

COMFORT

CHILLERS

# FOCS3-W

**WATER SOURCE CHILLERS FOR  
INDOOR INSTALLATION**

- ▶ High efficiency
- ▶ Flexible installation
- ▶ Easy adaptability
- ▶ Advanced control



# FOCS3-W

**LIQUID CHILLER, WATER SOURCE**  
**188-1693 KW**

Chilled water unit for indoor installation.

Semi-hermetic screw compressors optimized to operate with low compression ratio and R134a; shell and tube condenser, flooded evaporator and electronic expansion valve.

Thanks to its precise and accurate thermoregulation, this extremely flexible and reliable unit easily adapts to different thermal load conditions. The high performance level and the premium efficiency is achieved thanks to the accurate sizing of all the components, such as the heat exchangers and the innovative optimized compressors.

CA Version  
Class A efficiency



## Unparalleled efficiency

Thanks to the choice of high performing components, the FOCS3-W units are characterized by really competitive efficiency levels both at full and part loads (EER 5.8, ESEER 7.4, IPLV 7.7), which ensure minimum running costs and a quick return on investment.

## Flexible installation

The compact and essential design leads to more flexibility during the design phase, both in the case of new plants and preexisting ones, to a higher ease of handling and on site positioning in plants with reduced space.

## Easy adaptability

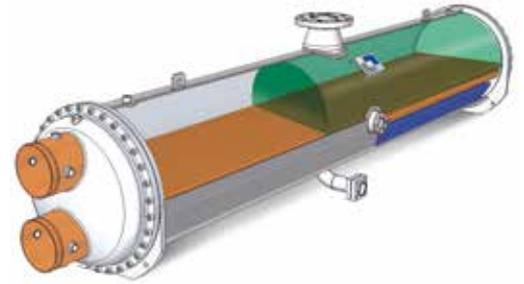
Maximum adaptability to the needs of the plant thanks to the continuous modulation of the cooling capacity and the precision in the control logics.



## INNOVATIVE DESIGN OF THE HEAT EXCHANGERS

The flooded evaporator and the shell and tube condenser, both fully designed and built internally, present an exclusive design aimed to maximize the cooling power and optimize the operation of the compressors.

In the evaporator the complete flooding of the tubes is guaranteed also during partial load conditions by an electronic expansion valve, managed by proprietary control logics. The shell and tube condenser is designed in order to guarantee reduced pressure drops on the water side and to decrease the pumping costs as much as possible.



In both the exchangers the presence of refrigerant fluid in the shell side and water in the tube side allows:

Minimization of pressure drops

Perfect unified temperature as well as complete refrigerant evaporation

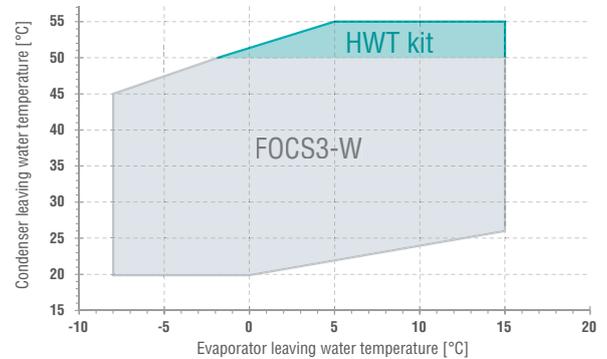
Elimination of a surface dedicated to super-heating

Facilitation of cleaning operation

## LARGE OPERATING RANGE

FOCS3-W is characterized by a huge operating range, even in the standard configuration.

The operating limits can be further enlarged with dedicated accessories, such as the High Water Temperature (HWT) kit, available for every size.



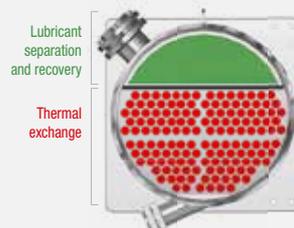
### Optimized compressors

Screw compressors intentionally designed to work with low compression ratios, allowing them to reach efficiency values, both at part and full loads, considerably higher than those possible for units with traditional screw compressors.



### Perfect lubricant recovery

Unique design of the heat exchangers that provides the perfect separation and complete recovery of the lubricants in order to guarantee proper lubrication of the compressors and the relevant cleaning of the shell and tube exchanging surfaces.



### High quality components

FOCS3-W is provided with an electronic expansion valve managed by proprietary control logics which guarantees the proper refrigerant charge and the complete flooding of the tubes, also when the compressors work in part load conditions.





# FOCS3-W 0551 - 4752

## LIQUID CHILLER, WATER SOURCE 188-1693 KW

### FOCS3-W

Model			0551	0701	0851	0951	1101	1301	1401	1651	1901	2101	2501
Power supply		V/phase	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	400/3/50	400/3/50
<b>PERFORMANCE</b>													
<b>COOLING ONLY (GROSS VALUE)</b>													
Cooling capacity	(1)	kW	188	250	306	338	384	460	524	592	682	741	837
Total power input	(1)	kW	34,9	45,9	56,1	61,2	69,8	82,5	93,0	104	122	133	149
EER	(1)	kW/kW	5,39	5,45	5,45	5,52	5,49	5,57	5,63	5,70	5,59	5,57	5,61
ESEER	(1)	kW/kW	6,84	7,09	6,55	6,85	6,80	6,73	6,90	7,00	6,90	6,89	6,94
<b>COOLING ONLY (EN14511 VALUE)</b>													
Cooling capacity	(1)(2)	kW	187	249	305	336	382	458	522	590	679	739	834
EER	(1)(2)	kW/kW	5,09	5,15	5,16	5,21	5,20	5,30	5,40	5,41	5,33	5,34	5,37
ESEER	(1)(2)	kW/kW	6,14	6,31	5,94	6,16	6,14	6,15	6,09	6,35	6,10	6,19	6,23
Cooling energy class			A	A	A	A	A	A	A	A	A	A	A
<b>ENERGY EFFICIENCY</b>													
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>													
<b>Ambient refrigeration</b>													
Prated,c	(7)	kW	187	249	305	336	382	458	522	590	679	739	834
SEER	(7)(8)		5,92	6,15	5,72	5,88	5,90	5,90	6,55	6,16	6,25	6,39	6,31
Performance ηs	(7)(9)	%	229	238	221	227	228	230	254	239	242	248	244
<b>EXCHANGERS</b>													
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>													
Water flow	(1)	l/s	9,00	11,95	14,63	16,15	18,34	21,99	25,06	28,30	32,59	35,45	40,03
Pressure drop	(1)	kPa	42,0	48,7	49,1	52,4	52,8	47,5	39,9	50,9	42,0	42,7	42,8
<b>HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION</b>													
Water flow	(1)	l/s	10,64	14,10	17,26	19,01	21,61	25,86	29,42	33,17	38,31	41,69	47,02
Pressure drop	(1)	kPa	56,7	57,2	56,0	58,6	57,4	54,5	44,3	55,2	59,7	45,3	47,6
<b>REFRIGERANT CIRCUIT</b>													
Compressors nr.		N°	1	1	1	1	1	1	1	1	1	1	1
No. Circuits		N°	1	1	1	1	1	1	1	1	1	1	1
Refrigerant charge		Kg	75,0	86,0	95,0	94,0	86,0	100	110	112	121	147	182
<b>NOISE LEVEL</b>													
Sound Pressure	(3)	dB(A)	77	77	80	80	80	80	80	80	80	82	82
Sound power level in cooling	(4)(5)	dB(A)	95	95	98	98	98	98	98	98	98	100	100
<b>SIZE AND WEIGHT</b>													
A	(6)	mm	2920	2920	2920	2920	2920	2900	2900	2900	2930	2980	2990
B	(6)	mm	1180	1180	1180	1180	1180	1180	1180	1180	1180	1190	1280
H	(6)	mm	1870	1870	1870	1870	1870	1960	1970	1960	2050	2100	2200
Operating weight	(6)	kg	1740	1790	2170	2200	2260	2940	3020	3150	3270	3570	3960

#### NOTE

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## ADVANCED CONTROL

The new controller featuring proprietary settings to ensure faster adaptive responses to different dynamics.

### The new user interface features:



LED icons that allow a full and immediate status display of the various circuits, including circulation pumps and condensing circuits. (for air cooled units only)

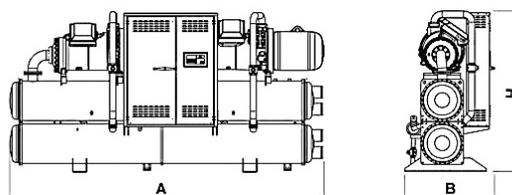
Controls and display that allow easy and safe access to the unit's settings.


**NEW!**
**FOCS3-W**

Model			2602	3002	3152	3502	3652	4002	4102	4502	4602	4752
Power supply	V/phase		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	400/3/50
<b>PERFORMANCE</b>												
<b>COOLING ONLY (GROSS VALUE)</b>												
Cooling capacity	(1)	kW	916	1062	1140	1218	1303	1382	1450	1522	1614	1693
Total power input	(1)	kW	164	187	196	214	225	242	253	268	284	292
EER	(1)	kW/kW	5,58	5,68	5,82	5,69	5,80	5,72	5,74	5,68	5,68	5,80
ESEER	(1)	kW/kW	7,35	7,43	7,46	7,24	7,32	7,28	7,27	7,12	7,39	7,39
<b>COOLING ONLY (EN14511 VALUE)</b>												
Cooling capacity	(1)(2)	kW	913	1058	1137	1214	1299	1377	1445	1517	1609	1688
EER	(1)(2)	kW/kW	5,37	5,42	5,62	5,43	5,60	5,46	5,50	5,42	5,45	5,54
ESEER	(1)(2)	kW/kW	6,44	6,56	6,80	6,41	6,67	6,47	6,49	6,36	6,58	6,58
Cooling energy class			A	A	A	A	A	A	A			
<b>ENERGY EFFICIENCY</b>												
<b>SEASONAL EFFICIENCY IN COOLING (Reg. EU 2016/2281)</b>												
<b>Ambient refrigeration</b>												
Prated,c	(7)	kW	913	1058	1137	1214	1299	1377	1445	1517	1609	1688
SEER	(7)(8)		6,34	6,47	7,03	6,34	6,89	6,43	6,50	6,35	6,50	6,75
Performance $\eta_s$	(7)(9)	%	246	251	273	246	267	249	252	246	252	262
<b>EXCHANGERS</b>												
<b>HEAT EXCHANGER USER SIDE IN REFRIGERATION</b>												
Water flow	(1)	l/s	43,80	50,79	54,53	58,23	62,33	66,11	69,33	72,76	77,20	80,94
Pressure drop	(1)	kPa	40,0	51,5	37,4	51,4	39,8	50,4	46,7	51,5	42,5	46,7
<b>HEAT EXCHANGER SOURCE SIDE IN REFRIGERATION</b>												
Water flow	(1)	l/s	51,49	59,55	63,73	68,26	72,87	77,45	81,18	85,33	90,51	94,64
Pressure drop	(1)	kPa	44,0	53,8	31,6	56,2	33,7	52,9	49,5	54,7	53,1	58,0
<b>REFRIGERANT CIRCUIT</b>												
Compressors nr.		N°	2	2	2	2	2	2	2	2	2	2
No. Circuits		N°	2	2	2	2	2	2	2	2	2	2
Refrigerant charge		kg	210	249	270	270	280	280	288	297	341	341
<b>NOISE LEVEL</b>												
Sound Pressure	(3)	dB(A)	81	81	81	81	81	81	82	82	82	82
Sound power level in cooling	(4)(5)	dB(A)	100	100	100	100	100	100	101	102	102	102
<b>SIZE AND WEIGHT</b>												
A	(6)	mm	4430	4430	4440	4470	4470	4470	4565	4650	5270	5270
B	(6)	mm	1270	1270	1270	1270	1320	1270	1320	1320	1320	1320
H	(6)	mm	2210	2210	2280	2250	2330	2280	2380	2380	2380	2380
Operating weight	(6)	kg	6200	6430	7080	7160	7560	7280	7850	7940	8420	8950

**Notes:**

- 1 Plant (side) cooling exchanger water (in/out) 12°C/7°C;  
Source (side) heat exchanger water (in/out) 30°C/35°C.
  - 2 Values in compliance with EN14511-3:2013.
  - 3 Average sound pressure level at 1m distance, unit in a free field on a reflective surface;  
non-binding value calculated from the sound power level.
  - 4 Sound power on the basis of measurements made in compliance with ISO 9614.
  - 5 Sound power level in cooling, indoors.
  - 6 Unit in standard configuration/execution, without optional accessories.
  - 7 Seasonal energy efficiency of the cooling environment in AVERAGE climatic conditions  
[REGULATION (EU) N. 2016/2281]
  - 8 Seasonal space heating energy index
  - 9 Seasonal energy efficiency of the space cooling
- The units highlighted in this publication contain HFC R134a [GWP<sub>100</sub> 1430] fluorinated greenhouse gases.



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**As an option a new touch screen interface is available**


7" color display that allows intuitive navigation between the different screens.

the presence of a USB port allows quick and easy application updates, as well as downloading the registered variables in graphical form.

## MORE THAN 1000 PROJECTS ALL OVER THE WORLD

Every project is characterised by different usage conditions and system specifications for many different latitudes. All these projects share high energy efficiency, maximum integration and total reliability of the Climaveneta brand.

### Intercontinental Hotel Dhaka

2016 Dhaka - Bangladesh

**Application:**

Hotel and resorts

**Plant type:**

Hydronic System

**Cooling capacity:**

3508 kW

**Heating capacity:**

608 kW

**Plant type:**

Hydronic System

**Installed machines:**

2x FOCS3-W 4502

2x ERACS2-Q/CA 1162

191x i-LIFE2 402

59x i-LIFE 602

9x i-LIFE 802

#### PROJECT

InterContinental Hotel Dhaka has been the first international five star hotel in Bangladesh and still is one of the best addresses of the country's capital. It opened in 1966 and hosted many important local political events. From 2013 to 2016 it went about a major renovation.

#### CHALLENGE

The retrofit of the complex comprised also a deep renovation of the HVAC system, in order to provide the guests with the uncompromised comfort standards typical of InterContinental hotel experience. At the same time, high energy efficiency was a key requirement of the new HVAC system, given the impact of air conditioning and sanitary hot water production on luxury hotel energy and running costs profile.

#### SOLUTION

The new HVAC system synergistically combines 2 INTEGRA units for simultaneous production of heating and cooling with 2 water cooled chillers FOCS3-W.

INTEGRA units, besides satisfying a significant share of the cooling load, produce for free the sanitary hot water required by the hotel, thanks to their smart operating and heat recovery logic.

The water cooled FOCS3-W chillers are used to tackle the remaining cooling loads and play a key role in coping with demand peaks.

The smart integration of these technologies results in enhanced resiliency of the building and in a significant reduction of its operating costs.

## BNP PARIBAS TIROU CHARLEROI - BELGIUM

**Period:** 2016 - 2017  
**Application:** Bank Offices  
**Plant type:** Hydronic System  
**Cooling capacity:** 382 kW  
**Installed machines:** 1x FOCS3 W 1101



## N1 CITY NETCARE CAPE TOWN - SOUTH AFRICA

**Period:** 2015  
**Application:** Healthcare / Hospitals  
**Plant type:** Hydronic System  
**Cooling capacity:** 250 kW  
**Installed machines:** 1x FOCS3-W 0701



## PCC MARRIOTT HOTEL AUSTRIA - AUSTRIA

**Period:** 2015  
**Application:** Hotel and resorts  
**Plant type:** Hydronic System  
**Cooling capacity:** 1672 kW  
**Heating capacity:** 1175 kW  
**Installed machines:** 1x ERACS2-WQ 2702,  
 1x NECS-WQ 1204, 1x FOCS3-W 2101



## NOAKHALI SUPERMARKET NOAKHALI - BANGLADESH

**Period:** 2016 - 2018  
**Application:** Supermarket  
**Plant type:** Hydronic System  
**Cooling capacity:** 1522 kW  
**Installed machines:** 1x FOCS3-W 4502





for a greener tomorrow

Eco Changes is the Mitsubishi Electric Group's environmental statement, and expresses the Group's stance on environmental management. Through a wide range of businesses, we are helping contribute to the realization of a sustainable society.



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