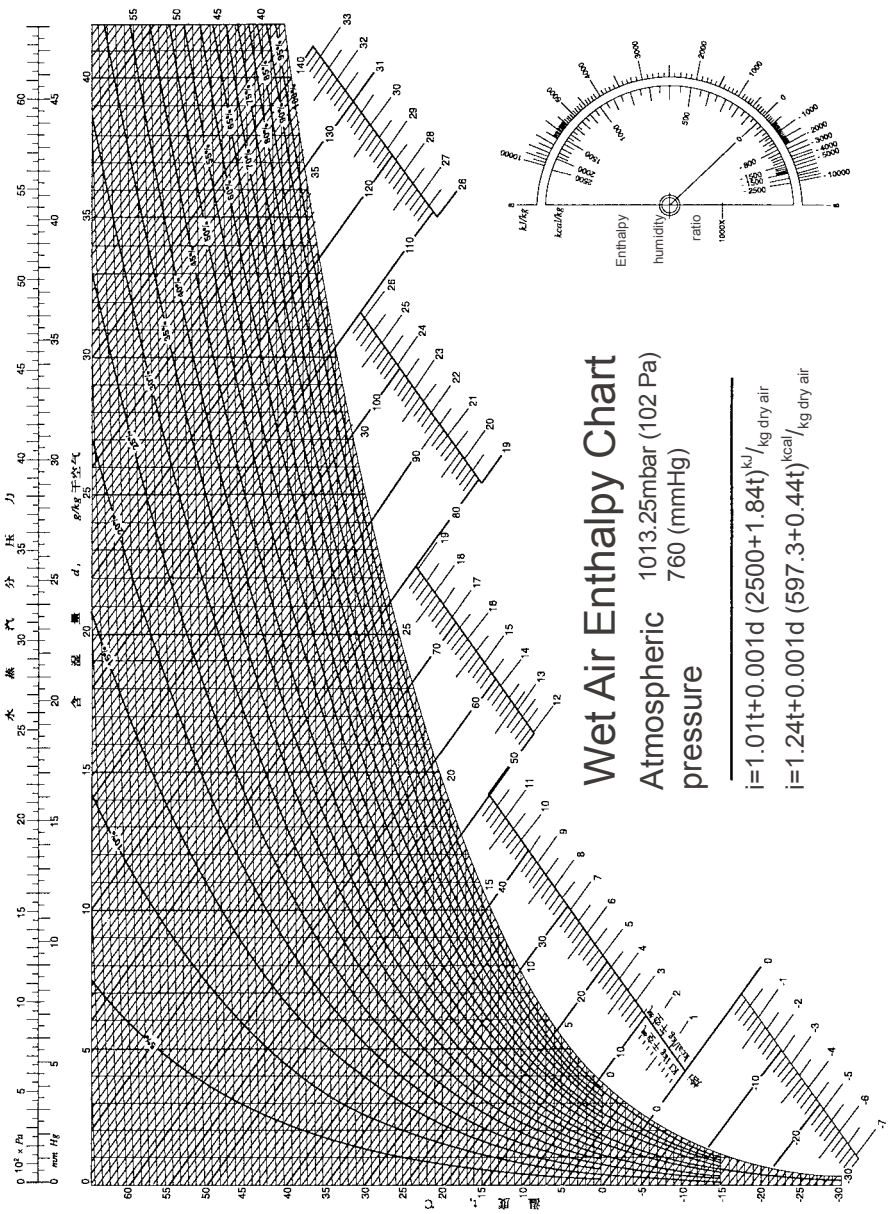
The estimate of Air cooled chiller unit

Cooling Capacity		Compressor power(kW)	Chilled water pump				Exhaut fan	
Ton	kW		Water flow(l/s)	Pressure Head(Kpa)	Pipe diameter(mm)	Electric power(kW)	Power(kW)	Airflow(m3/h)
3	10.5	4	0.5	120	25	0.4	0.2	1.11
5	17.6	6	0.9	120	32	0.6	0.3	1.83
8	28.1	9	1.4	120	32	0.8	0.4	2.88
10	35.2	11	1.7	150	40	1.1	0.5	3.56
15	52.7	16	2.6	150	450	1.1	0.7	5.28
20	70.3	22	3.4	150	50	1.5	0.8	6.94
25	87.9	27	4.3	150	65	2.2	1.0	8.56
30	105.5	33	5.1	150	65	2.2	1.0	10.27
40	140.6	43	6.8	200	80	3.0	1.5	13.70
50	175.8	54	8.5	200	80	3.7	1.5	17.12

Unit of measurement conversion table

Length	m	mm	in	ft	mile
	1	$1*10^{3}$	39.37	3.2808	$3.214*10^{-4}$
	$1*10^{-3}$	1	$3.937*10^{-2}$	$3.281*10^{-3}$	$6.214*10^{-7}$
	$2.548*10^{-2}$	25.4	1	$8.333*10^{-2}$	$1.578*10^{-5}$
	$3.048*10^{-1}$	304.8	12	1	$1.894*10^{-4}$
	$1.069*10^{3}$	$1.609*10^{6}$	63.36	5280	1
Area	m^2	hm^2	in^2	ft^2	mik^2
	1	$1*10^{-4}$	1.55*103	10.764	$3.864*10^{-7}$
	10000	1	1.55*107	1076.4	$3.861*10^{-3}$
	$6.4516*10^{-4}$	$6.4516*10^{-3}$	1	$6.944*10^{-3}$	$2.491*10^{-10}$
	$9.29*10^{-2}$	$9.29*10^{-6}$	144	1	$3.587*10^{-3}$
	$2.59*10^{6}$	258.999	$4.0145*10^{9}$	$2.7878*10^{7}$	1
Volume	立方米m^2	L	US gal	UK gal	ft^3
	1	1000	264.17	219.98	35.315
	$1*10^{-3}$	1	$2.624*10^{-1}$	$2.20*10^{-1}$	$3.532*10^{-2}$
	$3.785*10^{-3}$	3.7853	1	$8.327*10^{-1}$	$1.337*10^{-1}$
	$4.546*10^{-3}$	4.546	1.20095	1	$1.605*10^{-1}$
	$2.832*10^{-2}$	28.316	7.481	6.229	1
Mass	g	kg	t	lb	Slug
	1	$1*10^{-3}$	$1*10^{-6}$	$2.205*10^{-3}$	$6.85*10^{-5}$
	$1*10^{3}$	1	$1*10^{-3}$	2.20462	$6.85*10^{-2}$
	$1*10^{6}$	$1*10^{3}$	1	2204.6	68.5
	453.59	$1.5359*10^{-1}$	$4.536*10^{-4}$	1	$3.11*10^{-2}$
	$1.4594*10^{-2}$	14.5939	$1.46*10^{-2}$	32.174	1
Pressure	Pa	mmH_2O	atm	ib/in^2	n·Hg
	1	$1.0197*10^{-1}$	$9.8692*10^{-6}$	$1.4504*10^{-4}$	$2.953*10^{-4}$
	9.806	1	$9.675*10^{-5}$	$1.422*10^{-3}$	$2.89*10^{-3}$
	101325	10332	1	14.696	29.921
	6894.8	703.06	$6.805*10^{-2}$	1	2.036
	3386.5	345.32	$3.34*10^{-2}$	$4.912*10^{-1}$	1
Energy	J	KJ	KW·h	kcal	Btu
	1	$1*10^{-3}$	$2.778*10^{-7}$	$2.388*10^{-4}$	$9.478*10^{-4}$
	$1*10^{3}$	1	$2.778*10^{-4}$	$2.388*10^{-1}$	$9.478*10^{-1}$
	$3.6*10^{6}$	3600	1	860.1	3413
	4186.8	4.1868	$1.163*10^{-3}$	1	3.968
	1055.1	1.0551	$2.93*10^{-4}$	$2.519*10^{-1}$	1
Power	W	KW	kcal/h	Btu/h	rt
	1	$1*10^{-3}$	$8.60*10^{-1}$	3.413	$2.844*10^{-4}$
	$1*10^{3}$	1	860.1	3413	$2.844*10^{-1}$
	1.1622	$1.1622*10^{-3}$	1	3.968	$3.30*10^{-4}$
	$2.93*10^{-1}$	$2.93*10^{-4}$	$2.52*10^{-1}$	1	$8.33*10^{-5}$
	3516	3.516	3024	12000	1
Rate of flow	L/s	m^3/s	m^3/h	ft^3/s	UK gal/s
	1	$1*10^{-3}$	3.6	$3.53*10^{-2}$	$2.199*10^{-1}$
	$1*10^{3}$	1	3600	35.3147	$2.1997*10^{-2}$
	$2.778*10^{-1}$	$2.778*10^{-4}$	1	$9.81*10^{-3}$	$6.11*10^{-2}$
	$4.719*10^{-1}$	$4.719*10^{-4}$	1.6986	1	6.2288
	$6.309*10^{-2}$	$6.309*10^{-5}$	$2.271*10^{-1}$	$1.605*10^{-1}$	1
Temperature	（℃）		（℉）		
	1		5（F−32）/9		
	（9*℃/5）+32		1		
Density	（kg/m^3）		（ib/in^3）		
	1		0.06242		
	16.02		1		
Heat transfer coefficient	W/（m^2·k）	kcal/（m^2·h·k）	Btu/（ft^2·h·℉）		
	1	$8.60*10^{-1}$	$1.761*10^{-1}$		
	1.163	1	$2.048*10^{-1}$		
	5.6783	4.882	1		
Thermal conductivity	W/（m·k）	kcal/（m·h·k）	Btu·in/（ft^2·h·℉）		
	1	$8.598*10^{-1}$	6.935		
	1.163	1	8.063		
	$1.442*10^{-1}$	$1.24*10^{-1}$	1		
Specific heat	J/（kg·k）	kcal/（kg·k）	Btu/（ib·℉）		
	1	$2.388*10^{-4}$	$2.388*10^{-4}$		
	4.1868*103	1	1		
Common units	CFM（ft^3/min）=0.4719L/S	Gallon=3.79L	1Btu/lb·℉=4.18KJ/kg·K		
	=1.699m3/h(CMH)				
	CFS(ft^3/min）=28.35l/s	GRM=0.0631L/S	1Btu/h·5t℉=1.7307W/m·K		
	FRP(ft/min）=0.00508m/s	1PSI=0.069Bar	1Btu/hft·5t℉=5.678W/m·K		
		1KWh=3.60MJ	1SF·h·℉=176m·℃/kW		

Wet Air Enthalpy Chart



the table of Low pressure air duct size selection

Branch pipe		Main pipe		the diameter of Circular duct diameter	the size of Equivalent rectangular duct					
wind speed	airflow	wind speed	airflow							
2.5	30	3.0	37	125	200*75	125*100	125*125			
	50		60	150	250*75	200*100	150*125			
	75		100	180	275*100	200*125	175*150			
3.0	100	4.0	130	200	375*100	275*125	225*150	200*175		
	150		180	230	500*100	375*125	300*150	250*175*	200*200	
4.0	200		240	250	625*100	475*125	375*150	300*175	275*200	225*225
	250	5.0	315	280	575*125	450*150	375*175	325*200	275*225	250*250
	300		380	300	550*150	450*175	400*200	350*225	300*250	275*275
	400		490	330	675*150	550*175	450*200	400*225	350*250	300*300
5.0	500	6.0	600	360	650*175	550*200	475*225	425*250	350*300	325*325
	560		720	380	775*175	650*200	550*225	475*250	400*225	350*350
	660		840	400	900*175	750*200	625*225	550*250	450*300	375*350
	800		1090	430	850*200	725*225	725*250	575*300	425*350	400*375
	950		1200	460	975*200	825*225	725*250	575*300	500*350	425*400
6.0	1060	7.5	1340	480	950*225	825*250	650*300	550*350	475*400	450*425
	1200		1590	500	1075*225	925*250	725*300	625*350	525*400	475*400
	1300		1750	530	1050*250	800*300	675*350	575*400	525*450	475*475
	1600		2000	560	1175*280	900*300	750*350	650*400	575*450	500*500
	1750		2220	580	1000*300	825*350	700*400	625*450	550*500	525*525
	2150		2500	610	1100*300	900*350	775*400	675*450	600*500	550*550
	2250		2830	640	1225*300	100*350	850*400	725*450	650*500	600*550
	2500	9.0	3100	660	1100*350	925*400	800*450	725*500	650*550	625*575
	2750		3400	680	1175*350	1000*400	875*450	775*500	700*550	650*600
7.5	3200		3700	720	1300*350	1075*400	950*450	825*500	750*550	700*600
	3400		4100	740	1425*350	1175*400	1025*450	750*500	800*550	750*600
	3600	10.0	4600	760	1275*400	1100*450	975*500	875*550	800*600	725*650
	3900		4900	780	1375*400	1175*450	1025*500	925*550	850*600	775*650
	4300		5300	810	1475*400	1275*450	1100*500	1000*550	900*600	825*650
	4700		5750	830	1600*400	1350*450	1200*500	1075*550	975*600	900*650
	5100		6300	860	1725*400	1450*450	1275*500	1125*550	1025*600	950*650
9.0	5500		6900	880	1828*400	1550*450	1350*500	1225*550	425*350	1000*650
	5850		7500	910	1950*400	1675*450	1450*500	1300*550	500*350	1050*650
	6200		8000	940	2075*400	1775*450	1550*500	1375*550	475*400	1125*650
	6800		8400	960	2200*400	1875*450	1650*500	1450*550	525*400	1200*650
	7300		9300	990	2375*400	2000*450	1750*500	1525*550	525*450	1250*650
	8000	11.0	10200	1020	2150*450	1850*500	1625*550	1475*600	575*450	1125*750
	8600		10900	1040	2250*450	2000*500	1725*550	1600*600	1400*650	1200*750
10.0	9200		11700	1070	2400*450	2100*500	1825*550	1650*600	1475*650	1250*750
	9800		12400	1090	2550*450	2200*500	1925*550	1750*600	1550*650	1300*750
	10500		13200	1120	2350*500	2025*550	1825*600	1650*650	1500*700	1375*750
	11100		13900	1140	2450*500	2150*550	1900*600	1725*650	1575*700	1450*750
	11600		14700	1170	2575*500	2275*550	2000*600	1800*650	1650*700	1525*750
	12300		15400	1190	2700*500	2375*550	2100*600	1900*650	1750*700	1575*750
11.0	12900		16200	1220	2900*500	2525*550	2200*600	2000*650	1825*700	1675*750
	13500		16900	1240	3000*500	2750*550	2350*600	2075*650	1900*700	1750*800
	14200	12.0	17700	1270	2750*550	2450*600	2000*650	2200*700	2000*750	1900*800
	14800		18300	1300	3000*550	2700*600	2400*650	2200*700	2000*750	1900*800
	15500		19000	1340	2900*600	2600*650	2300*700	2100*750	2000*800	1700*900
	16200		19700	1380	3000*600	2800*650	2500*700	2300*750	2100*800	1800*900
	17000		20500	1420	2700*700	2500*750	2250*800	1950*900	1700*1000	1550*1100
	18000		21500	1470	2900*700	2650*750	2450*800	2100*900	1900*1000	1700*1100

Air cleanliness level（ISO14644-1）

ISO grade	Exceed or equal to the maximum concentration limit of particles is focused					
	0.1μm	0.2μm	0.3μm	0.5μm	1μm	5μm
ISO1	10	2				
ISO 2	100	24	10	4		
ISO 3	1000	237	102	35	8	
ISO 4	10000	2370	1020	352	83	
ISO 5	100000	23700	10200	3520	832	29
ISO 6	1000000	237000	102000	35200	8320	293
ISO 7				352000	83200	2930
ISO 8				3520000	832000	29300
ISO 9				35200000	8320000	293000
Notes:According to the uncertainty requirements related to the measurement method,No more than 3 significant digits of concentration data to determine the grade level						

Air flow pattern and air supply volume of clean room and clean area

Air cleanliness level	Air flow pattern	Average speed of wind	Ventilation times
1～3	Unidirectional flow	0.3～0.5	–
4、5	Unidirectional flow	0.2～0.4	–
6	Non unidirectional flow	–	50～60
7	Non unidirectional flow	–	15～25
8、9	Non unidirectional flow	–	10～15

Excerpt from-《GB 50073-2013 Design code of cleaning workshop》

Classification of clean area, suspended particles and microbiological test standard for sterile drug production

Grade	Maximum Permissible Concentration of Suspended Particles in Air			
	Stable		Dynamic	
	≥0.5 μm	≥5.0 μm	≥0.5 μm	≥5.0 μm
Class A	3520	20	3520	20
Class B	3520	29	352000	2900
Class C	352000	2900	3520000	29000
Class D	3520000	29000	No provision	No provision

Grade	Airborne bacterial concentration	Depositing bacterial concentration(ϕ90mm) cfu/4h	Surface microorganism	
			touch(ϕ55mm)cfu/dish	5 finger gloves cfu/gloves
Class A	<1	<1	<1	<1
Class B	10	5	5	5
Class C	100	20	25	–
Class D	200	100	50	–

Excerpt from-《Appendices for Pharmaceutical Manufacturing Quality Management Standards (2011 GMP)》

Classification standard of clean operating room

Gard	Airborne bacterial concentration（Depositing bacterial concentration）Maximum average concentration of bacteria		Air cleanliness level		Relative surgery
	operation zone	surround zone	operation zone	surround zone	
Ⅰ	0.2cfu/30min · Φ90Ⅲ（5cfu/m³）	0.4cfu/30min · Φ90Ⅲ（10cfu/m³）	5	6	Prosthesis implantation,Some large organ transplants,Operation site infection can endanger life and quality of life directly
Ⅱ	0.75cfu/30min · Φ90Ⅲ（25cfu/m³）	1.5cfu/30min · Φ90Ⅲ（50cfu/m³）	6	7	Large scale operation involving deep tissue and vital organs
Ⅲ	2cfu/30min · Φ90Ⅲ（75cfu/m³）	4cfu/30min · Φ90Ⅲ（150cfu/m³）	7	8	Other surgery
Ⅳ	6cfu/30min · Φ90Ⅲ		8.5		Operation of infection and severe pollution

Main technical indexes of clean operating room

name	Indoor pressure	Minimum Ventilation times	Average speed of wind	Temperature(℃)	Humidify（%）	Minimum fresh air m³/h or time/h(Data in parentheses only)	Noise dB(A)	Minimum illumination	Minimum recovery time betwween operation
Clean operation room and special room for aseptic operation Class I	positive	–	0.20～0.25	21~25	30~60	15~20	≤51	≥350	10
Clean operation room Class II	positive	24	–	21~25	30~60	15~20	≤49	≥350	20
Clean operation room Class III	positive	18	–	21~25	30~60	15~20	≤49	≥350	20
Clean operation room Class IV	positive	12	–	21~25	30~60	15~20	≤49	≥350	30
Cardiopulmonary bypass room	positive	12	–	21~27	≤60	(2)	≤60	≥150	–
Sterile dressing room	positive	12	–	≤27	≤60	(2)	≤60	≥150	–
Unsealed device,aseptic drugs,Storage for disposable goods and precision instruments rooms	positive	10	–	≤27	≤60	(2)	≤60	≥150	–
Nursing station	positive	10	–	21~27	≤60	(2)	≤55	≥150	–
Preanesthetic room	negative	10	–	23~26	30~60	(2)	≤55	≥150	–
The front operating room of room	positive	8	–	21~27	≤60	(2)	≤60	≥200	–
Scrub Room	negative	8	–	21~27	–	(2)	≤55	≥150	–
Clean area corridor	positive	8	–	21~27	≤60	(2)	≤52	≥150	–
Recovery room	positive	8	–	22~26	25~26	(2)	≤48	≥200	–
Dressing room	External desquamation negative	–	–	–	–	–	–	–	–
	Internal temporary storage positive	8	–	–	–	–	–	–	–

Excerpt from-《GB 50333-2013 Architectural technical code for hospital clean operating department》

★ Remarks:

1.The column of indoor pressure in negative pressure operating room should be "negative"
2.The average speed wind refers to the average wind speed of 1.2m section above the ground in the centralized air supply area
3.The average wind speed of eye operating room should be controlled between 0.15m/s ~ 0.2m/s
4.The lower limit of temperature and humidity range is the lowest value in winter,Maximum in summer.
5.Value of fresh air volume in operating room,It should be increased or decreased according to the presence or absence of anesthesia or harmful gases emitted during the operation such as electric knife

Air Cleaning Rating Requirements for Production of Different Electronic Products

Product, process		Air cleanliness rating	Air cleanliness rating
Semiconductor material	Crystal pulling	6~8	0.5
	Cut, grind, throw	5~7	0.3~0.5
	Clean, epitaxial	4~6	0.3~0.5
	Oxidation, diffusion, cleaning, etching, film, ion implantation, GMP	4~6	0.3~0.5
Chip manufacturing	Lithography	2~5	0.1~0.5
	Detection	1~5	0.1~0.3
	Equipment area	3~6	0.2~0.5
	Scratch , bond	6~8	0.3~0.5
Encapsulation	Encapsulation	5~7	0.3~0.5
	Array plate (film, photolithography, etching, stripping)	6~8	0.3~0.5
TFT-LCD	Box (coating, friction, liquid crystal injection, cutting, edge grinding)	2~5	0.2~0.3
	The module	3~6	0.2~0.3
	The color film version	4~6	0.3~0.5
	STN-LCD	2~5	0.2~0.3
	Manufacturing area	6~7 (Local level 5)	0.3~0.5
HDD	The other area	3~4	0.1~0.3
	Core	6~7	0.3~0.5
PDP	Support area	6~7	0.3~0.5
	Dry process	7~8	0.3~0.5
The lithium battery	The other area	6~7	0.5
	The other area	7~8	0.5
Electronic instruments, microcomputer assembly			
Printing plate photography, plate making, dry film			
Optical fiber	Preform	6~7	0.3~0.5
	Wire drawing	5~7	0.3~0.5
	Disk manufacturing	6~8	0.3~0.5
Chip ceramic capacitor, chip resistance, etc	Silk screen printing, flow	8	0.5
device manufacturing	Photolithography, development	5	0.3~0.5
	Coating, cleaning, scribing, sealing	6	0.5

Excerpt from《GB 50472-2008 design specification for electronic clean workshop》

China, USA and Europe efficiency specification comparison table

CHINA GB/T 14295-2008		Primary filter≥2μm 50%>efficiency≥10%					Medium effect filter≥0.5μm 70%>efficiency≥20%				High/Medium efficiency filter≥0.5μm 95%>efficiency≥70%			Subhepa filter≥0.5μm 99.9%>efficiency≥95%				High efficiency filter≥0.5μm efficiency>99.99% (GB13554)			
USA ASHRAE		C1	C2~C4	L5	L6	L7	L8	M9	M10	M11	M12	M13	M14	H12~H16				VH17	VH18	VH19	VH20
Europe	New standard efficiency EN 779:2012779:2012	G1 65%	G2 80%	G3 80%~90%		G4 >90%	M5 40%		M6 60%		F7 80%	F8 90%		F9 85%	H10 95%	H11 99.9%	H12 99.9%	H13 99.95%		H14 99.995%	U15~U17 99.9995%
	The old specification Eurovent	EU1	EU2	EU3		EU4	EU5		EU6		EU7	EU8		EU9	EU10		EU11	EU12	EU13	EU14	

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Nanjing TICA Climate Solutions Co., Ltd.
Address: No. 6, Hengye Road, Nanjing Economic and Technological Development Zone, Nanjing, Jiangsu, China
Tel: 86-25-85326977
E-mail: tica@ticachina.com
Post Code: 210046