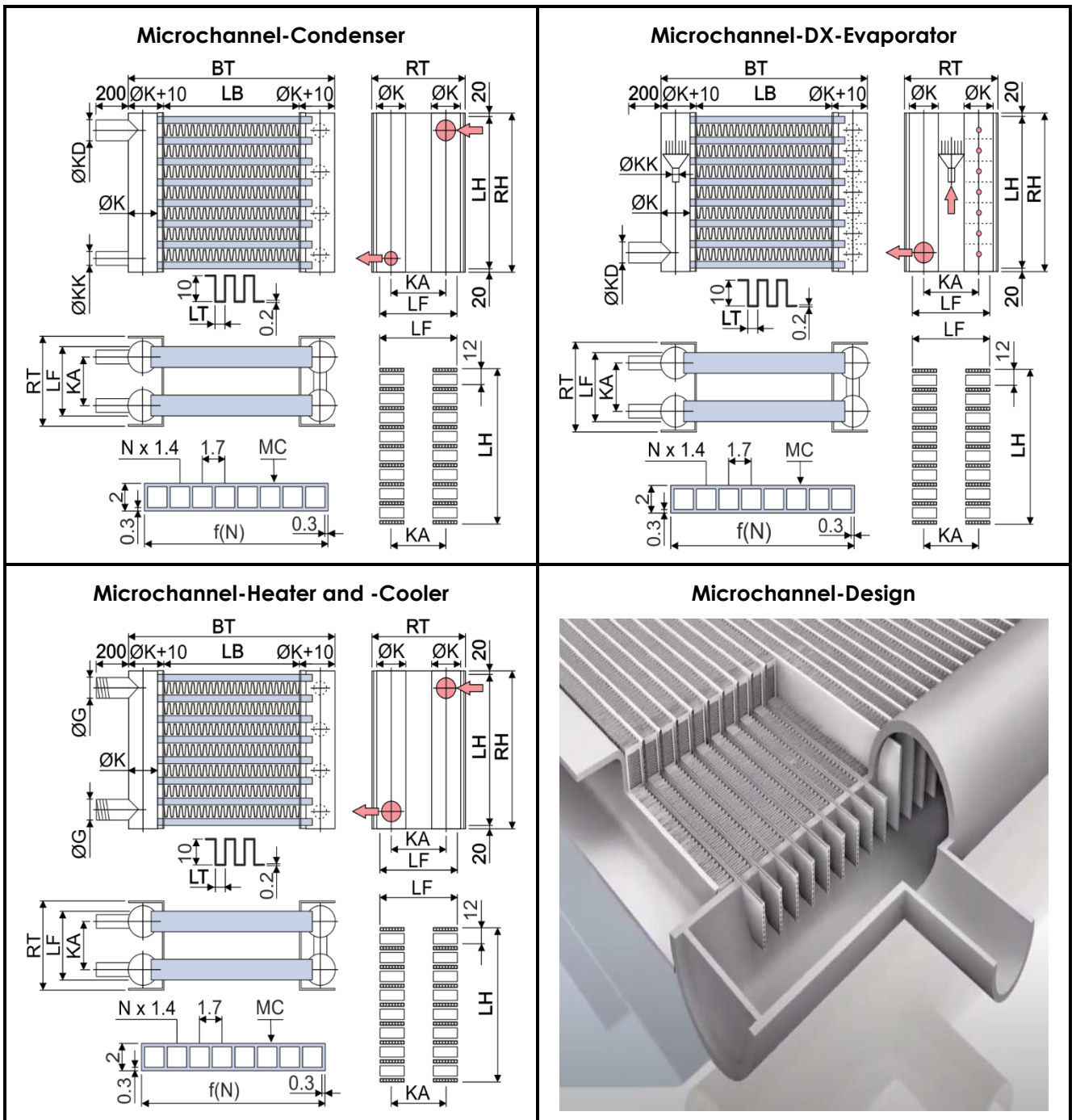




# Microchannel finned heat exchanger

Microchannel heat exchangers offer many advantages in terms of heat transfer coefficient, content, weight and depth. Microchannel heat exchangers must be connected in cross-counterflow, otherwise the mean logarithmic temperature will be reduced and the required performance will not be achieved.



On pages 2 to 5 you will find exemplary layouts for condensers, DX evaporators, air heaters and air coolers.

**Condenser - dry: 2R-121T-1266A-2.5PA-121C-AI**

Capacity total	kW	89.830
Capacity sensible	kW	89.830
Capacity latent	kW	0.000
Surface reserve	%	2.380
Present surface	m2	63.500
Required surface	m2	62.024
k-coeff.	W/m2K	75.114
Average temp. diff.	K	19.281



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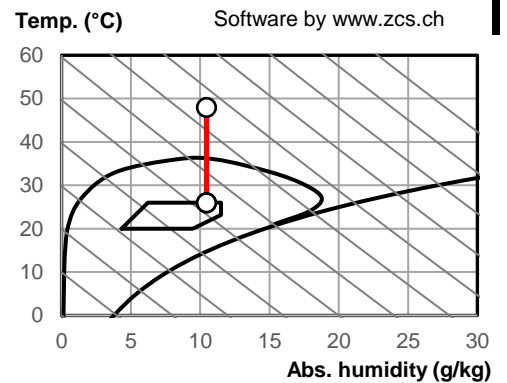
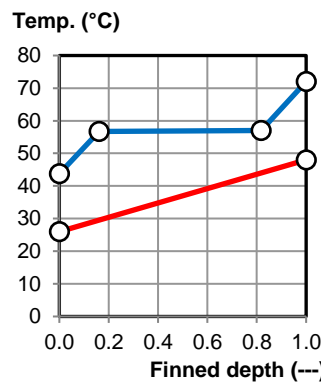
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Plant  
Object  
Position

Air humid (ff=0.00005 m2K/W)		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp. ( 26.000 )	°C	26.000	48.000	20.000
Rel. humidity ( 50.000 )	%	50.000	15.080	40.000
Abs. humidity ( 10.463 )	g/kg	10.463	10.463	5.784
Density humid	kg/m3	1.172	1.092	1.200
Enthalpy humid	kJ/kg	52.835	75.428	34.805
Volume flow humid	m3/h	12336.843	13244.085	12000.000
Mass flow dry	kg/h	14313.370	14313.370	14313.370
Velocity	m/s	1.877	2.015	1.826
Pressure drop dry	Pa		14.083	
Pressure drop wet	Pa		14.083	

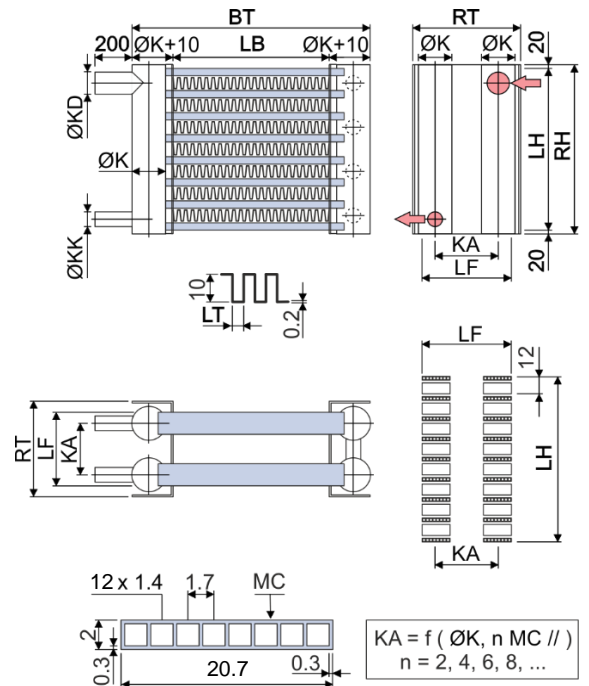
Agent (ff=0.00005 m2K/W)		
R410A	%	99.500
Oil ISO VG32	%	0.500
Pressure	bar	35.882
Hot gas	°C	72.000
Condensation''	°C	57.000
Condensation'	°C	56.903
Subcooling	°C	44.000
Mass flow	kg/h	1840.675
Volume flow in	m3/h	10.256
Volume flow out	m3/h	2.172
Pressure drop	bar	0.343
Pressure drop	K	0.431



Software by www.zcs.ch

**System type complete AI**

Microchannels total	Piece	242
Microchannels in depth	Piece	2
Microchannels in height	Piece	121
Microchannels passages	Piece	2
Number of circuits (NC)	Piece	121
Volume	l	11
Weight	kg	39
Steam connection	ØKD mm	42
Cond. connection	ØKK mm	42
Collector	ØK mm	42
Collector distance	KA mm	53
Frame height	RH mm	1482
Frame width	BT mm	1370
Frame depth	RT mm	95
Finned height	LH mm	1442
Finned width	LB mm	1266
Finned depth	LF mm	74
Frame on top	RO mm	20
Frame on bottom	RU mm	20
Frame in front	RV mm	52
Frame on back	RN mm	52
Fin spacing	LT mm	2.500
Fin thickness	LD mm	0.200
Microchannel width	---	mm 20.700
Microchannel height	---	mm 2.000
Microchannel thickness	---	mm 0.300
Microchannel interval in height	---	mm 12.000
Microchannel interval in depth	---	mm 53.000



Delivery: 5-6 weeks  
Validity: 12 weeks  
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Price net: EUR 1450.00

**DX evaporator: 2R-121T-1254A-2.5PA-121C-AI** Software by www.zcs.ch

Capacity total	kW	70.228
Capacity sensible	kW	44.131
Capacity latent	kW	26.097
Capacity frost	kW	0.000
Surface reserve	%	2.472
Present surface	m2	62.897
Required surface	m2	61.379
k-coeff.	W/m2K	96.643
Average temp. diff.	K	11.839



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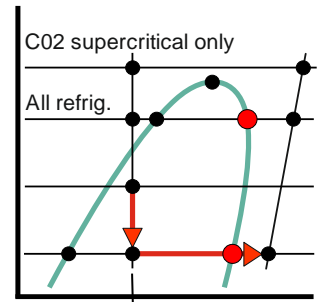
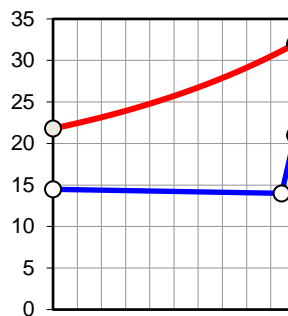
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Plant  
Object  
Position

Air humid (ff=0.00005 m2K/W)		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp.	°C	32.000	21.800	5.000
Rel. humidity	%	50.000	76.402	80.000
Abs. humidity	g/kg	14.896	12.469	4.320
Density humid	kg/m3	1.146	1.188	1.265
Enthalpy humid	kJ/kg	70.340	53.620	15.873
Volume flow humid	m3/h	13387.021	12890.258	12000.000
Mass flow dry	kg/h	15120.480	15120.480	15120.480
Condensate flow	kg/h		36.705	
Surface temperature	°C	15.985	15.130	
Velocity	m/s	2.056	1.980	1.843
Pressure drop dry	Pa		15.265	
Pressure drop wet	Pa		17.794	

**R410A Evaporation 12.189 bar (ff=0.00005 m2K/W)**

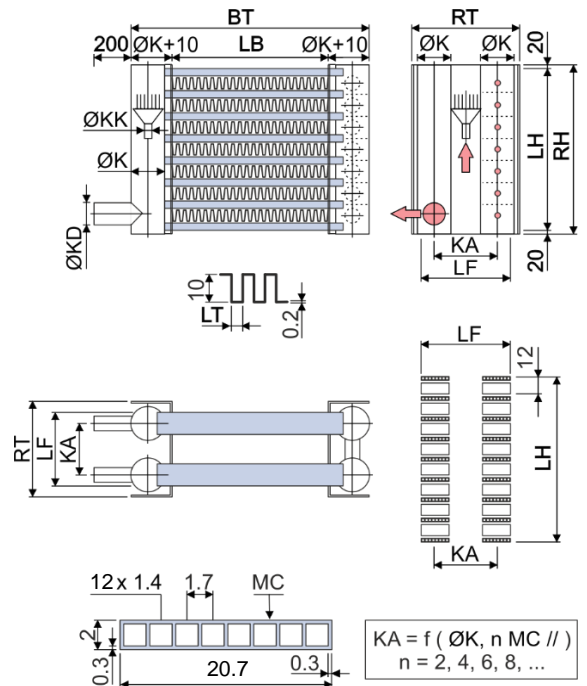
Condensate"	°C	50.000
Condensate'	°C	49.890
Subcooling	°C	47.000
Evaporation"	°C	14.000
Superheating	°C	21.000
Mass flow	kg/h	1650.175
Volume flow	m3/h	34.825
Velocity	m/s	3.399
Pressure drop Evaporation	K	0.546
Pressure drop Capillary	bar	4.010
Oil ISO VG32	%	0.500



Part of steam on the inject point 28.43 %  
Capillary: 30 x Ø5.00/Ø3.00x1642.00 mm

**System type complete AI**

Microchannels total	Piece	242
Microchannels in depth	Piece	2
Microchannels in height	Piece	121
Microchannels passages	Piece	2
Number of circuits (NC)	Piece	121
Volume	l	12
Weight	kg	39
Cond. connection	ØKK mm	28
Steam connection	ØKD mm	48
Collector	ØK	48
Collector distance	KA mm	59
Frame height	RH mm	1482
Frame width	BT mm	1370
Frame depth	RT mm	107
Finned height	LH mm	1442
Finned width	LB mm	1254
Finned depth	LF mm	80
Frame on top	RO mm	20
Frame on bottom	RU mm	20
Frame in front	RV mm	58
Frame on back	RN mm	58
Fin spacing	LT mm	2.500
Fin thickness	LD mm	0.200
Microchannel width	---	mm 20.700
Microchannel height	---	mm 2.000
Microchannel thickness	---	mm 0.300
Microchannel interval in height	---	mm 12.000
Microchannel interval in depth	---	mm 59.000



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Capacity total	kW	127.135
Capacity sensible	kW	127.135
Capacity latent	kW	0.000
Surface reserve	%	1.973
Present surface	m2	61.689
Required surface	m2	60.496
k-coeff.	V/m2K	88.782
Average temp. diff.	K	23.671

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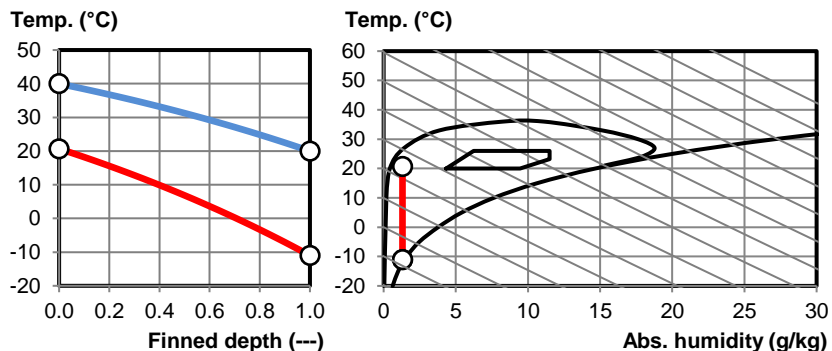
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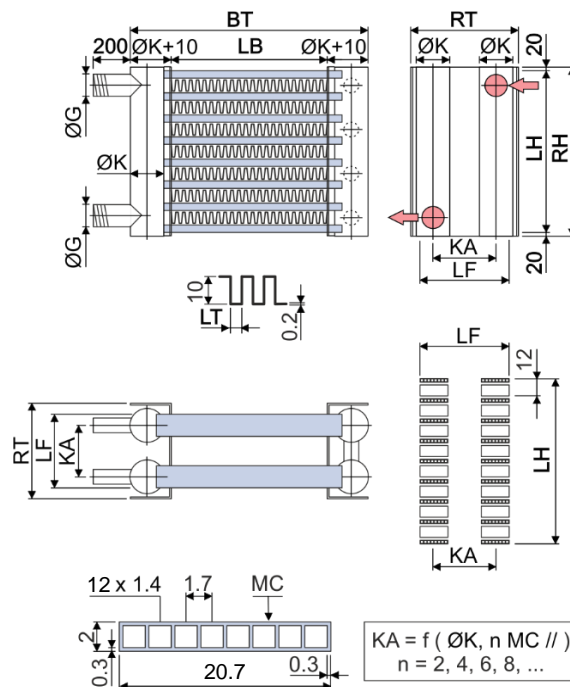
Plant  
Object  
Position

Air humid (ff=0.00005 m2K/W)		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp.	°C	-11.000	20.700	20.000
Rel. humidity	%	90.000	8.715	40.000
Abs. humidity	g/kg	1.306	1.306	5.784
Density humid	kg/m3	1.345	1.200	1.200
Enthalpy humid	kJ/kg	-7.827	24.150	34.805
Volume flow humid	m3/h	10654.557	11942.891	12000.000
Mass flow dry	kg/h	14313.370	14313.370	14313.370
Velocity	m/s	1.669	1.870	1.879
Pressure drop dry	Pa		12.737	
Pressure drop wet	Pa		12.737	

Water (ff=0.00005 m2K/W)		
Temp. in	°C	40.000
Temp. out	°C	20.000
Density	kg/m3	995.803
Spec. heat	kJ/kgK	4.177
Heat cond.	W/mK	0.615
Viscosity	Pas	8.063E-04
Volume flow	m3/h	5.502
Velocity	m/s	0.537
Pressure drop ( T/C = 11.448	kPa	22.233



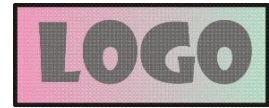
System type complete AI		
Tubes total	Piece	242
Tube rows on the depth	Piece	2
Tube rows on the height	Piece	121
Tube coupling in series	Piece	2
Number of circuits (NC)	Piece	121
Volume	l	15
Weight	kg	42
Pipe diameter in	ØG	2"
Pipe diameter out	ØG	2"
Collector	ØK	mm 60
Collector distance	KA	mm 71
Frame height	RH	mm 1482
Frame width	BT	mm 1370
Frame depth	RT	mm 131
Finned height	LH	mm 1442
Finned width	LB	mm 1230
Finned depth	LF	mm 92
Frame on top	RO	mm 20
Frame on bottom	RU	mm 20
Frame in front	RV	mm 70
Frame on back	RN	mm 70
Fin spacing	LT	mm 2.500
Fin thickness	LD	mm 0.200
Microchannel width	---	mm 20.700
Microchannel height	---	mm 2.000
Microchannel thickness	---	mm 0.300
Microchannel interval in height	---	mm 12.000
Microchannel interval in depth	---	mm 71.000



$$KA = f(\text{ØK}, n \text{ MC} //)$$

n = 2, 4, 6, 8, ...

Delivery: 5-6 weeks  
Validity: 12 weeks  
Condit.: net, prepaid address  
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Price net: EUR 1483.00



Capacity total	kW	78.764
Capacity sensible	kW	57.052
Capacity latent	kW	21.712
Capacity frost	kW	0.000
Surface reserve	%	2.722
Present surface	m2	61.689
Required surface	m2	60.055
k-coeff.	W/m2K	94.803
Average temp. diff. ( 93.49 % )	K	13.834

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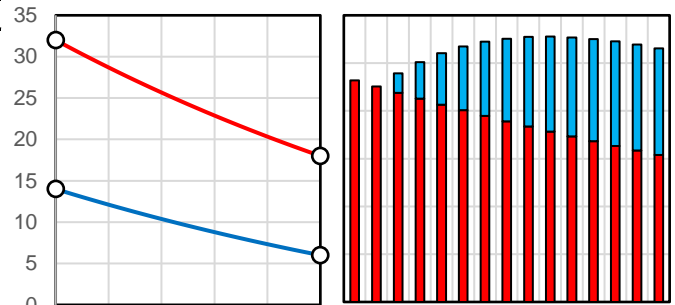
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Plant  
Object  
Position

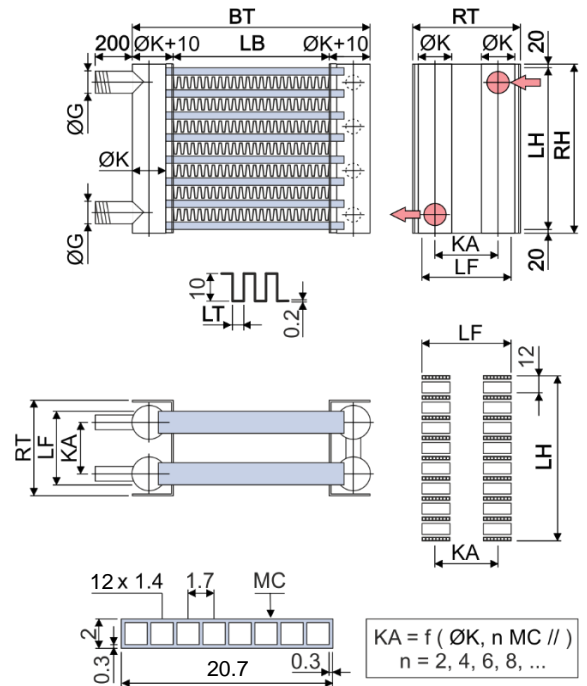
Air humid ( ff = 0.00005 m2K/W )		Inlet	Outlet	Definition
Height over sea level	m			0.000
Pressure	hPa			1013.250
Temp.	°C	32.000	18.000	20.000
Rel. humidity	%	40.000	75.707	40.000
Abs. humidity	g/kg	11.860	9.727	5.784
Density humid	kg/m3	1.148	1.205	1.200
Enthalpy humid	kJ/kg	62.569	42.759	34.805
Volume flow humid	m3/h	12612.054	11992.956	12000.000
Mass flow dry	kg/h	14313.370	14313.370	14313.370
Condensate flow	kg/h		30.538	
Surface temperature	°C	17.459	8.306	
Velocity	m/s	1.975	1.878	1.879
Pressure drop dry	Pa		14.534	
Pressure drop wet	Pa		16.188	

Water ( ff = 0.00005 m2K/W )		
Temp. in	°C	6.000
Temp. out	°C	14.000
Density	kg/m3	999.800
Spec. heat	kJ/kgK	4.194
Heat cond.	W/mK	0.578
Viscosity	Pas	1.348E-03
Volume flow	m3/h	8.452
Velocity	m/s	0.825
Pressure drop ( T/C = 13.517 )	kPa	53.364

Temp. (°C)



System type complete AI		
Tubes total	Piece	242
Tube rows on the depth	Piece	2
Tube rows on the height	Piece	121
Tube coupling in series	Piece	2
Number of circuits (NC)	Piece	121
Volume	l	15
Weight	kg	43
Pipe diameter in	ØG ---	2"
Pipe diameter out	ØG ---	2"
Collector	ØK mm	60
Collector distance	KA mm	138
Frame height	RH mm	1482
Frame width	BT mm	1370
Frame depth	RT mm	230
Finned height	LH mm	1442
Finned width	LB mm	1230
Finned depth	LF mm	159
Frame on top	RO mm	20
Frame on bottom	RU mm	20
Frame in front	RV mm	70
Frame on back	RN mm	70
Fin spacing	LT mm	2.500
Fin thickness	LD mm	0.200
Microchannel width	---	mm 20.700
Microchannel height	---	mm 2.000
Microchannel thickness	---	mm 0.300
Microchannel interval in height	---	mm 12.000
Microchannel interval in depth	---	mm 138.000



Delivery: 5-6 weeks  
Validity: 12 weeks  
Condit.: net, prepaid address  
Payment: 30 days net  
Price net: EUR 1503.00