CHILLERS

TECS-FC 0211 - 1204

High efficiency air cooled chiller with free-cooling
302-1693 kW

Outdoor unit for the production of chilled water, equipped with oil-free centrifugal compressors, R134a refrigerant, axial EC fans, condensing coil with copper tubes and aluminum fins, shell and tube flooded evaporator and electronic expansion valve. Base, supporting structure and panels are of galvanized epoxy powder coated steel. The unit is supplied with refrigerant and has been factory tested. On-site installation therefore just involves making connections to the mains power and water supplies.
The rotor speed digital control allows an accurate and efficient thermoregulation in every operating condition. The economizer improves the refrigerant circuit efficiency (not present in sizes 0211 and 0452).
These chillers, fitted with free-cooling coils, are used in IT-cooling, industrial and civil applications, when the cooling load is constant all-year-round or the outdoor air temperature is lower than the temperature of the liquid return line. In free cooling mode, the liquid is cooled by outdoor air, thus lowering the load of the compressors until it is reduced to zero.
The NG configuration complies with applications where it is not allowed or desired the use of ethylene glycol.

Version

K	Key efficiency, compact version
CA	High energy efficiency units

Configurations

-	Basic function
NG	Function for free-cooling without use of glycole

Features

ENERGY SAVING
Energy saving guaranteed by free-cooling, which exploits the low external air temperatures; free-cooling control with optional modulating valve.
VERY HIGH EFFICIENCY
Top-level seasonal efficiency thanks to technlogical solutions at the forefront: magnetic levitation centrifugal compressors, flooded evaporator, EC fans and advanced control algorithms.
WIDE RANGE
Extended capacity range.
LOW INRUSH CURRENTS
Reduced breakaway starting currents thanks to the revolutionary centrifugal compressor.
EXTREMELY SILENT OPERATION
Extremely silent operation in line with the best on the market, and highly reduced vibrations
INTEGRATED HYDRONIC GROUP
It consists of 2 pumps with 4-pole motor, fixed or variable speed, with high or low head options to satisfy different industrial or IT-cooling applications and demands for comfort.

Accessory

- Modulating valve for water temperature control in Free-Cooling mode
- Hydronic group
- VPF (Variable Primary Flow) kit: variable flow pumps with on board regulation
- Fast restart
- Double power supply with automatic changeover (ATS) or motorized changeover
- Compressor power factor correction
- Set-up for remote connectivity with ModBus/Echelon protocol cards
- Touch Screen visual display
- Remote control keyboard (distance to 200m and to 500m)

Controls

Electronic control W3000 TE
The brand new W3000TE controller offers advanced functions and algorithms. The large format keyboard and the wide LCD display favour an easy and safe access to the machine setup and a complete view of unit's staus. The assessment and intervention on the unit is managed through a multi-level menu, with selectable user's language. The led icons immediately show the operating status of the circuits, as well as of the fans and of the water pumps (if present). An optional extra is the touch screen interface: 7.0" WVGA colour display with adjustable LED backlight and front USB port. The touch screen technology allows intuitive navigation between the various screens, safe access to the data with a three-level password protection as well as the graphic display of the performance of some monitored measurements.
The diagnostics comprises a complete alarm management system, with "black box" (via PC) and alarm log functions (via display or also PC) for a better analysis of the unit performance.
For the systems made of several units, the adjustment of the resources is performed by optional proprietary devices.
Consumption metering and performance measurement are possible as well. Supervision can be easily developed via proprietary devices or the integration in third party systems by means of the most common protocols as ModBus, Bacnet-over-IP, Echelon LonWorks, Bacnet MS/TP protocols.
Compatibility with the remote keyboard managing up to 8 units.
The presence of the programmable timer allows the creation of an operating profile containing up to 4 typical days and 10 time bands.
The control is characterized by the continuous modulation of the unit capacity, based on PID algorithms and referring to the water delivery temperature.
Optionally (VPF package), capacity modulation can be integrated with hydraulic flow modulation, thanks to inverter-driven pumps and to specific resources for the hydraulic circuit.

TECS-FC /K			0211	0351	0452	0552	0652	0712
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE								
COOLING ONLY (GROSS VALUE)								
Cooling capacity	(1)	kW	302	483	594	689	943	980
Total power input	(1)	kW	87,1	141	179	181	285	275
EER	(1)	kW/kW	3,47	3,43	3,33	3,81	3,31	3,56
COOLING ONLY (EN14511 VALUE)								
Cooling capacity	(1)(2)	kW	300	479	590	684	936	973
EER	(1)(2)	kW/kW	3,36	3,31	3,23	3,67	3,21	3,44
FREE-COOLING TOTALE (GROSS VALUE)								
Cooling capacity	(3)	kW	302	483	594	689	943	980
EER	(3)	kW/kW	59,25	50,28	49,52	67,55	56,15	51,05
Total free-cooling temperature	(3)	°C	-1,9	-2,5	-1,9	-1,4	-2,7	-1,4
ENERGY EFFICIENCY								
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)								
Ambient refrigeration								
Prated,c	(8)	kW	261	414	507	608	800	851
SEER	(8)(9)		4,91	4,62	4,66	5,23	4,73	4,77
Performance ηs	(8)(10)	%	193	182	184	206	186	188
EXCHANGERS								
HEAT EXCHANGER USER SIDE IN REFRIGERATION								
Water flow	(1)	l/s	16,01	25,57	31,48	36,50	49,98	51,93
Pressure drop	(1)	kPa	86,0	98,6	89,3	104	104	107
REFRIGERANT CIRCUIT								
Compressors nr.		N°	1	1	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1
Refrigerant charge		kg	120	140	260	260	320	320
NOISE LEVEL								
Sound Pressure	(4)	dB(A)	56	61	62	58	63	63
Sound power level in cooling	(5)(6)	dB(A)	88	93	94	91	96	96
SIZE AND WEIGHT								
A	(7)	mm	4000	4000	4900	6400	7000	7900
B	(7)	mm	2260	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500	2500
Operating weight	(7)	kg	3430	3850	5080	5820	6340	6900

TECS-FC /K			0903	0953	1003	1164	1204
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1)	kW	1185	1253	1421	1578	1649
Total power input	(1)	kW	320	373	425	455	461
EER	(1)	kW/kW	3,70	3,36	3,35	3,47	3,58
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	1177	1246	1411	1567	1637
EER	(1)(2)	kW/kW	3,59	3,28	3,25	3,36	3,46
FREE-COOLING TOTALE (GROSS VALUE)							
Cooling capacity	(3)	kW	1185	1253	1421	1578	1649
EER	(3)	kW/kW	49,38	52,21	53,83	50,58	52,85
Total free-cooling temperature	(3)	°C	-1,2	-2,7	-2,5	-1,6	-1,8
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(8)	kW	1045	1069	1212	1361	1435
SEER	(8)(9)		4,62	4,46	4,53	4,38	4,41
Performance ηs	(8)(10)	%	182	175	178	172	173
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	62,78	66,38	75,30	83,61	87,35
Pressure drop	(1)	kPa	91,8	80,2	103	106	115
REFRIGERANT CIRCUIT							
Compressors nr.		N°	3	3	3	4	4
No. Circuits		N°	2	2	2	2	2
Refrigerant charge		kg	430	520	520	540	540
NOISE LEVEL							
Sound Pressure	(4)	dB(A)	64	64	65	65	65
Sound power level in cooling	(5)(6)	dB(A)	97	97	98	98	98
SIZE AND WEIGHT							
A	(7)	mm	10600	11200	11200	13000	13600
B	(7)	mm	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500
Operating weight	(7)	kg	9750	10260	10530	12290	12350

Notes:
1 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Source (side) heat exchanger air (in) 30°C; Ethylene glycol 30%.
2 Values in compliance with EN14511-3:2013.
3 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Ethylene glycol 30%.
4 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
5 Sound power on the basis of measurements made in compliance with ISO 9614.
6 Sound power level in cooling, outdoors.
7 Unit in standard configuration/execution, without optional accessories.
8 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
9 Seasonal space heating energy index
10 Seasonal energy efficiency of the space cooling
The units highlighted in this publication contain HFC R134a [GWP_{100} 1430] fluorinated greenhouse gases.

TECS-FC /CA			0211	0251	0351	0452	0552	0712	0803	0903	1003
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW	310	354	496	616	714	990	1068	1209	1446
Total power input	(1)	kW	85,4	89,8	134	173	177	268	267	308	412
EER	(1)	kW/kW	3,63	3,94	3,69	3,56	4,03	3,69	4,00	3,92	3,51
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW	307	351	492	611	708	983	1062	1201	1436
EER	(1)(2)	kW/kW	3,50	3,79	3,56	3,44	3,87	3,56	3,90	3,80	3,40
FREE-COOLING TOTALE (GROSS VALUE)											
Cooling capacity	(3)	kW	310	354	496	616	714	990	1068	1209	1446
EER	(3)	kW/kW	60,71	52,04	58,36	60,37	52,51	58,25	52,35	54,71	65,43
Total free-cooling temperature	(3)	°C	-0,1	-0,2	-1,0	-0,5	0,4	-0,9	0,2	0,0	-1,6
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(8)	kW	271	319	434	535	650	867	972	1086	1244
SEER	(8)(9)		5,04	4,95	5,05	5,18	5,26	5,16	5,21	5,06	4,94
Performance ηs	(8)(10)	%	199	195	199	204	207	204	205	199	195
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	16,40	18,75	26,28	32,63	37,83	52,47	56,60	64,05	76,60
Pressure drop	(1)	kPa	90,3	96,3	104	95,9	111	109	74,6	95,6	107
REFRIGERANT CIRCUIT											
Compressors nr.		N°	1	1	1	2	2	2	3	3	3
No. Circuits		N°	1	1	1	1	1	1	2	2	2
Refrigerant charge		kg	120	120	140	260	280	320	430	430	520
NOISE LEVEL											
Sound Pressure	(4)	dB(A)	56	57	58	58	59	60	61	61	61
Sound power level in cooling	(5)(6)	dB(A)	88	89	90	91	92	93	94	94	94
SIZE AND WEIGHT											
A	(7)	mm	4000	4000	4900	6400	7900	10000	12100	13000	13000
B	(7)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500	2500	2500	2500	2500
Operating weight	(7)	kg	3660	3790	4380	5720	6770	8870	10530	11370	11730

Notes:
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3 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Ethylene glycol 30%.
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6 Sound power level in cooling, outdoors.
7 Unit in standard configuration/execution, without optional accessories.
8 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
9 Seasonal space heating energy index
10 Seasonal energy efficiency of the space cooling
The units highlighted in this publication contain HFC R134a [GWP_{100} 1430] fluorinated greenhouse gases.

TECS-FC /NG /K			0211	0351	0452	0552	0652	0712
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE								
COOLING ONLY (GROSS VALUE)								
Cooling capacity	(1)	kW	310	496	610	708	969	1007
Total power input	(1)	kW	87,6	142	180	182	287	277
EER	(1)	kW/kW	3,54	3,50	3,40	3,89	3,38	3,64
COOLING ONLY (EN14511 VALUE)								
Cooling capacity	(1)(2)	kW	308	491	606	701	961	999
EER	(1)(2)	kW/kW	3,43	3,37	3,29	3,73	3,26	3,51
FREE-COOLING TOTALE (GROSS VALUE)								
Cooling capacity	(3)	kW	310	496	610	708	969	1007
EER	(3)	kW/kW	38,32	32,83	31,29	39,98	30,47	29,44
Total free-cooling temperature	(3)	°C	-4,9	-5,5	-5,0	-4,5	-5,8	-4,5
ENERGY EFFICIENCY								
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)								
Ambient refrigeration								
Prated,c	(8)	kW	260	413	506	606	798	849
SEER	(8)(9)		4,74	4,42	4,47	4,92	4,51	4,57
Performance ηs	(8)(10)	%	187	174	176	194	177	180
EXCHANGERS								
HEAT EXCHANGER USER SIDE IN REFRIGERATION								
Water flow	(1)	l/s	14,85	23,72	29,20	33,86	46,37	48,17
Pressure drop	(1)	kPa	98,1	128	112	137	135	130
REFRIGERANT CIRCUIT								
Compressors nr.		N°	1	1	2	2	2	2
No. Circuits		N°	1	1	1	1	1	1
Refrigerant charge		kg	120	140	260	260	320	320
NOISE LEVEL								
Sound Pressure	(4)	dB(A)	56	61	62	58	63	63
Sound power level in cooling	(5)(6)	dB(A)	88	93	94	91	96	96
SIZE AND WEIGHT								
A	(7)	mm	4000	4000	4900	6400	7000	7900
B	(7)	mm	2260	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500	2500
Operating weight	(7)	kg	4120	4620	6100	6990	7610	8280

TECS-FC /NG /K			0903	0953	1003	1164	1204
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE							
COOLING ONLY (GROSS VALUE)							
Cooling capacity	(1)	kW	1217	1287	1460	1621	1693
Total power input	(1)	kW	322	375	427	457	463
EER	(1)	kW/kW	3,78	3,43	3,42	3,55	3,66
COOLING ONLY (EN14511 VALUE)							
Cooling capacity	(1)(2)	kW	1208	1278	1448	1606	1677
EER	(1)(2)	kW/kW	3,66	3,33	3,30	3,41	3,50
FREE-COOLING TOTALE (GROSS VALUE)							
Cooling capacity	(3)	kW	1217	1287	1460	1621	1693
EER	(3)	kW/kW	31,21	30,28	30,17	26,49	27,66
Total free-cooling temperature	(3)	°C	-4,3	-5,7	-5,6	-4,7	-4,9
ENERGY EFFICIENCY							
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)							
Ambient refrigeration							
Prated,c	(8)	kW	1043	1067	1209	1357	1430
SEER	(8)(9)		4,45	4,28	4,31	4,15	4,14
Performance ηs	(8)(10)	%	175	168	170	163	163
EXCHANGERS							
HEAT EXCHANGER USER SIDE IN REFRIGERATION							
Water flow	(1)	l/s	58,24	61,58	69,85	77,56	81,03
Pressure drop	(1)	kPa	113	110	140	154	169
REFRIGERANT CIRCUIT							
Compressors nr.		N°	3	3	3	4	4
No. Circuits		N°	2	2	2	2	2
Refrigerant charge		kg	430	520	520	540	540
NOISE LEVEL							
Sound Pressure	(4)	dB(A)	64	64	65	65	65
Sound power level in cooling	(5)(6)	dB(A)	97	97	98	98	98
SIZE AND WEIGHT							
A	(7)	mm	10600	11200	11200	13000	13600
B	(7)	mm	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500
Operating weight	(7)	kg	11700	12320	12640	14750	14820

Notes:
1 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Source (side) heat exchanger air (in) 30°C; Ethylene glycol 0%.
2 Values in compliance with EN14511-3:2013.
3 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Ethylene glycol 0%.
4 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
5 Sound power on the basis of measurements made in compliance with ISO 9614.
6 Sound power level in cooling, outdoors.
7 Unit in standard configuration/execution, without optional accessories.
8 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
9 Seasonal space heating energy index
10 Seasonal energy efficiency of the space cooling
The units highlighted in this publication contain HFC R134a [GWP_{100} 1430] fluorinated greenhouse gases.

TECS-FC /NG /CA			0211	0251	0351	0452	0552	0712	0803	0903	1003
Power supply		V/ph/Hz	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50	400/3/50
PERFORMANCE											
COOLING ONLY (GROSS VALUE)											
Cooling capacity	(1)	kW	318	363	509	632	733	1017	1097	1242	1485
Total power input	(1)	kW	85,9	90,3	135	174	178	270	268	310	414
EER	(1)	kW/kW	3,70	4,03	3,78	3,63	4,12	3,77	4,09	4,01	3,58
COOLING ONLY (EN14511 VALUE)											
Cooling capacity	(1)(2)	kW	316	360	505	627	726	1009	1090	1233	1472
EER	(1)(2)	kW/kW	3,57	3,86	3,62	3,50	3,93	3,63	3,97	3,87	3,45
FREE-COOLING TOTALE (GROSS VALUE)											
Cooling capacity	(3)	kW	318	363	509	632	733	1017	1097	1242	1485
EER	(3)	kW/kW	39,26	29,55	36,39	40,28	29,81	31,78	30,99	30,59	33,67
Total free-cooling temperature	(3)	°C	-3,2	-3,2	-4,1	-3,6	-2,7	-4,0	-2,9	-3,1	-4,7
ENERGY EFFICIENCY											
SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)											
Ambient refrigeration											
Prated,c	(8)	kW	270	318	433	533	648	865	970	1084	1241
SEER	(8)(9)		4,87	4,69	4,82	4,94	4,91	4,91	5,00	4,83	4,67
Performance ηs	(8)(10)	%	192	184	190	194	193	194	197	190	184
EXCHANGERS											
HEAT EXCHANGER USER SIDE IN REFRIGERATION											
Water flow	(1)	l/s	15,22	17,39	24,38	30,26	35,10	48,67	52,51	59,42	71,06
Pressure drop	(1)	kPa	103	120	131	120	147	133	92,2	117	145
REFRIGERANT CIRCUIT											
Compressors nr.		N°	1	1	1	2	2	2	3	3	3
No. Circuits		N°	1	1	1	1	1	1	2	2	2
Refrigerant charge		kg	120	120	140	260	280	320	430	430	520
NOISE LEVEL											
Sound Pressure	(4)	dB(A)	56	57	58	58	59	60	61	61	61
Sound power level in cooling	(5)(6)	dB(A)	88	89	90	91	92	93	94	94	94
SIZE AND WEIGHT											
A	(7)	mm	4000	4000	4900	6400	7900	10000	12100	13000	13000
B	(7)	mm	2260	2260	2260	2260	2260	2260	2260	2260	2260
H	(7)	mm	2500	2500	2500	2500	2500	2500	2500	2500	2500
Operating weight	(7)	kg	4400	4550	5260	6870	8130	10650	12640	13650	14080

Notes:
1 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Source (side) heat exchanger air (in) 30°C; Ethylene glycol 0%.
2 Values in compliance with EN14511-3:2013.
3 Plant (side) cooling exchanger water (in/out) 15°C/10°C; Ethylene glycol 0%.
4 Average sound pressure level at 10m distance, unit in a free field on a reflective surface; non-binding value calculated from the sound power level.
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7 Unit in standard configuration/execution, without optional accessories.
8 Seasonal energy efficiency of the cooling environment [REGULATION (EU) N. 2016/2281]
9 Seasonal space heating energy index
10 Seasonal energy efficiency of the space cooling
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