

# Aquaflair TRAC-TRAF

120 – 400 kW

Air-cooled chillers and free-cooling chillers for mission critical applications

460V / 3ph / 60Hz

380V / 3ph / 60Hz



**Air-cooled chillers and free-cooling chillers with scroll compressors and R410A refrigerant.**

- All-in-one units, completely configurable for easy design and installation, continuous and quiet operations in multiple applications and environmental conditions.
- Aquaflair chillers are designed for Tier III and IV data center installations

# System Architecture

## Electrical panel

- IP54 rated
- maximum internal temperature control
- auxiliary transformer
- general auxiliary cut-off switch
- magneto-thermal protection switches with trip alarm signal on compressors
- fuses for fan speed control protection
- safemotor for pumps protection and remote control cutoff switches.

## Microchannel condensing coils

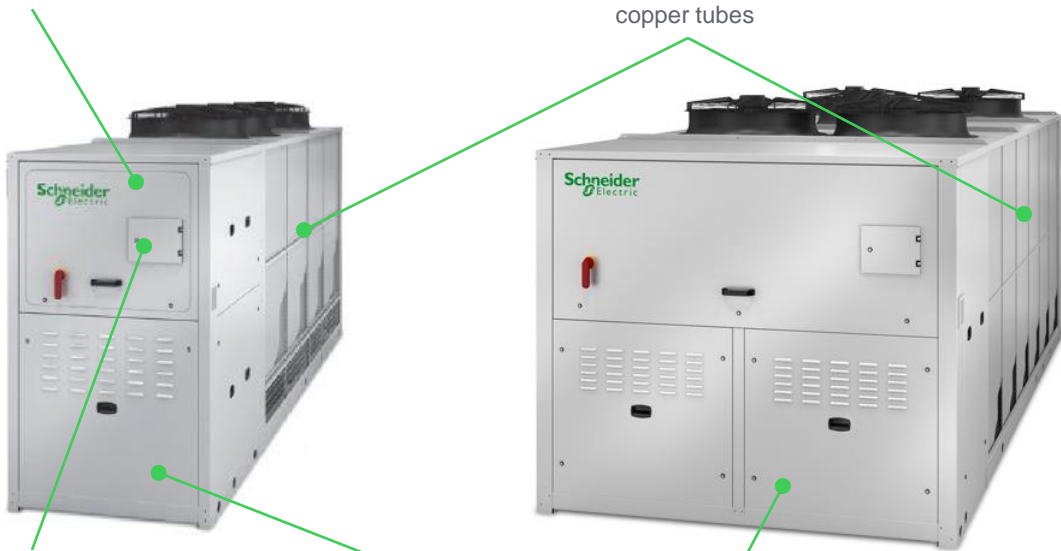
- TRAC/F models up to 260 kW
- less refrigerant content
- CAPEX reduction

## Finned-tubes condensing coils

- TRAC/F models from 300 kW
- flexibility for movement and maintenance

## Free-cooling coils

- only TRAF models
- aluminum fins and mechanically-expanded copper tubes



## Microprocessor controller

- 7-inch IT Touch Screen display
- exclusive PID algorithm for chilled water supply temperature regulation
- production of chilled water down to -10 °C
- advanced freeze protection on evaporator
- standard or VSD embedded pump rotation and management
- integrated features:
  - LAN card to connect units
  - SNMP, Modbus TCP/IP
  - USB port for firmware upload and data download
  - Clock card
- external motorized isolating valve management
- quick start procedure after a power failure
- unloading to protect unit operation even with temperatures that exceed the maximum

## Hermetic Scroll compressors

- oil by-pass valve and line
- integrated soft start
- integrated thermal protection
- crankcase heaters with oil heating function
- anti-vibration supports

# System Architecture

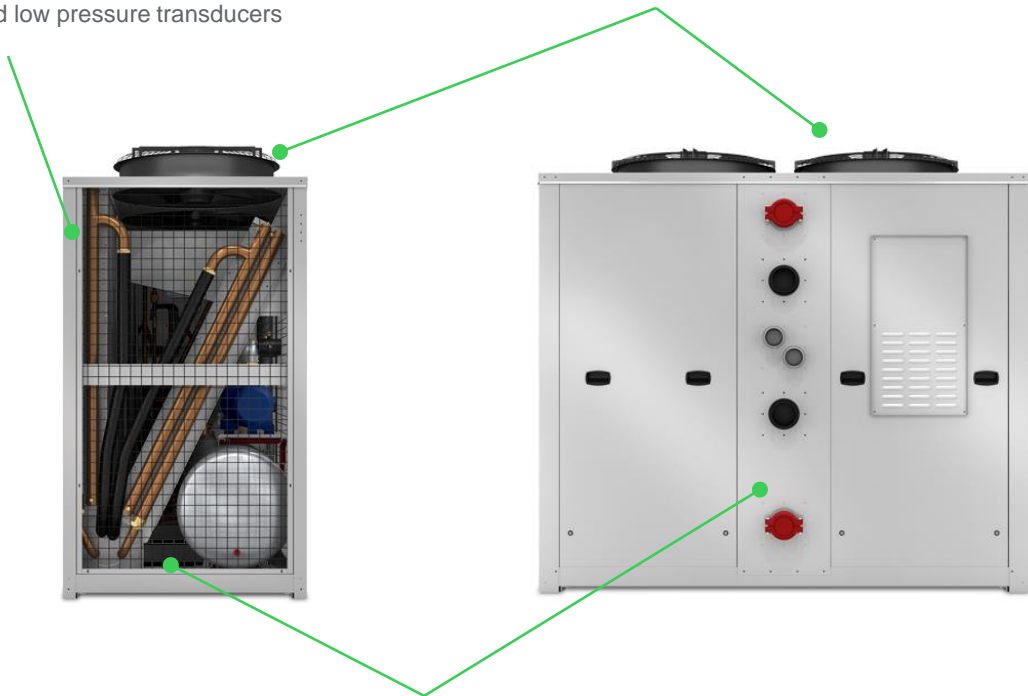
## Refrigerant circuits

Single (\*\*21 models) or double (\*\*42) refrigerant circuit conforming to EC standards (PED 97/23/ CE) with:

- filter dryer
- liquid sight glass
- expansion valve (mechanicals or electronic)
- discharge and suction taps on the compressor
- pressure switches
- high and low pressure transducers

## Axial fans with Electronically Commutated (EC) motor

- Sickle-blade axial fans
- Statically and dynamically balanced
- Composite materials for high efficiency
- Low acoustic impact
- Protective safety grilles
- High energy efficiency
- Low motor noise
- Higher ambient temperature operation



## Water-side heat exchanger

- brazed plate heat exchanger in stainless steel
- insulated with closed cell expanded polyurethane

## DIMENSIONAL DATA

TRAC / TRAF models		1421	1742	2042	2342	2842	3642	4042	4142
Height (EC fans)	mm	2236	2235	2235	2236	2236	2156	2156	2156
Width	mm	3162	4612	4612	5562	5562	5730	5730	5730
Depth	mm	1151	1151	1151	1151	1151	2204	2204	2204

# Main Configurable Options

## Double and/or separate power supply

- Double power supply with automatic transfer switch (ATS) for complete redundancy without single point of failure as per TIER III and IV recommendations
- Separate power supply from UPS for Unit and compressor/s control for 2 minutes quick start and emergency operation
- Automatic double and separate power supply from UPS for redundancy & Quick Restart

## Acoustic options

Aquaflair air-cooled mid chillers with scroll compressors can be featured by different options in order to reduce the noise level:

- Basic version (standard): enclosures for compressors
- UltraQuiet version (option): soundproof enclosures for compressors and modulating condensation control algorithm for fans based on noise reduction

## Additional options

Aquaflair chillers can be equipped with special devices to operate at particular ambient conditions

- For aggressive ambient conditions: metal safety grilles and filters and coil treatments (electrolytic pre-painting treatment)
- Low ambient temperature option (standard for TRAF/H models): electrical heaters in the electrical board

## Onboard pumps

Onboard pumps allow a direct contact with the primary circuit only. The available options are:

- Integrated hydronic system with one or two circulation pumps (1 + 1 standby)
- Integrated hydronic system with one or two (1+1 standby) inverter-driven circulation pumps\* and pressure transducers for increased efficiency, flexibility and modularity

## Heat recovery

- Partial heat recovery: the unit is equipped with a system to recover the superheating of compressors
- Total heat recovery (TRAC only): the unit is equipped with a system to recover the condensing capacity

## Free-cooling options

- Intelligent free-cooling for increased efficiency leveraging on standby units
- Glycol-free free-cooling: integrated system to separate the main water system (pure water) from the free-cooling circuit (water + glycol)

*\* VSD pumps are not available for 380V/3ph/60Hz power supply*

# Electrical Data

## 460V/3ph/60Hz – Complete unit

TRAC / TRAF models		1421F	1742F	2042F	2342F	2842F	3642F	4042F	4142F
FLI	kW	59	77	89	104	117	137	158	178
FLA	A	82	107	126	147	163	191	219	248
LRA	A	256	229	278	321	338	355	383	476
Cos $\varphi$		0,89	0,89	0,88	0,89	0,89	0,90	0,90	0,90

\* Values do not consider pump and free-cooling pump (that are optional features). To include FLA and LRA of the pump and/or free cooling pump, add the corresponding values

## 460V/3ph/60Hz – Pump and free-cooling pump

TRAC / TRAF models		1421F	1742F	2042F	2342F	2842F	3642F	4042F	4142F
<b>Main pump</b>									
FLA	A	9,6	14,3	14,3	14,3	14,3	21,5	21,5	21,5
LRA	A	73,0	130,1	130,1	130,1	130,1	182,8	182,8	182,8
<b>Free-cooling pump (only for TRAF)</b>									
FLA	A	6,6	9,6	9,6	9,6	9,6	18,5	18,5	18,5
LRA	A	54,1	73,0	73,0	73,0	73,0	151,7	151,7	151,7

## 380V/3ph/60Hz – Complete unit

TRAC / TRAF models		1421H	1742H	2042H	2342H	2842H	3642H	4042H	4142H
FLI	kW	59	77	89	105	117	137	157	177
FLA	A	97	127	149	174	194	226	258	293
LRA	A	301	270	307	378	398	420	452	573
Cos $\varphi$		0,91	0,92	0,90	0,91	0,91	0,92	0,93	0,92

\* Values do not consider pump and free-cooling pump (that are optional features). To include FLA and LRA of the pump and/or free cooling pump, add the corresponding values

## 380V/3ph/60Hz – Pump and free-cooling pump

TRAC / TRAF models		1421H	1742H	2042H	2342H	2842H	3642H	4042H	4142H
<b>Main pump</b>									
FLA	A	11,2	17,0	17,0	17,0	17,0	25,8	25,8	25,8
LRA	A	87,4	156,4	156,4	156,4	156,4	219,3	219,3	219,3
<b>Free-cooling pump (only for TRAF)</b>									
FLA	A	7,7	11,2	11,2	11,2	11,2	22,0	22,0	22,0
LRA	A	64,7	87,4	87,4	87,4	87,4	180,4	180,4	180,4

# TRAC – Technical Data

## PERFORMANCE DATA

TRAC models		1421	1742	2042	2342	2842	3642	4042	4142
Power supply	V/ph/Hz	380/3/60 - 460/3/60							
Compressors/circuits	nr. x nr.	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Evaporator	nr. x mod.	1 x plate							
Fans	nr.	2	3	3	4	4	5	6	6

### Water temperatures 7/12°C, ambient temperature 35°C, 0% glycol

Cooling capacity <sup>(1)</sup>	kW	125	165	190	223	250	292	324	373
Absorbed power <sup>(1)(2)</sup>	kW	41	52	62	70	82	97	107	123
EER <sup>(1)(2)</sup>		3,05	3,16	3,06	3,17	3,07	3,00	3,02	3,02

### Water temperatures 7/12°C, ambient temperature 40°C, 0% glycol

Cooling capacity <sup>(1)</sup>	kW	117	155	177	209	233	271	302	345
Absorbed power <sup>(1)(2)</sup>	kW	45	57	68	77	89	108	120	137
EER <sup>(1)(2)</sup>		2,60	2,72	2,61	2,72	2,62	2,50	2,52	2,51

### Water temperatures 15/20°C, ambient temperature 35°C, 0% glycol

Cooling capacity <sup>(1)</sup>	kW	159	211	240	284	317	368	414	474
Absorbed power <sup>(1)(2)</sup>	kW	45	56	67	76	89	102	114	131
EER <sup>(1)(2)</sup>		3,54	3,75	3,58	3,74	3,56	3,61	3,64	3,61

### Water temperatures 15/20°C, ambient temperature 40°C, 0% glycol

Cooling capacity <sup>(1)</sup>	kW	148	198	225	266	297	342	384	440
Absorbed power <sup>(1)(2)</sup>	kW	49	61	73	83	97	114	126	145
EER <sup>(1)(2)</sup>		3,04	3,23	3,07	3,23	3,07	3,01	3,04	3,03

### Water temperatures 20/28°C, ambient temperature 35°C, 0% glycol

Cooling capacity <sup>(1)</sup>	kW	182	244	275	327	364	421	476	544
Absorbed power <sup>(1)(2)</sup>	kW	48	60	71	81	95	105	119	137
EER <sup>(1)(2)</sup>		3,80	4,10	3,88	4,06	3,83	3,99	4,01	3,97

## SEASONAL ENERGY EFFICIENCY

Integrated Partial Load Value (IPLV)		4,92	4,90	4,88	5,01	4,77	4,91	4,92	4,98
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## NOISE PRESSURE LEVELS

Basic version <sup>(3)</sup>	dB(A)	56,5	56,9	57,1	58,6	59,2	60,6	61,1	61,1
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<sup>1</sup>: Data for units with EC fans and basic version for noise. Data may change for different noise versions

<sup>2</sup>: Data ref. to total absorbed power (compressors + fans)

<sup>3</sup>: Data refer to free field at 10 meters from the unit operating without pump at nominal conditions, with fans at nominal conditions, coil side, Q=2 directional factor. At different conditions and with different configurations, noise values may vary

# TRAF – Technical Data

## PERFORMANCE DATA

TRAF models		1421	1742	2042	2342	2842	3642	4042	4142
Power supply	V/ph/Hz	380/3/60 - 460/3/60							
Compressors/circuits	nr. x nr.	2/1	4/2	4/2	4/2	4/2	4/2	4/2	4/2
Evaporator	nr. x mod.	1 x plate							
Fans	nr.	2	3	3	4	4	5	6	6

### Water temperatures 10/15°C, ambient temperature 35°C, 20% glycol

Cooling capacity <sup>(1)</sup>	kW	135	177	204	239	268	312	347	401
Absorbed power <sup>(1)(2)</sup>	kW	43	55	65	74	86	102	114	128
EER <sup>(1)(2)</sup>		3,14	3,25	3,15	3,22	3,11	3,07	3,05	3,13

### Water temperatures 10/15°C, ambient temperature 30°C, 20% glycol

Cooling capacity <sup>(1)</sup>	kW	142	186	215	251	281	329	366	425
Absorbed power <sup>(1)(2)</sup>	kW	39	50	59	68	79	91	103	116
EER <sup>(1)(2)</sup>		3,60	3,72	3,62	3,68	3,57	3,60	3,57	3,67

### Water temperatures 20/25°C, ambient temperature 35°C, 20% glycol

Cooling capacity <sup>(1)</sup>	kW	173	229	260	307	342	398	445	516
Absorbed power <sup>(1)(2)</sup>	kW	48	59	71	81	95	107	121	137
EER <sup>(1)(2)</sup>		3,64	3,85	3,69	3,79	3,60	3,71	3,67	3,77

### Water temperatures 20/25°C, ambient temperature 30°C, 20% glycol

Cooling capacity <sup>(1)</sup>	kW	182	240	274	322	360	420	470	545
Absorbed power <sup>(1)(2)</sup>	kW	44	55	65	75	88	97	110	124
EER <sup>(1)(2)</sup>		4,15	4,38	4,22	4,30	4,11	4,35	4,29	4,40

### Water temperatures 20/28°C, ambient temperature 35°C, 20% glycol

Cooling capacity <sup>(1)</sup>	kW	185	246	279	329	366	426	477	552
Absorbed power <sup>(1)(2)</sup>	kW	49	61	73	83	98	109	124	140
EER <sup>(1)(2)</sup>		3,76	4,02	3,84	3,94	3,73	3,90	3,85	3,95

## NOISE PRESSURE LEVELS

Basic version <sup>(3)</sup>	dB(A)	56,5	56,9	57,1	58,6	59,2	60,6	61,1	61,1
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<sup>1</sup>: Data for units with EC fans and basic version for noise. Data may change for different noise versions

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