YORK®
BY JOHNSON CONTROLS

YFCC Fan Coil

YFCC Fan Coil Units

EUROVENT CERTIFIED PERFORMANCE

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INTRODUCTION

Thanks to the particular air handling section, **YFCC** *cassette units generate an airflow with a "coanda" effect. The unit is suitable for installation in a suspended ceiling. Air intake is from the bottom while the air supply is parallel to the ceiling, through practical and functional intake and outlet grids.*

The "coanda" effect creates excellent circulation of the air inside the room.

Every unit can be supplied with 1 coil (2 pipe system) and possibly an electric heating element, or with 2 coils (4 pipe system) with one or two rows, for water supply at a low temperature.

Fresh air may be mixed with room air.

A condensate pump may also be supplied as an accessory.

In addition to the conventional temperature and speed control systems, there is also the possibility of automatic fan speed change, the management of more than one unit with a single control and to govern operation of each unit through a single remote control with central supervisor software installed on a PC (Maxinet).

It is also possible to use the completely wireless electronic control system based on radio communication, **FREE***, with great advantages in terms of installation flexibility and maximum precision in measuring room temperature.*

EUROVENT CERTIFIED PERFORMANCE

Johnson Controls take part to the Eurovent program of fan coil performance certification.
The official figures are published in the Eurovent web site (**www.eurovent-certification.com**).
The tested performances are:

- Cooling total emission at the following conditions:
  - water temperature +7°C E.W.T. +12°C L.W.T.
  - air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (2-pipe units) at the following conditions:
  - water temperature +50°C E.W.T.
  - air temperature +20°C
  - water flow rate as for the cooling conditions
- Cooling sensible emission at the following conditions:
  - water temperature +7°C E.W.T. +12°C L.W.T.
  - air temperature +27°C dry bulb +19°C wet bulb
- Heating emission (4-pipe units) at the following conditions:
  - water temperature +70°C E.W.T. +60°C L.W.T.
  - air temperature +20°C

- Fan absorption
- Water pressure drop
- Sound power

CONSTRUCTIONAL FEATURES OF THE MAIN COMPONENTS

Casing

Made from galvanized steel with closed cell insulation.

Diffuser with intake grille

In prepainted metal sheet in RAL 9003 colour with intake grille that can be opened for inspection and maintenance of the air filter.

Air Filter

Polypropylene cellular fabric regenerating filter.

Fan Assembly

The fans have aluminium or plastic blades directly keyed on the motor with double aspiration and they are dynamically and statically balanced during manufacture in order to have an extremely quiet operation.

Electric motor

The motor is wired for single phase and has six speeds, three of which are connected, with always-on capacitor. The motor is fitted on sealed for life bearings and is secured on anti-vibration and self-lubricating mountings. Internal thermal protection with automatic reset, protection IP 20, class B.
The speeds connected in the factory are indicated by “MIN, MED and MAX” in the following tables.

Heat exchange coil

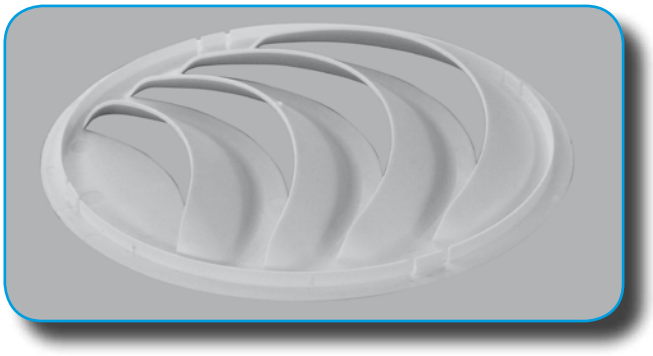
It is manufactured from drawn copper tube and the aluminium fins are mechanically bonded onto the tube by an expansion process. The coil has two 1/2 inch BSP internal connections and 1/8 inch BSP air vent and drain.
The heat exchanger is not suitable for use in corrosive atmosphere or in environments where aluminium may be subject to corrosion. **The connection side cannot be changed on site.**

Condensate Collection Tray

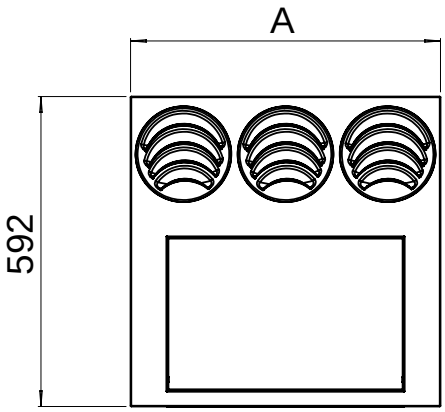
Made from plastic with an “L”-shape fitted on the inner casing.
The outside diameter of the condensate discharge pipe is 15mm.

Round diffuser

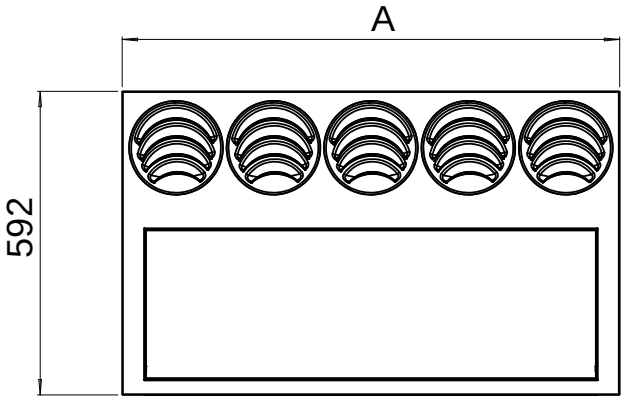
The YFCC one-way cassette units are supplied with round diffusers suitably designed to generate an airflow with “coanda” effect. The direction of diffuser air flow can be adjusted on site.



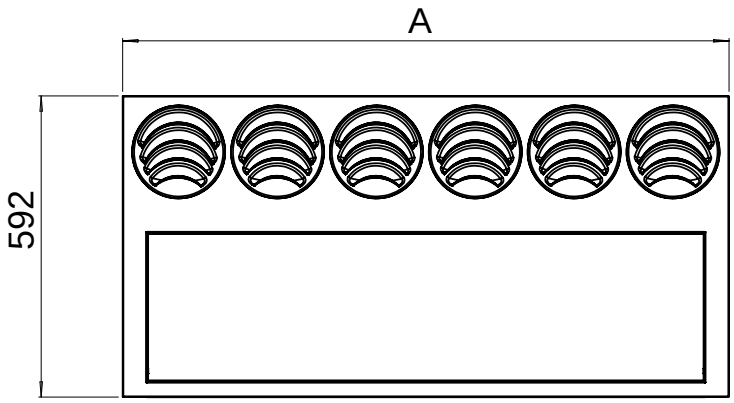
YFCC Gr 1 - 3 diffusers

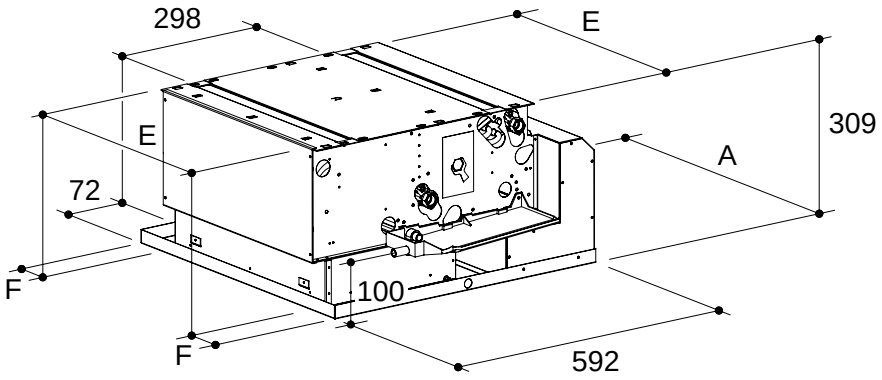


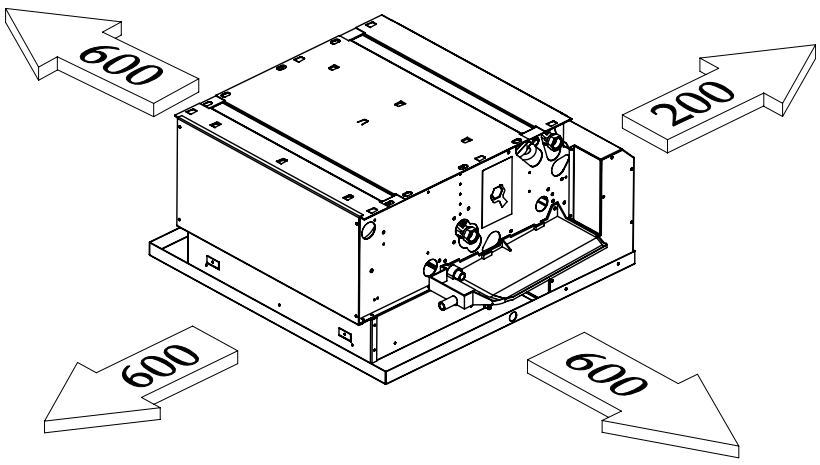
YFCC Gr 2 - 5 diffusers

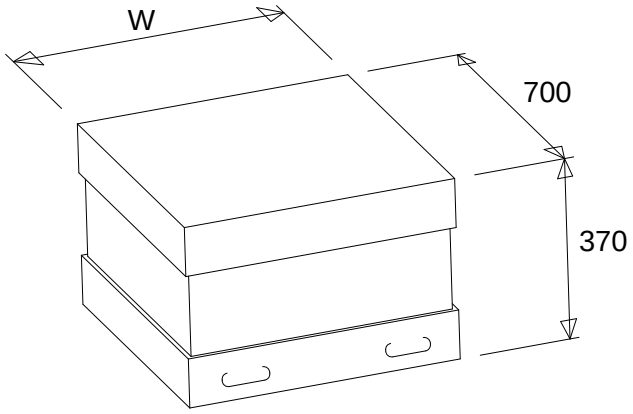


YFCC Gr 3 - 6 diffusers









DIMENSIONS (mm)

Model	1	2	3
A	592	970	1192
E	454	884	1099
F	78	43	46,5
W	750	1130	1350

WEIGHT (kg)

		Weight packed unit			Weight unpacked unit		
Model		1	2	3	1	2	3
Rows	3	18	34	44	16	33	42
	3+1	20	40	51	19	38	48
	3+2	23	46	58	22	43	54
	4	20	37	48	18	35	45
	4+1	23	42	54	21	40	51

WATER CONTENT (l)

Model		1	2	3
Rows	3	0,6	1,3	1,7
	4	0,8	1,7	2,4
	+1	0,2	0,4	0,5
	+2	0,4	0,8	1,0

Technical features

2-pipe units

The following standard rating conditions are used:

COOLING (summer operation)
Entering air temperature: + 27°C d.b. / + 19°C w.b.
Water temperature: + 7°C E.W.T. / + 12°C L.W.T.

HEATING (winter operation)
Entering air temperature: + 20°C
Water temperature: + 50°C E.W.T.
Water flow rate as for the cooling conditions

MODEL			YFCC 130						YFCC 230						YFCC 330					
Speed			1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4 (E)	5	6
			MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow		m³/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	**290**	360	**440**	**540**	620	680
Cooling total emission (E)		kW	**0,88**	**1,06**	1,26	1,35	**1,50**	1,60	**1,37**	**1,62**	1,97	**2,37**	2,81	3,23	**1,97**	2,37	**2,84**	**3,34**	3,75	4,05
Cooling sensible emission (E)		kW	**0,66**	**0,81**	0,98	1,06	**1,18**	1,27	**1,00**	**1,19**	1,47	**1,77**	2,13	2,47	**1,44**	1,74	**2,11**	**2,51**	2,83	3,07
Heating (E)		kW	**1,08**	**1,33**	1,59	1,73	**1,93**	2,08	**1,60**	**1,91**	2,35	**2,86**	3,43	3,95	**2,30**	2,79	**3,37**	**4,02**	4,53	4,88
ΔP Cooling (E)		kPa	**2,4**	**3,3**	4,5	5,1	**6,1**	6,8	**2,9**	**3,9**	5,5	**7,6**	10,3	13,1	**6,4**	8,8	**12,1**	**16,2**	19,8	22,7
ΔP Heating (E)		kPa	**1,8**	**2,6**	3,5	4,0	**4,9**	5,6	**2,3**	**3,1**	4,5	**6,3**	8,4	10,8	**5,2**	7,3	**9,8**	**13,4**	16,3	18,6
Fan (E)		W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	**27**	33	**42**	**59**	72	84
Sound power (E)	Lw	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	**35**	41	**46**	**52**	55	57
Sound pressure (*)	Lp	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	**26**	32	**37**	**43**	46	48

MODEL			YFCC 140						YFCC 240						YFCC 340					
Speed			1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1	2 (E)	3	4 (E)	5 (E)	6
			MIN	MED			MAX		MIN	MED		MAX				MIN		MED	MAX	
Air flow		m³/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	290	**360**	440	**540**	**620**	680
Cooling total emission (E)		kW	**0,97**	**1,19**	1,44	1,55	**1,74**	1,87	**1,44**	**1,72**	2,12	**2,57**	3,09	3,58	2,05	**2,49**	3,00	**3,56**	**4,02**	4,36
Cooling sensible emission (E)		kW	**0,71**	**0,88**	1,07	1,17	**1,31**	1,42	**1,04**	**1,24**	1,54	**1,88**	2,28	2,67	1,48	**1,81**	2,20	**2,63**	**2,98**	3,25
Heating (E)		kW	**1,14**	**1,42**	1,72	1,88	**2,10**	2,27	**1,69**	**2,03**	2,54	**3,12**	3,79	4,44	2,38	**2,90**	3,51	**4,20**	**4,77**	5,20
ΔP Cooling (E)		kPa	**4,7**	**6,7**	9,2	10,6	**12,9**	14,6	**4,4**	**6,0**	8,6	**12,1**	16,8	21,7	4,7	**6,7**	9,3	**12,6**	**15,5**	17,9
ΔP Heating (E)		kPa	**3,7**	**5,4**	7,6	8,8	**10,7**	12,3	**3,5**	**4,8**	7,1	**10,2**	13,6	17,9	3,9	**5,5**	7,3	**10,0**	**12,6**	14,6
Fan (E)		W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	27	**33**	42	**59**	**72**	84
Sound power (E)	Lw	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	35	**41**	46	**52**	**55**	57
Sound pressure (*)	Lp	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	26	**32**	37	**43**	**46**	48

4-pipe units

The following standard rating conditions are used:

COOLING (summer operation)
Entering air temperature: + 27°C d.b. / + 19°C w.b.
Water temperature: + 7°C E.W.T. / + 12°C L.W.T.

HEATING (winter operation)
Entering air temperature: + 20°C
Water temperature: + 70°C E.W.T. / + 60°C L.W.T.

MODEL			YFCC 130 + 1						YFCC 230 + 1						YFCC 330 + 1					
Speed			1 (E)	2 (E)	3	4	5 (E)	6	1 (E)	2 (E)	3	4 (E)	5	6	1 (E)	2	3 (E)	4 (E)	5	6
			MIN	MED			MAX		MIN	MED		MAX			MIN		MED	MAX		
Air flow		m³/h	**140**	**180**	220	245	**280**	305	**200**	**240**	305	**380**	470	560	**290**	360	**440**	**540**	620	680
Cooling total emission (E)		kW	**0,88**	**1,06**	1,26	1,35	**1,50**	1,60	**1,37**	**1,62**	1,97	**2,37**	2,81	3,23	**1,97**	2,37	**2,84**	**3,34**	3,75	4,05
Cooling sensible emission (E)		kW	**0,66**	**0,81**	0,98	1,06	**1,18**	1,27	**1,00**	**1,19**	1,47	**1,77**	2,13	2,47	**1,44**	1,74	**2,11**	**2,51**	2,83	3,07
Heating (E)		kW	**0,92**	**1,08**	1,25	1,34	**1,47**	1,56	**1,49**	**1,71**	2,02	**2,35**	2,73	3,07	**2,12**	2,47	**2,87**	**3,30**	3,64	3,89
ΔP Cooling (E)		kPa	**2,4**	**3,3**	4,5	5,1	**6,1**	6,8	**2,9**	**3,9**	5,5	**7,6**	10,3	13,1	**6,4**	8,8	**12,1**	**16,2**	19,8	22,7
ΔP Heating (E)		kPa	**1,6**	**2,1**	2,7	3,1	**3,6**	4,0	**0,9**	**1,2**	1,6	**2,0**	2,6	3,2	**2,0**	2,6	**3,4**	**4,3**	5,1	5,8
Fan (E)		W	**16**	**22**	32	38	**49**	66	**24**	**27**	34	**44**	57	71	**27**	33	**42**	**59**	72	84
Sound power (E)	Lw	dB(A)	**35**	**41**	46	49	**52**	55	**33**	**36**	42	**48**	54	57	**35**	41	**46**	**52**	55	57
Sound pressure (*)	Lp	dB(A)	**26**	**32**	37	40	**43**	46	**24**	**27**	33	**39**	45	48	**26**	32	**37**	**43**	46	48

(E) = Eurovent certified performance. **MIN-MED-MAX** = Standard connected speeds.

(*) = The sound pressure levels are 9 dB(A) lower than the sound power levels and apply to the reverberant field of a 100 m³ room and a reverberation time of 0.5 sec.

WORKING CONDITIONS

Max. entering water temperature..... + 80 °C
MIn. entering water temperature..... + 5 °C
for entering water temperatures below + 5°C, contact "York" technical department
Max. rated pressure .....1000 kPa (10 bar)

Installation height (m)

MODEL	1	2	3
Minimum	2,6	2,6	2,6
Maximum	3,2	3,2	3,5

Water flow limits for main coil (l/h)

	3 rows			4 rows		
MODEL	13	23	33	14	24	34
Minimum	100	150	150	100	150	200
Maximum	500	1000	1500	750	1000	2000

Water flow limits for additional coil (l/h)

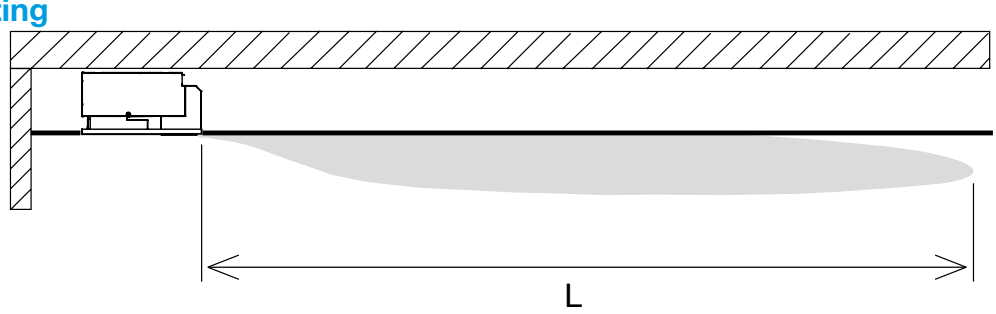
	1 row			2 rows		
MODEL	1	2	3	1	2	3
Minimum	50	100	100	50	100	100
Maximum	250	450	650	250	450	650

Motor electrical data (max. absorption)

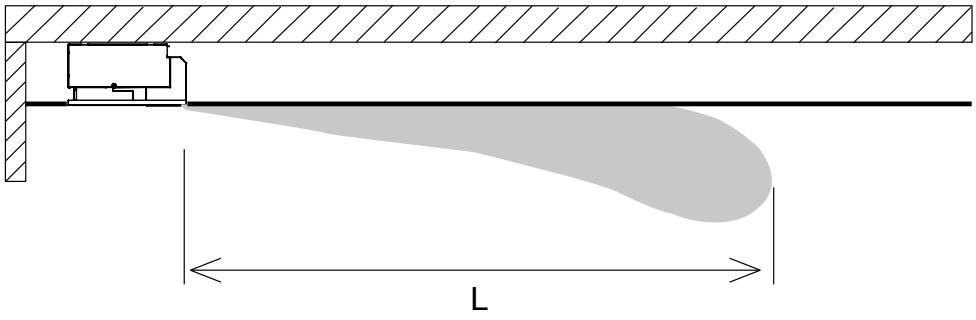
MODEL		1	2	3
230/1 50Hz	*W*	66	71	84
	A	0,30	0,32	0,38

AIR THROW

C1 - Heating



C2 - Cooling



		YFCC 1						YFCC 2						YFCC 3					
MODEL		1	2	3	4	5	6	1	2	3	4	5	6	1	2	3	4	5	6
Air throw L (m)	*C1*	3,8	4,5	5,8	6,3	6,8	7,2	4	5	6,1	7	8	9	4,5	5,2	6,3	7,5	8,8	9,5
	C2	3	3,6	4,6	5	5,4	5,7	3,2	4	4,8	5,6	6,4	7,2	3,6	4,1	5	6	7	7,6

Emissions

Cooling emission of 3 row coil

Entering air temperature: +27°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 130	VI		305	1,73	1,27	298	7,8	1,54	1,19	265	6,3	1,14	1,04	196	3,7	0,91	0,91	157	2,5
	V	MAX	280	1,62	1,18	279	7,0	1,44	1,11	248	5,6	1,07	0,97	184	3,3	0,85	0,85	146	2,2
	IV		245	1,46	1,06	251	5,8	1,30	0,99	224	4,7	0,97	0,86	167	2,8	0,76	0,76	131	1,8
	III		220	1,36	0,97	234	5,1	1,21	0,92	208	4,2	0,91	0,80	157	2,5	0,70	0,70	120	1,5
	II	MED	180	1,14	0,81	196	3,8	1,02	0,76	175	3,1	0,77	0,66	132	1,8	0,59	0,59	101	1,1
	I	MIN	140	0,95	0,66	163	2,7	0,85	0,62	146	2,2	0,64	0,54	110	1,3	0,48	0,48	83	0,8
YFCC 230	VI		560	3,47	2,46	597	14,9	3,12	2,32	537	12,2	2,36	2,02	406	7,4	1,78	1,78	306	4,4
	V		470	3,03	2,13	521	11,7	2,72	2,00	468	9,6	2,06	1,74	354	5,8	1,54	1,54	265	3,4
	IV	MAX	380	2,54	1,77	437	8,6	2,29	1,66	394	7,1	1,74	1,45	299	4,3	1,28	1,28	220	2,5
	III		305	2,12	1,46	365	6,3	1,91	1,37	329	5,2	1,46	1,19	251	3,2	1,06	1,06	182	1,8
	II	MED	240	1,74	1,19	299	4,4	1,57	1,12	270	3,6	1,20	0,97	206	2,2	0,86	0,86	148	1,2
	I	MIN	200	1,47	1,00	253	3,3	1,32	0,94	227	2,7	1,02	0,81	175	1,7	0,72	0,72	124	0,9
YFCC 330	VI		680	4,36	3,06	750	25,8	3,91	2,88	673	21,2	2,98	2,51	513	13,0	2,22	2,22	382	7,6
	V		620	4,03	2,82	693	22,5	3,63	2,65	624	18,6	2,77	2,31	476	11,4	2,04	2,04	351	6,6
	IV	MAX	540	3,59	2,50	617	18,4	3,23	2,35	556	15,2	2,47	2,05	425	9,3	1,81	1,81	311	5,3
	III	MED	440	3,05	2,10	525	13,8	2,75	1,98	473	11,4	2,11	1,72	363	7,0	1,52	1,52	261	3,9
	II		360	2,55	1,74	439	10,0	2,30	1,64	396	8,3	1,77	1,42	304	5,2	1,26	1,26	217	2,8
	I	MIN	290	2,11	1,44	363	7,2	1,91	1,35	329	6,0	1,47	1,17	253	3,7	1,04	1,04	179	2,0

Entering air temperature: +26°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 130	VI		305	1,53	1,19	263	6,3	1,34	1,12	230	5,0	0,99	0,99	170	2,9	0,83	0,83	143	2,1
	V	MAX	280	1,43	1,11	246	5,6	1,26	1,04	217	4,4	0,92	0,92	158	2,5	0,77	0,77	132	1,8
	IV		245	1,30	0,99	224	4,7	1,14	0,93	196	3,7	0,80	0,80	138	2,0	0,69	0,69	119	1,5
	III		220	1,21	0,92	208	4,1	1,06	0,86	182	3,3	0,75	0,74	129	1,7	0,64	0,64	110	1,3
	II	MED	180	1,02	0,76	175	3,1	0,90	0,71	155	2,4	0,63	0,61	108	1,3	0,54	0,54	93	1,0
	I	MIN	140	0,84	0,62	144	2,2	0,74	0,58	127	1,8	0,53	0,50	91	1,0	0,44	0,44	76	0,7
YFCC 230	VI		560	3,10	2,32	533	12,2	2,74	2,17	471	9,7	1,96	1,87	337	5,3	1,63	1,63	280	3,8
	V		470	2,70	2,00	464	9,5	2,39	1,87	411	7,6	1,72	1,61	296	4,2	1,40	1,40	241	2,9
	IV	MAX	380	2,27	1,67	390	7,1	2,01	1,56	346	5,7	1,46	1,34	251	3,2	1,18	1,18	203	2,1
	III		305	1,90	1,38	327	5,1	1,68	1,29	289	4,1	1,23	1,11	212	2,3	0,97	0,97	167	1,5
	II	MED	240	1,55	1,12	267	3,6	1,38	1,05	237	2,9	1,01	0,90	174	1,7	0,79	0,79	136	1,0
	I	MIN	200	1,31	0,94	225	2,7	1,17	0,88	201	2,2	0,86	0,75	148	1,2	0,66	0,66	114	0,8
YFCC 330	VI		680	3,89	2,89	669	21,2	3,45	2,70	593	17,0	2,50	2,33	430	9,5	2,03	2,03	349	6,5
	V		620	3,60	2,66	619	18,5	3,20	2,49	550	14,9	2,32	2,15	399	8,4	1,87	1,87	322	5,6
	IV	MAX	540	3,21	2,36	552	15,1	2,85	2,21	490	12,2	2,08	1,90	358	6,9	1,65	1,65	284	4,5
	III	MED	440	2,73	1,98	470	11,3	2,42	1,85	416	9,1	1,78	1,60	306	5,2	1,40	1,40	241	3,4
	II		360	2,28	1,64	392	8,3	2,03	1,54	349	6,7	1,49	1,32	256	3,8	1,15	1,15	198	2,4
	I	MIN	290	1,89	1,36	325	6,0	1,69	1,27	291	4,8	1,24	1,09	213	2,8	0,95	0,95	163	1,7

Entering air temperature: +25°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 130	VI		305	1,34	1,12	230	5,0	1,15	1,04	198	3,8	0,91	0,91	157	2,5	0,75	0,75	129	1,7
	V	MAX	280	1,26	1,04	217	4,5	1,08	0,97	186	3,4	0,85	0,85	146	2,2	0,70	0,70	120	1,5
	IV		245	1,14	0,93	196	3,7	0,98	0,87	169	2,9	0,76	0,76	131	1,8	0,63	0,63	108	1,3
	III		220	1,06	0,86	182	3,3	0,91	0,80	157	2,5	0,70	0,70	120	1,6	0,58	0,58	100	1,1
	II	MED	180	0,89	0,71	153	2,4	0,77	0,66	132	1,9	0,59	0,59	101	1,1	0,48	0,48	83	0,8
	I	MIN	140	0,74	0,58	127	1,8	0,64	0,54	110	1,4	0,48	0,48	83	0,8	0,40	0,40	69	0,6
YFCC 230	VI		560	2,73	2,18	470	9,7	2,37	2,03	408	7,5	1,79	1,79	308	4,5	1,48	1,48	255	3,2
	V		470	2,38	1,88	409	7,7	2,07	1,75	356	5,9	1,54	1,54	265	3,5	1,27	1,27	218	2,5
	IV	MAX	380	2,01	1,56	346	5,7	1,75	1,46	301	4,4	1,29	1,29	222	2,5	1,07	1,07	184	1,8
	III		305	1,68	1,29	289	4,1	1,46	1,20	251	3,2	1,06	1,06	182	1,8	0,88	0,88	151	1,3
	II	MED	240	1,38	1,05	237	2,9	1,20	0,98	206	2,3	0,86	0,86	148	1,2	0,71	0,71	122	0,9
	I	MIN	200	1,16	0,88	200	2,2	1,02	0,82	175	1,7	0,69	0,69	119	0,9	0,60	0,60	103	0,7
YFCC 330	VI		680	3,44	2,71	592	17,0	2,99	2,53	514	13,2	2,22	2,22	382	7,7	1,84	1,84	316	5,5
	V		620	3,19	2,50	549	14,9	2,78	2,33	478	11,6	2,05	2,05	353	6,7	1,70	1,70	292	4,7
	IV	MAX	540	2,84	2,21	488	12,2	2,48	2,06	427	9,5	1,81	1,81	311	5,4	1,50	1,50	258	3,8
	III	MED	440	2,41	1,86	415	9,1	2,11	1,73	363	7,1	1,53	1,53	263	4,0	1,27	1,27	218	2,8
	II		360	2,02	1,54	347	6,7	1,77	1,43	304	5,2	1,26	1,26	217	2,9	1,05	1,05	181	2,0
	I	MIN	290	1,68	1,27	289	4,8	1,47	1,18	253	3,8	1,01	1,00	174	1,9	0,86	0,86	148	1,4

Correction factors for different R.H.

U.R.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

Legend

WT	= Water temperature	Speed	= Fan speed
Pc	= Cooling Total emission	MAX	= High speed
Ps	= Cooling Sensible emission	MED	= Medium speed
Qw	= Water flow	MIN	= Low speed
Dp(c)	= Water side pressure drop	Qv	= Air flow

Emissions

Cooling emission of 4 row coil

Entering air temperature: +27°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 140	VI		305	2,01	1,42	346	16,7	1,80	1,33	310	13,7	1,36	1,16	234	8,2	1,02	1,02	175	4,9
	V	MAX	280	1,87	1,31	322	14,6	1,68	1,23	289	12,0	1,27	1,07	218	7,3	0,95	0,95	163	4,3
	IV		245	1,67	1,16	287	12,1	1,50	1,09	258	9,9	1,14	0,95	196	6,0	0,84	0,84	144	3,5
	III		220	1,54	1,07	265	10,5	1,39	1,00	239	8,6	1,06	0,87	182	5,3	0,77	0,77	132	3,0
	II	MED	180	1,28	0,88	220	7,6	1,15	0,83	198	6,2	0,88	0,72	151	3,8	0,64	0,64	110	2,1
	I	MIN	140	1,05	0,71	181	5,3	0,94	0,67	162	4,4	0,72	0,58	124	2,7	0,52	0,52	89	1,5
YFCC 240	VI		560	3,85	2,66	662	24,7	3,47	2,50	597	20,4	2,65	2,18	456	12,6	1,93	1,93	332	7,0
	V		470	3,32	2,28	571	19,0	2,99	2,14	514	15,7	2,30	1,86	396	9,7	1,65	1,65	284	5,4
	IV	MAX	380	2,76	1,88	475	13,7	2,49	1,77	428	11,4	1,92	1,54	330	7,1	1,36	1,36	234	3,8
	III		305	2,28	1,54	392	9,8	2,06	1,45	354	8,1	1,59	1,26	273	5,1	1,11	1,11	191	2,7
	II	MED	240	1,84	1,24	316	6,8	1,67	1,17	287	5,6	1,29	1,01	222	3,5	0,85	0,85	146	1,7
	I	MIN	200	1,54	1,04	265	4,9	1,40	0,97	241	4,1	1,09	0,85	187	2,6	0,72	0,71	124	1,2
YFCC 340	VI		680	4,69	3,24	807	20,3	4,22	3,05	726	16,8	3,23	2,65	556	10,4	2,34	2,34	402	5,8
	V	MAX	620	4,32	2,98	743	17,6	3,89	2,80	669	14,6	2,98	2,44	513	9,0	2,15	2,15	370	5,0
	IV	MED	540	3,83	2,62	659	14,2	3,45	2,47	593	11,8	2,65	2,15	456	7,3	1,90	1,90	327	4,0
	III		440	3,22	2,19	554	10,5	2,91	2,06	501	8,7	2,24	1,79	385	5,4	1,59	1,59	273	2,9
	II	MIN	360	2,67	1,81	459	7,5	2,41	1,70	415	6,3	1,86	1,48	320	3,9	1,30	1,30	224	2,1
	I		290	2,20	1,48	378	5,4	1,99	1,39	342	4,5	1,54	1,21	265	2,8	1,01	1,01	174	1,3

Entering air temperature: +26°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 140	VI		305	1,79	1,33	308	13,6	1,58	1,25	272	10,9	1,14	1,07	196	6,0	0,94	0,94	162	4,2
	V	MAX	280	1,67	1,23	287	12,0	1,47	1,15	253	9,6	1,06	0,99	182	5,3	0,87	0,87	150	3,7
	IV		245	1,49	1,10	256	9,9	1,32	1,03	227	7,9	0,96	0,88	165	4,4	0,77	0,77	132	3,0
	III		220	1,38	1,01	237	8,6	1,22	0,94	210	6,9	0,89	0,81	153	3,9	0,71	0,71	122	2,6
	II	MED	180	1,15	0,83	198	6,2	1,02	0,78	175	5,0	0,74	0,67	127	2,8	0,58	0,58	100	1,8
	I	MIN	140	0,94	0,67	162	4,3	0,83	0,63	143	3,5	0,61	0,54	105	2,0	0,47	0,47	81	1,3
YFCC 240	VI		560	3,44	2,51	592	20,3	3,06	2,35	526	16,3	2,24	2,02	385	9,3	1,76	1,76	303	6,0
	V		470	2,97	2,15	511	15,6	2,64	2,01	454	12,6	1,94	1,73	334	7,2	1,51	1,51	260	4,6
	IV	MAX	380	2,47	1,77	425	11,3	2,20	1,66	378	9,2	1,62	1,43	279	5,3	1,25	1,25	215	3,3
	III		305	2,04	1,45	351	8,1	1,82	1,36	313	6,6	1,35	1,17	232	3,8	1,02	1,02	175	2,3
	II	MED	240	1,65	1,17	284	5,6	1,48	1,10	255	4,5	1,10	0,94	189	2,6	0,82	0,82	141	1,6
	I	MIN	200	1,39	0,98	239	4,1	1,24	0,91	213	3,3	0,92	0,78	158	2,0	0,68	0,68	117	1,1
YFCC 340	VI		680	4,19	3,06	721	16,7	3,72	2,86	640	13,5	2,72	2,46	468	7,7	2,15	2,15	370	5,0
	V	MAX	620	3,87	2,81	666	14,5	3,43	2,63	590	11,7	2,52	2,26	433	6,7	1,97	1,97	339	4,3
	IV	MED	540	3,43	2,47	590	11,7	3,05	2,31	525	9,5	2,24	1,99	385	5,4	1,74	1,74	299	3,5
	III		440	2,88	2,07	495	8,7	2,57	1,93	442	7,0	1,89	1,66	325	4,0	1,45	1,45	249	2,5
	II	MIN	360	2,39	1,70	411	6,2	2,13	1,59	366	5,1	1,58	1,37	272	2,9	1,19	1,19	205	1,8
	I		290	1,97	1,40	339	4,4	1,76	1,31	303	3,6	1,31	1,12	225	2,1	0,98	0,98	169	1,3

Entering air temperature: +25°C - Relative Humidity: 50%

Model	Speed		Qv	WT: 7/12 °C				WT: 8/13 °C				WT: 10/15 °C				WT: 12/17 °C			
				Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)	Pc	Ps	Qw	Dp(c)
			m³/h	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa	kW	kW	l/h	kPa
YFCC 140	VI		305	1,58	1,25	272	10,9	1,37	1,16	236	8,4	1,03	1,03	177	5,0	0,85	0,85	146	3,5
	V	MAX	280	1,47	1,16	253	9,6	1,27	1,08	218	7,4	0,95	0,95	163	4,4	0,78	0,78	134	3,1
	IV		245	1,32	1,03	227	7,9	1,14	0,96	196	6,1	0,84	0,84	144	3,5	0,70	0,70	120	2,5
	III		220	1,22	0,94	210	6,9	1,06	0,88	182	5,4	0,78	0,78	134	3,1	0,64	0,64	110	2,2
	II	MED	180	1,01	0,78	174	5,0	0,88	0,72	151	3,9	0,64	0,64	110	2,2	0,53	0,53	91	1,5
	I	MIN	140	0,83	0,63	143	3,5	0,72	0,58	124	2,7	0,52	0,52	89	1,5	0,43	0,43	74	1,1
YFCC 240	VI		560	3,05	2,36	525	16,4	2,66	2,19	458	12,8	1,93	1,93	332	7,2	1,60	1,60	275	5,1
	V		470	2,63	2,02	452	12,6	2,30	1,88	396	9,9	1,65	1,65	284	5,5	1,37	1,37	236	3,9
	IV	MAX	380	2,19	1,66	377	9,2	1,92	1,55	330	7,2	1,31	1,31	225	3,6	1,14	1,14	196	2,8
	III		305	1,81	1,36	311	6,6	1,59	1,27	273	5,2	1,09	1,07	187	2,6	0,93	0,93	160	2,0
	II	MED	240	1,47	1,10	253	4,5	1,29	1,02	222	3,6	0,90	0,86	155	1,9	0,75	0,75	129	1,3
	I	MIN	200	1,23	0,92	212	3,3	1,08	0,85	186	2,6	0,76	0,72	131	1,4	0,62	0,62	107	1,0
YFCC 340	VI		680	3,71	2,87	638	13,5	3,24	2,67	557	10,5	2,35	2,35	404	5,9	1,95	1,95	335	4,2
	V	MAX	620	3,42	2,63	588	11,7	2,99	2,45	514	9,2	2,16	2,16	372	5,1	1,79	1,79	308	3,6
	IV	MED	540	3,03	2,32	521	9,5	2,65	2,16	456	7,4	1,91	1,91	329	4,1	1,58	1,58	272	2,9
	III		440	2,56	1,94	440	7,0	2,24	1,80	385	5,5	1,53	1,52	263	2,8	1,32	1,32	227	2,1
	II	MIN	360	2,12	1,60	365	5,0	1,86	1,49	320	4,0	1,28	1,25	220	2,0	1,09	1,09	187	1,5
	I		290	1,75	1,31	301	3,6	1,54	1,22	265	2,8	1,07	1,03	184	1,5	0,89	0,89	153	1,1

Correction factors for different R.H.

U.R.	WT:	7/12°C	8/13°C	10/15°C	12/17°C
48%	Pc	0,95	0,94	1,00	1,00
	Ps	1,00	1,00	1,00	1,00
46%	Pc	0,90	0,88	1,00	1,00
	Ps	1,00	1,00	1,00	1,00

Legend

WT	= Water temperature	**Speed**	= Fan speed
Pc	= Cooling Total emission	**MAX**	= High speed
Ps	= Cooling Sensible emission	**MED**	= Medium speed
Qw	= Water flow	**MIN**	= Low speed
Dp(c)	= Water side pressure drop	**Qv**	= Air flow

Heating emission of 3 row coil

Entering air temperature: +20°C

Model	Speed		Qv	WT: 70/60°C			WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
				Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
			m³/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
YFCC 130	VI		305	3,54	304	6,3	2,71	233	4,1	1,87	161	2,2	2,16	372	9,5	1,75	301	6,7
	V	MAX	280	3,29	283	5,6	2,51	216	3,6	1,74	150	1,9	2,01	346	8,4	1,62	279	5,9
	IV		245	2,94	253	4,6	2,25	194	2,9	1,56	134	1,6	1,80	310	6,9	1,45	249	4,8
	III		220	2,71	233	4,0	2,07	178	2,5	1,44	124	1,4	1,66	286	6,0	1,34	230	4,2
	II	MED	180	2,26	194	2,9	1,73	149	1,9	1,20	103	1,0	1,38	237	4,3	1,12	193	3,0
	I	MIN	140	1,84	158	2,0	1,41	121	1,3	0,98	84	0,7	1,12	193	3,0	0,91	157	2,1
YFCC 230	VI		560	6,64	571	10,7	5,10	439	6,9	3,55	305	3,8	4,06	698	16,1	3,29	566	11,3
	V		470	5,77	496	8,3	4,43	381	5,4	3,09	266	3,0	3,52	605	12,5	2,86	492	8,8
	IV	MAX	380	4,79	412	6,0	3,68	316	3,9	2,57	221	2,1	2,93	504	9,0	2,38	409	6,4
	III		305	3,95	340	4,3	3,03	261	2,8	2,12	182	1,5	2,41	415	6,4	1,96	337	4,5
	II	MED	240	3,20	275	2,9	2,46	212	1,9	1,72	148	1,1	1,95	335	4,4	1,59	273	3,1
	I	MIN	200	2,68	230	2,2	2,07	178	1,4	1,45	125	0,8	1,64	282	3,3	1,33	229	2,3
YFCC 330	VI		680	8,20	705	18,0	6,30	542	11,7	4,40	378	6,4	5,01	862	27,1	4,07	700	19,1
	V		620	7,61	654	15,8	5,85	503	10,3	4,09	352	5,6	4,65	800	23,8	3,77	648	16,8
	IV	MAX	540	6,73	579	12,7	5,18	445	8,3	3,62	311	4,6	4,11	707	19,2	3,34	574	13,5
	III	MED	440	5,65	486	9,4	4,35	374	6,1	3,04	261	3,4	3,45	593	14,1	2,80	482	9,9
	II		360	4,67	402	6,7	3,60	310	4,4	2,52	217	2,4	2,85	490	10,1	2,32	399	7,1
	I	MIN	290	3,85	331	4,8	2,96	255	3,1	2,08	179	1,7	2,35	404	7,2	1,91	329	5,1

Heating emission of 4 row coil

Entering air temperature: +20°C

Model	Speed		Qv	WT: 70/60°C			WT: 60/50°C			WT: 50/40°			WT: 50/45°			WT: 45/40°		
				Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
			m³/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
YFCC 140	VI		305	3,80	327	11,7	2,92	251	7,6	2,03	175	4,2	2,32	399	17,7	1,88	323	12,4
	V	MAX	280	3,52	303	10,2	2,70	232	6,6	1,88	162	3,6	2,15	370	15,4	1,74	299	10,8
	IV		245	3,14	270	8,4	2,42	208	5,5	1,69	145	3,0	1,92	330	12,7	1,56	268	8,9
	III		220	2,89	249	7,2	2,22	191	4,7	1,55	133	2,6	1,77	304	10,9	1,43	246	7,7
	II	MED	180	2,37	204	5,1	1,83	157	3,3	1,28	110	1,8	1,45	249	7,7	1,18	203	5,4
	I	MIN	140	1,92	165	3,5	1,48	127	2,3	1,03	89	1,3	1,17	201	5,3	0,95	163	3,7
YFCC 240	VI		560	7,46	642	18,2	5,75	495	11,8	4,04	347	6,6	4,56	784	27,3	3,71	638	19,4
	V		470	6,37	548	13,8	4,92	423	9,0	3,46	298	5,0	3,90	671	20,7	3,17	545	14,7
	IV	MAX	380	5,22	449	9,7	4,03	347	6,3	2,84	244	3,5	3,19	549	14,6	2,60	447	10,4
	III		305	4,25	366	6,7	3,28	282	4,4	2,31	199	2,5	2,60	447	10,1	2,12	365	7,2
	II	MED	240	3,40	292	4,5	2,63	226	3,0	1,85	159	1,7	2,08	358	6,9	1,69	291	4,9
	I	MIN	200	2,82	243	3,3	2,18	187	2,2	1,54	132	1,2	1,73	298	4,9	1,41	243	3,5
YFCC 340	VI		680	8,72	750	13,9	6,71	577	9,1	4,70	404	5,0	5,33	917	20,9	4,33	745	14,8
	V	MAX	620	8,00	688	12,0	6,16	530	7,8	4,31	371	4,3	4,89	841	18,0	3,97	683	12,7
	IV	MED	540	7,04	605	9,6	5,42	466	6,2	3,80	327	3,4	4,30	740	14,4	3,40	585	10,2
	III		440	5,87	505	6,9	4,52	389	4,5	3,18	273	2,5	3,59	617	10,4	2,92	502	7,4
	II	MIN	360	4,83	415	4,9	3,72	320	3,2	2,62	225	1,8	2,95	507	7,4	2,40	413	5,3
	I		290	3,96	341	3,5	3,06	263	2,3	2,15	185	1,3	2,42	416	5,2	1,97	339	3,7

Legend

WT = Water temperature
Ph = Emission
Qw = Water flow
Dp(c) = Water side pressure drop
Speed = Fan speed
MAX = High speed
MED = Medium speed
MIN = Low speed
Qv = Air flow

Heating emission of 1 row additional coil

Entering air temperature: +20°C

Model	Speed		Qv	WT: 80/70°C			WT: 75/65°			WT: 70/60°			WT: 65/55°			WT: 60/50°			WT: 55/45°		
				Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
			m^3/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
YFCC 130+1 140+1	VI		305	1,95	168	5,8	1,75	151	4,9	1,56	134	4,0	1,36	117	3,2	1,17	101	2,5	0,97	83	1,8
	V	MAX	280	1,83	157	5,2	1,65	142	4,4	1,47	126	3,6	1,28	110	2,9	1,10	95	2,2	0,92	79	1,6
	IV		245	1,67	144	4,4	1,51	130	3,7	1,34	115	3,1	1,17	101	2,5	1,00	86	1,9	0,84	72	1,4
	III		220	1,57	135	3,9	1,41	121	3,3	1,25	108	2,7	1,10	95	2,2	0,94	81	1,7	0,78	67	1,3
	II	MED	180	1,35	116	3,0	1,22	105	2,5	1,08	93	2,1	0,95	82	1,7	0,81	70	1,3	0,68	58	1,0
	I	MIN	140	1,15	99	2,3	1,03	89	1,9	0,92	79	1,6	0,81	70	1,3	0,69	59	1,0	0,58	50	0,7
YFCC 230+1 240+1	VI		560	3,84	330	4,7	3,46	298	3,9	3,07	264	3,2	2,37	204	1,0	2,31	199	2,0	1,93	166	1,5
	V		470	3,41	293	3,8	3,07	264	3,2	2,73	235	2,6	2,10	181	0,8	2,05	176	1,6	1,71	147	1,2
	IV	MAX	380	2,94	253	2,9	2,65	228	2,5	2,35	202	2,0	1,82	157	0,6	1,77	152	1,3	1,48	127	0,9
	III		305	2,52	217	2,2	2,27	195	1,9	2,02	174	1,6	1,57	135	0,5	1,52	131	1,0	1,27	109	0,7
	II	MED	240	2,14	184	1,7	1,93	166	1,4	1,71	147	1,2	1,33	114	0,4	1,29	111	0,7	1,08	93	0,5
	I	MIN	200	1,86	160	1,3	1,68	144	1,1	1,49	128	0,9	1,16	100	0,3	1,13	97	0,6	0,94	81	0,4
YFCC 330+1	VI		680	4,84	416	8,2	4,36	375	7,0	3,89	335	5,8	3,41	293	4,7	2,94	253	3,6	2,46	212	2,7
	V		620	4,53	390	7,3	4,08	351	6,2	3,64	313	5,1	3,19	274	4,1	2,75	237	3,2	2,31	199	2,4
	IV	MAX	540	4,10	353	6,2	3,70	318	5,2	3,30	284	4,3	2,89	249	3,5	2,49	214	2,7	2,09	180	2,0
	III	MED	440	3,57	307	4,8	3,22	277	4,1	2,87	247	3,4	2,52	217	2,7	2,17	187	2,1	1,82	157	1,6
	II		360	3,07	264	3,7	2,77	238	3,1	2,47	212	2,6	2,17	187	2,1	1,87	161	1,6	1,57	135	1,2
	I	MIN	290	2,64	227	2,8	2,38	205	2,4	2,12	182	2,0	1,86	160	1,6	1,61	138	1,3	1,35	116	0,9
YFCC 340+1	VI		680	4,84	416	8,2	4,36	375	7,0	3,89	335	5,8	3,41	293	4,7	2,94	253	3,6	2,46	212	2,7
	V	MAX	620	4,53	390	7,3	4,08	351	6,2	3,64	313	5,1	3,19	274	4,1	2,75	237	3,2	2,31	199	2,4
	IV	MED	540	4,10	353	6,2	3,70	318	5,2	3,30	284	4,3	2,89	249	3,5	2,49	214	2,7	2,09	180	2,0
	III		440	3,57	307	4,8	3,22	277	4,1	2,87	247	3,4	2,52	217	2,7	2,17	187	2,1	1,82	157	1,6
	II	MIN	360	3,07	264	3,7	2,77	238	3,1	2,47	212	2,6	2,17	187	2,1	1,87	161	1,6	1,57	135	1,2
	I		290	2,64	227	2,8	2,38	205	2,4	2,12	182	2,0	1,86	160	1,6	1,61	138	1,3	1,35	116	0,9

Heating emission of 2 row additional coil

Entering air temperature: +20°C

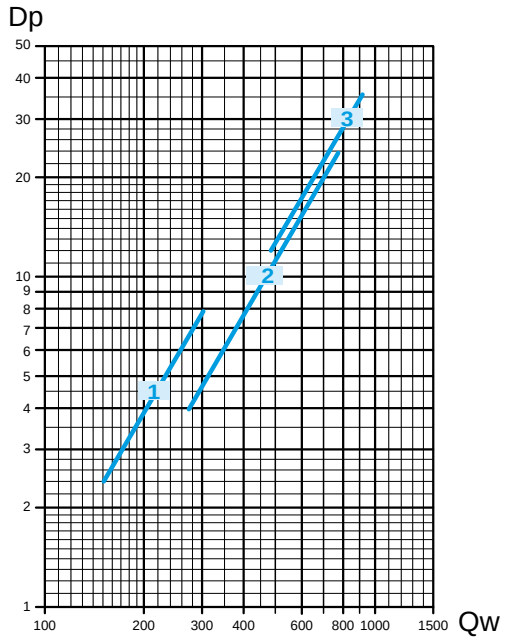
Model	Speed		Qv	WT: 65/55°C			WT: 60/50°			WT: 55/45°			WT: 50/40°			WT: 45/40°			WT: 45/35°		
				Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)	Ph	Qw	Dp(c)
			m^3/h	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa	kW	l/h	kPa
YFCC 130+2	VI		305	2,38	205	15,5	2,05	176	12,2	1,73	149	9,2	1,41	121	6,5	1,33	229	20,0	1,09	94	4,2
	V	MAX	280	2,23	192	13,8	1,92	165	10,8	1,62	139	8,2	1,32	114	5,8	1,25	215	17,8	1,02	88	3,7
	IV		245	2,02	174	11,6	1,75	151	9,1	1,47	126	6,9	1,20	103	4,9	1,13	194	15,0	0,92	79	3,1
	III		220	1,88	162	10,3	1,63	140	8,1	1,37	118	6,1	1,12	96	4,3	1,05	181	13,3	0,86	74	2,8
	II	MED	180	1,60	138	7,7	1,38	119	6,0	1,16	100	4,6	0,95	82	3,2	0,89	153	9,9	0,73	63	2,1
	I	MIN	140	1,35	116	5,7	1,16	100	4,5	0,98	84	3,4	0,80	69	2,4	0,75	129	7,4	0,62	53	1,6
YFCC 230+2	VI		560	4,66	401	12,7	4,03	347	10,0	3,40	292	7,6	2,78	239	5,4	2,61	449	16,5	2,15	185	3,5
	V		470	4,08	351	10,1	3,53	304	8,0	2,99	257	6,0	2,44	210	4,3	2,29	394	13,1	1,89	163	2,8
	IV	MAX	380	3,47	298	7,6	3,00	258	6,0	2,54	218	4,5	2,09	180	3,3	1,96	337	10,0	1,62	139	2,1
	III		305	2,95	254	5,7	2,55	219	4,5	2,16	186	3,4	1,77	152	2,4	1,65	284	7,4	1,37	118	1,6
	II	MED	240	2,43	209	4,1	2,11	181	3,2	1,78	153	2,4	1,46	126	1,7	1,36	234	5,3	1,14	98	1,1
	I	MIN	200	2,07	178	3,1	1,79	154	2,4	1,52	131	1,8	1,25	108	1,3	1,16	200	4,0	0,97	83	0,9
YFCC 330+2	VI		680	5,83	501	22,5	5,06	435	17,8	4,28	368	13,5	3,50	301	9,6	3,27	562	29,1	2,73	235	6,3
	V		620	5,42	466	19,8	4,70	404	15,6	3,98	342	11,8	3,26	280	8,5	3,04	523	25,6	2,54	218	5,6
	IV	MAX	540	4,86	418	16,3	4,22	363	12,9	3,57	307	9,8	2,92	251	7,0	2,72	468	21,1	2,28	196	4,6
	III	MED	440	4,20	361	12,6	3,65	314	10,0	3,09	266	7,6	2,53	218	5,4	2,36	406	16,4	1,98	170	3,6
	II		360	3,54	304	9,3	3,07	264	7,4	2,60	224	5,6	2,14	184	4,0	1,98	341	12,1	1,67	144	2,7
	I	MIN	290	2,96	255	6,8	2,57	221	5,4	2,18	187	4,1	1,79	154	3,0	1,66	286	8,8	1,40	120	1,9

Legend

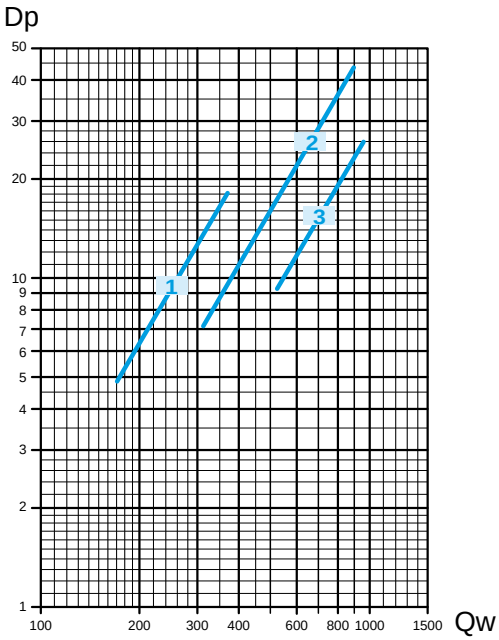
WT	= Water temperature	***Speed***	= Fan speed
Ph	= Emission	***MAX***	= High speed
Qw	= Water flow	***MED***	= Medium speed
Dp(c)	= Water side pressure drop	***MIN***	= Low speed
		Qv	= Air flow

Water side pressure drop

3 row coil



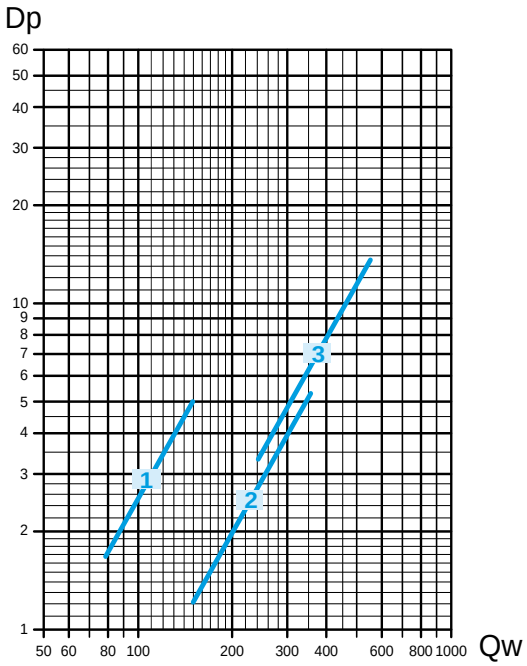
4 row coil



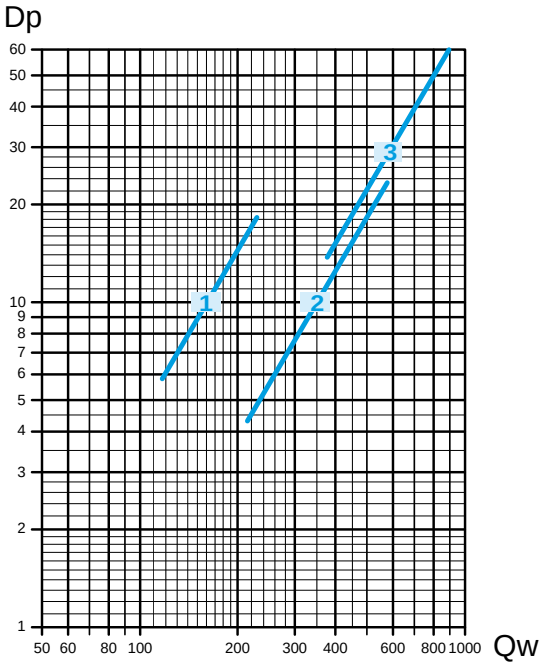
Pressure drop for mean water temperature of 10°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

°C	20	30	40	50	60	70	80
K	0,94	0,90	0,86	0,82	0,78	0,74	0,70

1 row additional coil



2 row additional coil



Pressure drop for mean water temperature of 65°C; for different temperatures multiply the pressure drop figure by the K correction factors in the table.

°C	40	50	60	70	80
K	1,14	1,08	1,02	0,96	0,90

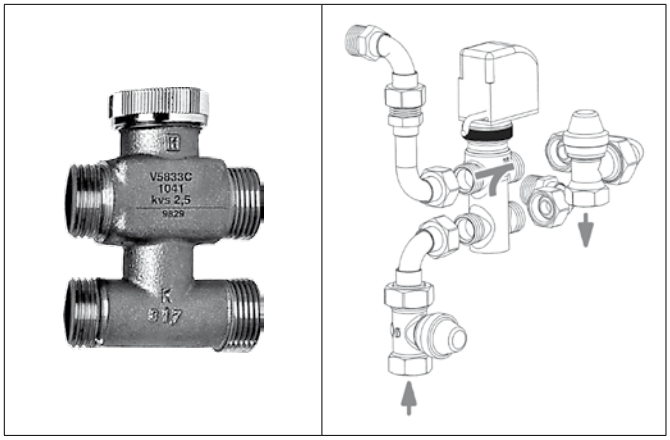
Legend

Qw = water flow (l/h)

Dp = pressure drop (kPa)

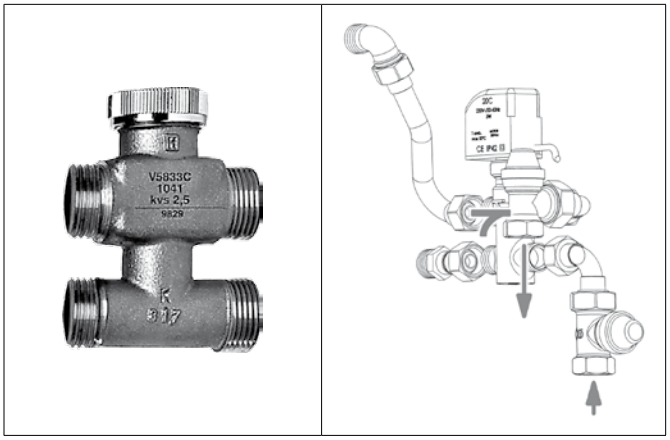
VBP Main coil 3 way valve

Control valve kit:3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



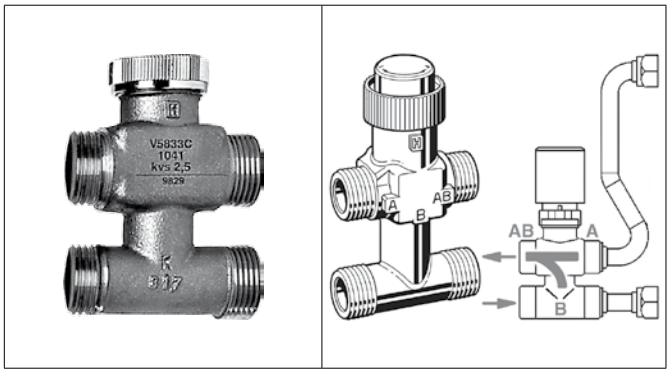
VBA Additional coil 3 way valve

Control valve kit:3 way valve, ON-OFF, with electric motor and mounting kit with micrometric lockshield valve.



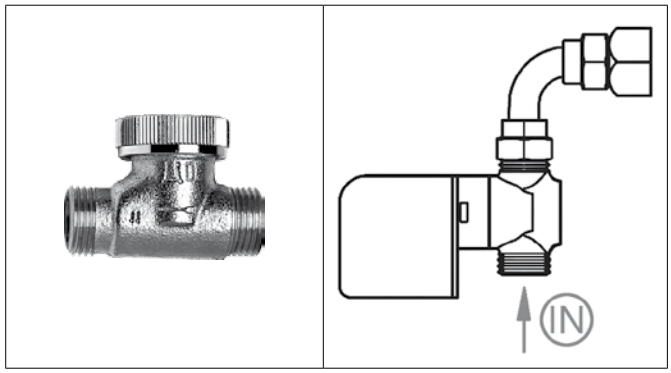
VS Simplified kit for 3 way valve for main and additional coil

3 way valve, (ON-OFF) with electric motor and mounting kit. Valve with flat connection without micrometric lockshield valve.

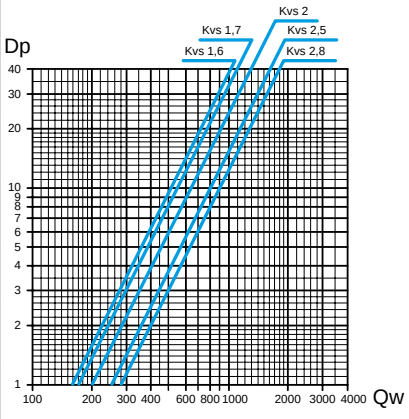


V2 2 way valve for main and additional coil

Control valve kit: 2 way valve, ON-OFF, with electric motor and mounting kit.



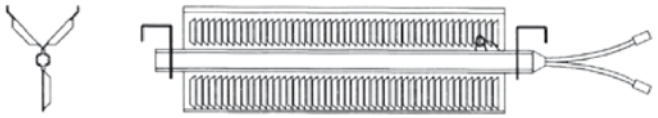
Valve	type	mod.	Valve			Micrometric lockshield valve			Code		Valves pressure drop
			DN	(Ø)	Kvs	DN	(Ø)	Kvs	Fitted	Not Fitted	
VBP	Main	1 - 2	15	1/2"	1,6	15	1/2"	2	9066561	9066560	
	Main	3	20	3/4"	2,5	15	1/2"	2	9060471	9060474	
VBA	Additional	All	15	1/2"	1,6	15	1/2"	2	9060472	9060475	
VS	Main	1 - 2	15	1/2"	1,6	-	-	-	9066571	9066570	
		3	20	3/4"	2,5	-	-	-	9060484	9060481	
	Additional	All	15	1/2”	1,6	-	-	-	9060483	9060480	
V2	Main	1 - 2	15	1/2"	1,7	-	-	-	9060476	9060478	
		3	20	3/4"	2,8	-	-	-	9060477	9060479	
	Additional	All	15	1/2”	1,7	-	-	-	9060476	9060478	



Legend
Qw = water flow (l/h)
Dp = pressure drop (kPa)

BEL Electric heater

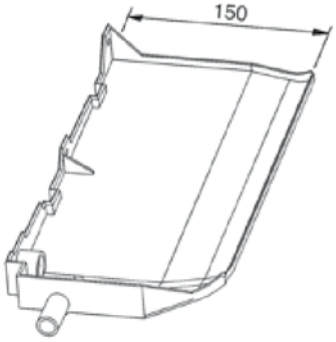
ID	BEL		
Size	1	2	3
Watt	600	1250	1500
Code	90666482	9066485	9066487



1 PHASE 230V
Electric heater with integral: safety thermostat and relay control.

ACTH Extension condensate collection tray to cover valve assembly

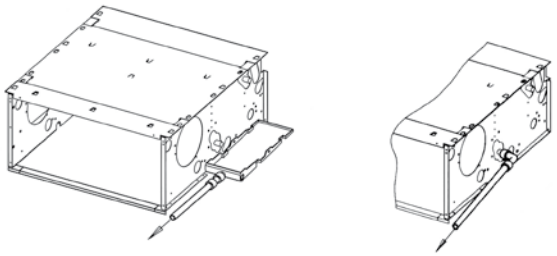
	ACTH	
Connection side	left	right
ID	ACTH-SX	ACTH-DX
Code	6060402	6060403



SCR plastic condensate drain pipe with fast connection

ID	SCR
Code	6060420

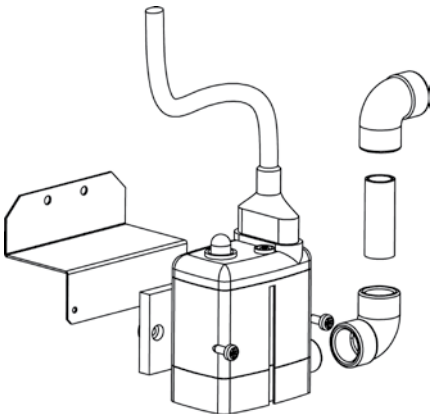
It helps regular drainage of condensate thereby preventing the formation of bends.



PCC condensate drain pump

	Fitted	Not fitted
ID	PCC-M	PCC-S
Code	9064011	9064010

Height for vertical flow (m)	Water flow (l/h) depending on the length of horizontal flow	
	5 m	10 m
1	6,8	6,3
2	5,5	5,0
3	4,2	3,8
4	3,0	2,6

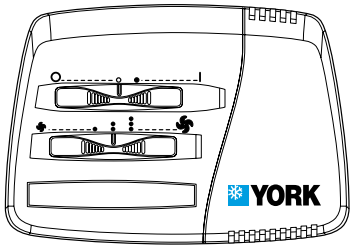


Electrical diagrams are shown on the installation, use and maintenance manual

CONTROL IDENTIFICATION / CONTROL OPERATIONS	ON-OFF switch	ON-OFF switch for electric heater	Manual 3 speed switch	Manual/Automatic 3 speed selection	Summer/Winter switch	Remote centralized Summer/Winter switch or by an automatic change-over fitted on the water pipe	Automatic Summer/Winter switch with neutral zone for 4 pipe installation with 2 valves	Room thermostat for fan control (ON-OFF)	Room thermostat for 1 valve control (2 pipe installation)	Room thermostat for 2 valve control (4 pipe installation)	Simultaneous thermostatic control of the valves and fan	Room thermostat for chilled water valve (SUMMER) and electric heater (WINTER) control (in winter only the heater is working)	Room thermostat for fan and electric heater control	Installation of electronic low temperature CUT-OUT thermostat (TME)	Installation of bimetallic low temperature CUT-OUT thermostat (TMM)	CONTROL CODES
DTR	●	●	●	●	●	●	●	●	●	●	●	●	●	●		9060521
TMO-503-SV2	●		●	●	●		●		●	●	●			●		9060172K
TMO-503-S	●		●	●	●			●						●		9060170K
ATR	●		●	●	●	●	●	●	●	●	●	●		●		9060542
TR	●		●		●	●		●	●	●		●		●		9060541
BR	●		●												●	9060540

Wall electronic controls

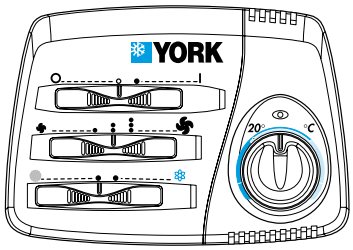
ID	Code
BR	9060540



Dimensions: 133x93x37 mm

- ON-OFF switch and speed switch, without thermostatic control.
- It allows to control the low temperature cut-out thermostat (TMM).

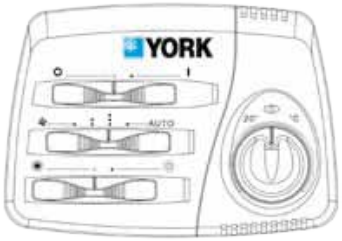
ID	Code
TR	9060541



Dimensions: 133x93x37 mm

- Manual speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use TR-E control with on/off switch for the electric heater).
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe (for 2-pipe systems only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

ID	Code
ATR	9060542



Dimensions: 133x93x37 mm

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) control (ON-OFF).
- Simultaneus thermostatic control on the valves and fan (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter (otherwise please use ATR-E control with on/off switch for the electric heater).
- It allows to install the Summer/Winter switch centralized and remote, or to control it with an automatic change-over fitted on the water pipe (for 2-pipe systems only). The latter case needs the adjustment of the jumper on the control board (see the instruction leaflet supplied with the control).

Note: *with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).*

ID	Code
TMO-503-S	9060170K

Dimensions: 118x87x8 mm

The TMO-503-S control for fan coils without valves, is designed to be installed in a series 503 wall box. The control is supplied integral with the external frame, but it is possible to use frames of the most known brand on the market (BTicino, Vimar, AVE, Gewiss).
The highest working electric absorbtion is 200 W; if the fan coil has an higher absorbtion or more units are connected to the same control, the speed switch REC-S must be installed.

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- It allows to control the low temperature cut-out thermostat (included with the control).

Wall electronic controls

ID	Code
TMO-503-SV2	9060172K

Dimensions: 118x87x8 mm

The TMO-503-SV2 control for fan coils with valves, is designed to be installed in a series 503 wall box. The control is supplied integral with the external frame, but it is possible to use frames of the most known brand on the market (BTicino, Vimar, AVE, Gewiss).
The highest working electric absorbtion is 200 W; if the fan coil has an higher absorbtion or more units are connected to the same control, the speed switch REC-S must be installed.

- Manual or automatic speed switch.
- Manual Summer/Winter switch.
- Electronic thermostat for valve(s) control (ON-OFF).
- Simultaneus thermostatic control on the valves and fan (ON-OFF)..
- It allows to control the low temperature cut-out thermostat (included with the control).

Note: *with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).*

ID	Code
DTR	9060521

Dimensions on the wall: 133x93x27 mm
Dimensions in the DIN 503 box: 133x93x18 mm

To be installed on the wall or in the DIN 503 box.
- Manual or automatic speed switch.
- Manual or automatic Summer/Winter switch.
- Electronic thermostat for fan control (ON-OFF).
- Electronic thermostat for valve(s) control (ON-OFF).
- Simultaneus thermostatic control on the valves and fan (ON-OFF).
- It allows to control the low temperature cut-out thermostat (TME).
- It allows to control the chilled water valve (ON-OFF) and the electric heater (BEL) only in case that hot water is not used in winter.
- It allows to control the fan and the heating electric resistance.
- It allows to control up to 10 units with REC-D speed switch.

Note: *with 4-pipe systems and continuous chilled and hot water supply, it allows the automatic summer/winter change-over in accordance to the room temperature (-1°C = Winter, +1°C = Summer, Dead Zone 2°C).*

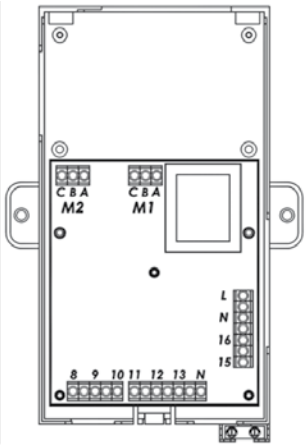
Speed switches

ID	Code
REC-S	9079110

- Speed switch (slave).
- It allows to control up to 8 units with only one centralized thermostat using one speed switch for each unit.
- For controls TR, ATR, TMO-503-S and TMO-503-SV2.

ID	Code
REC-D	9060139K

- Repeater for DTR
- It allows to control up to 10 units with only one DTR centralized thermostat.



TME low temperature cut-out thermostat

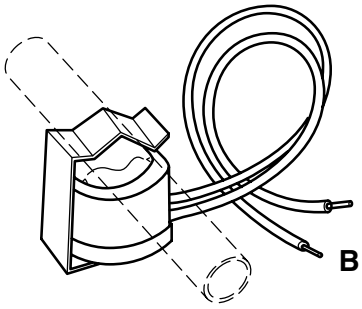
ID	Code
TME	3021091

To be fitted between the coil fins.
When connecting the control, the TME probe cable must be separated from the power supply wires.
To be used with the following controls: TR, ATR, DTR.
It stops the fan when the water temperature is lower than 38°C and it starts the fan when is higher than 42°C.

TMM low temperature cut-out thermostat

ID	Code
TMM	9053048

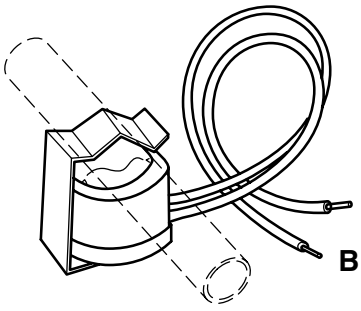
To be installed in contact with the hot water circuit.
To be used with the following controls only: BR.
For units working on heating only.
It stops the fan when the water temperature is lower than 30°C and it starts the fan when is higher than 38°C.



Change-Over CH 15-25

ID	Code
CH 15 -25	9053049

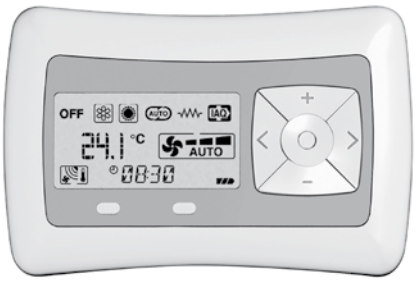
Automatic summer/winter switch to be installed in contact with the water circuit.
For 2-tube installations only (not to be used with 2 way valve).To be used with the following controls only: TR, ATR, DTR.



Free Wireless control system

Free

Free is an innovative, **fully wireless** electronic system for use with fan coil units, based on radio communication.
This technology provides installation flexibility and a **more accurate measurement of the room temperature.**



The probe can be moved until the most suitable position is found, without the worry of changes in the environment layout and of its furniture and also without mounting it on a wall. If a new fan coil unit is added, no electrical wiring for the control system is required: just define the control unit and the probe which regulates it. The improved measurement accuracy derives from the possibility to position the probe near the typical location of the user: this enables to keep the temperature exactly at the required value with more energy savings compared with a traditional measurement system.

Transmission is based on communication protocol IEE802.15.4, the most suitable way to transmit a relatively low amount of information with very low consumption and high reliability.

The system has been certified by a leading independent body, officially recognized by the EU authorities and its sale has been authorized in all the EU and EFTA countries.

Main components

Free includes 3 main components:

- **A remote control** which features a button panel and LCD display and can be wall-mounted or positioned on a dedicated table support.
  It enables the control of all the operating variables of the fan coil units in different configurations. The control is battery powered.
  The temperature and the operating speed of the fan coil unit are set with two large buttons featuring user friendly graphics.

Description	ID	Code
Remote control	*Free-Com*	*9060572*

Control unit with support

- **A power unit** to be installed on the fan coil (fan coil interface).
  It controls the fan and the valves of the fan coil. The power unit is connected to the electric supply.
  The power unit receives the information required to control the fan coil both from the remote control and locally, such as the temperature of the coil.

Description	ID	Code
Power unit fitted on the unit	*Free-Upm*	*9060571*
Power unit not fitted on the unit	*Free-Ups*	*9060570*

Power unit

- **A room temperature probe**, which can be wall-mounted or positioned on a dedicated table support.
  It is a battery powered device, able to measure the air temperature in the spot where it is positioned, generating temperature information which is communicated to the other devices.

Description	ID	Code
Temperature probe	*Free-Sen*	*9060573*

Probe with support

Free Wireless control system

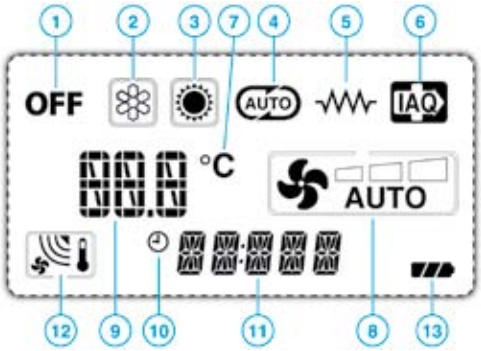
Main features of the remote control

The control enables:

- Fan coil on/off switching
- Fan speed selection (high - medium - low - automatic)
- Summer/winter operation selection
- Valve on/off
- Real time clock setting
- Temperature setting
- Daily switch on/off setting (timer function)
- Enable/disable the timer function
- Activation of the (eventual) electrostatic filter
- Activation of the (eventual) electric resistance

Main information displayed:

1 = On-off status
2 = Summer operation
3 = Winter operation
4 = Automatic season change
5 = Electric resistance
6 = Crystall filter
7 = Room temperature (with decimal accuracy)
8 = Fan operating speed
9 = Required/measured temperature
10 = Timer
11 = Clock
12 = Transmission signal
13 = Battery level



Main features of the power unit to be installed on the fan coil

The power unit controls the fan and the valves of the fan coil.
The power unit receives the information required to control such units both from the remote control and locally.

It enables the following main actions:

- Fan on/off at a set speed
- Fan speed change (fan on/off)
- Water valve/s on/off (1 valve for 2 tube system - 2 valves for 4 tube system)
- Fan speed change operating the water valve/s
- Control of the electric resistance as main heating unit or as integration to the battery supplied with hot water
- Control of the operation of the electrostatic filter (in parallel to the fan)
- Management of the dead zone function for 4-tube systems
- Available functional inputs:
  - Consent for remote on/off
  - Consent for remote Summer/Winter switch (centralized)
  - Consent for the activation of the Energy Saving function with setting change
  - Minimum probe
  - Probe for season change

Main features of the temperature probe

This device is able to measure the temperature of the air in the spot where it is positioned and to transmit it by means of radio communication to the other devices in the system. It is battery powered and can be freely positioned in the area to be air-conditioned.

Display:

- Measured environment temperature
- Transmission signal
- Clock
- Battery status

Unit with infra-red remote control

Description	ID	Code
Infra-red remote control with electronic board fitted on the unit	*IRC-M*	*9060175*
Infra-red remote control with electronic board not fitted on the unit	*IRC-S*	*9060176*

The YFCC cassettes can be supplied with a micro-processor managing system operated by an infra-red remote control with liquid crystal display.

Integral with the unit is the room temperature probe, the water temperature probe (cut-out thermostat), the infra-red remote control and the electronic board with RS485 communicating connection which can control up to 20 units connected between them.
The electronic board is of master/slave mode and the serial communicating connection allows the serial connection; in the master/slave connection of more units, it is recommended o install the infra-red receiver on the master unit.

Control operations:

- Temperature set.
- Fan speed switch with possible automatic speed selection.
- 24 hours on/off program.
- On/off cooling valve control.
- On/off heating valve control.
- Control of the valves only or of the valves and the fan together.
- Valve control of 2 or 4-pipe systems with winter/summer switch on the infra-red control.
- Valve control of 4-pipe systems with automatic heating/cooling mode selection with 2°C dead zone.
- Activating the sensor connected to the T3 contact of the board (non active in the standard configuration), it works like a cut-out thermostat: fitted between the coil fins it stops the fan when the water temperature is lower than 38°C and it starts the fan when the water temperature reaches 42°C.

IRC controls are not suitable for BEL electric heater.

The electronic board, fitted inside the electrical panel, can manage different control modes so as to best satisfy the requirements of the installation. These modes are selected by suitably positioning the configuration dipswitches, which define the following main functions:

- 2 pipe / 4-pipe system
- Operation without / with remote control
- Continuous ventilation
- Close valve and stop fan in cooling (autofan function)
- Close valve and stop fan in heating mode (autofan function)
- Close valve and stop fan in both cooling and heating mode (autofan function)

The autofan function allows the simultaneous on/off control of the water valve and the fan, while at the same time optimising the operation of the unit. When reaching the set point, the controller closes the water valve (valve off) and only 3 minutes later stops the fan, so as to correctly compensate for the valve closing time. To prevent the air probe from measuring an incorrect temperature, when the fan is off the controller runs a number of fan ON cycles to annul the effect of any stratification of the air in the room.

In 2-pipe systems, a water probe can be installed on the supply pipe to the unit upstream of the water valve. Based on the temperature read in this section of the pipe, the device will select either cooling or heating operation.

The electronic board also features a contact for connection to a window switch or remote enabling signal. When the contact is closed, the unit can operate, when the contact is open, the unit stops. The same contact can be used for starting and stopping the unit from an external timer or any other remote switching device.

In addition, a series of units can be switched on or off at the same time, by using a flip-flop switch connected to the terminals present on the board.

Sensors that require a 12 volt power supply, for example occupancy sensors, can be connected to other terminals on the electronic board and then to the on/off contacts. The board is able to power external sensors with a maximum current of 60mA.

T2 Change-Over for infra-red remote control (accessory)

ID	Code
T2	9079103

Suitable for units with infra-red remote control only.
The NTC sensor, if connected to the T2 contact of the board, works like a change-over: fitted in contact to the supplypipe it controls automatically the winter/summer switch in accordance to the water temperature.

Connection of the units in series and centralized management

ID	Code
PCR - DI	9079102

A group of YFCC cassette units with infra-red remote control microprocessor can be connected via a serial link and can consequently be managed at the same time by just one infra-red remote control. Using the special jumper present on the board, one unit must be configured as the master, and all the others as slaves. It is clear that the remote control must be pointed at the receiver on the master unit. To avoid problems, it is recommended to install and connect the receiver only on the master unit.

Another option available for the serial communication between the units is the possibility to connect up to 60 YFCC cassette units in series (the maximum length of the connection cable must not exceed 800 m) and manage them with just one wall-mounted intelligent PCR-DI controller. The wall-mounted controller can be used to set the operating mode for each individual unit connected, display the operating conditions of each individual unit, and set the on/off time sets for each day of the week. If more than 60 units need to be connected, two or more wall-mounted intelligent controllers must be used.
Each wall-mounted controller only manages the units it is connected to.

The PCR-DI control is used to manage a series of cassettes, up to a maximum of 60 units, from one single control point. The PCR-DI control communicates via a serial line with all the units connected, with the possibility of controlling them all together or individually. In fact, the unique address of each individual cassette means that all the units can be called at the same time, or the individual unit called, to perform the following functions:

- display the current operating mode, the fan speed, the set point
- display the room temperature measured on the individual unit
- turn all the units on and off at the same time or alternatively each unit individually
- change the operating mode (fan only, heating, cooling, automatic changeover)
- change the set point

Each function can then be sent to all the units connected, or alternatively to each individual unit.
Different set points or operating modes can be set for each individual unit.

The PCR-DI panel can also be used for the time management of the units over the week.
Two on times and two off times can be set on the units for each day of the week.

The weekly programming mode can be stopped at any time, returning to the manual setting and then weekly programming mode can subsequently be started again.

Unit with infra-red remote control

Maxinet program for managing a network of IR hydronic terminals

Maxinet is a centralised control system for networks of IR hydronic terminals, based on software that runs on Windows. The Maxinet software offers a practical and economical solution for managing the terminals, with the simple click of the mouse. The main characteristics include simplicity of use, an extremely complete and functional weekly program, and the possibility to access the historical operating data for each individual appliance connected.

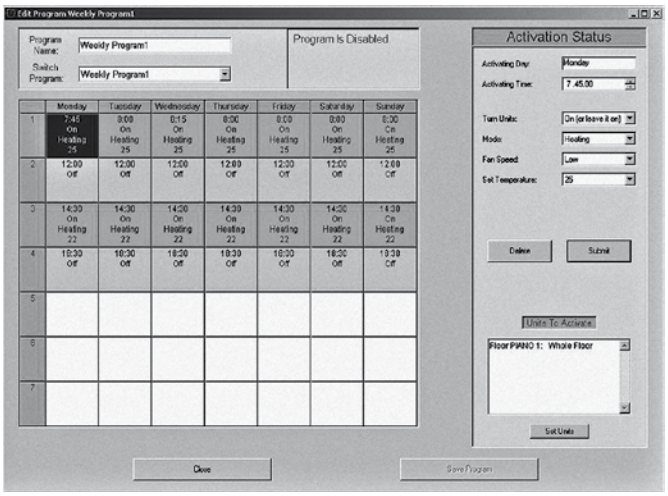
The program exploits all the potential of our appliances with remote controls, representing an addition to the latter.

The Maxinet program is a control tool that can be used as a replacement for the remote control, or in parallel, however with the possibility of setting the priority, that is, the settings made using Maxinet can have priority over those made using the remote control.

The program can be used to:

The program can be used to:

- create uniform logical blocks (groups of units on individual floors, in offices or rooms).
- save weekly programs configured for different types of operation (summer, winter, mid seasons, closing periods etc.); these can then be recalled and activated with a simple click of the mouse.
  Weekly on/off cycles can be set for individual units or groups of units.
- set the operating conditions for each individual unit or groups of units (operating mode, fan speed, temperature setting).
- set the set point limits for each individual unit or groups of units.
- switch each individual unit or groups of units on or off.

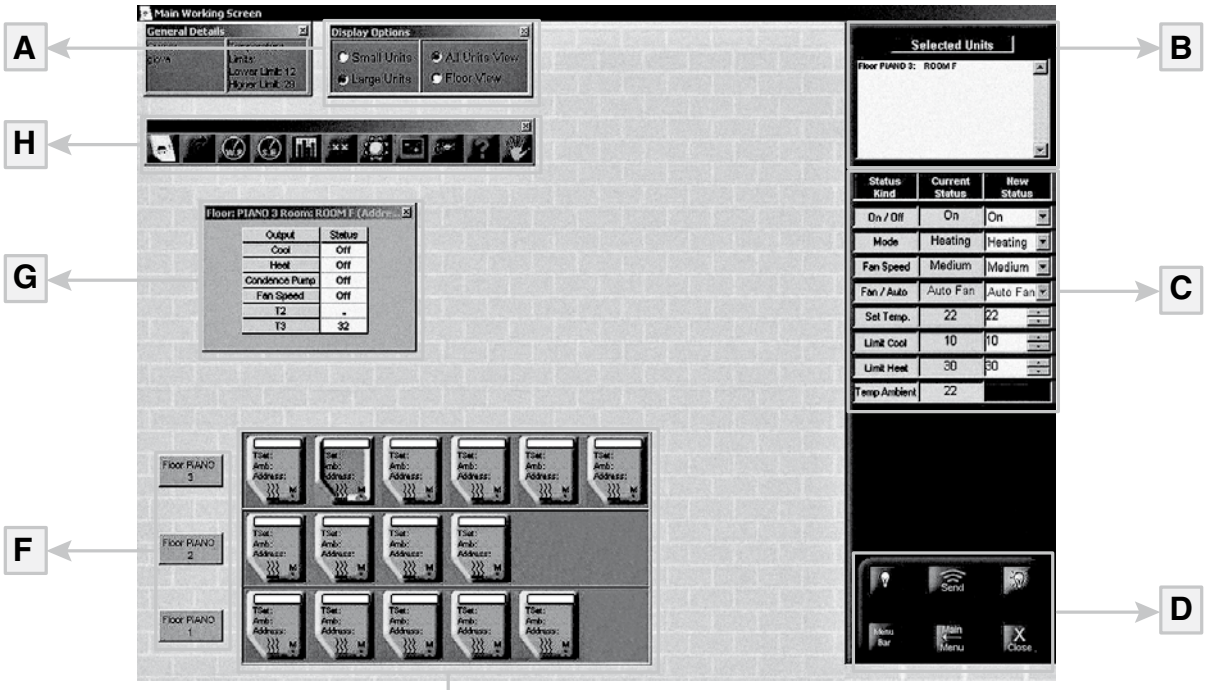


The “Weekly Program” can be used to set the unit operating parameters for each day of the week.
Up to 20 different weekly programs can be set.

Time bands are available for each day of the week. The time and the type of operation to be performed by the unit can be set for each band. The time and the operating parameters can then be displayed before being sent to the unit and implemented.

One especially useful function of the weekly program is to have the program to carry out timed checking routines to identify whether the operating mode or temperature setting have been modified on the terminals, for example using the local remote control. If activated, the routine will reset all the unit operating parameters to the values set in the weekly program.

Unit with infra-red remote control



Legend

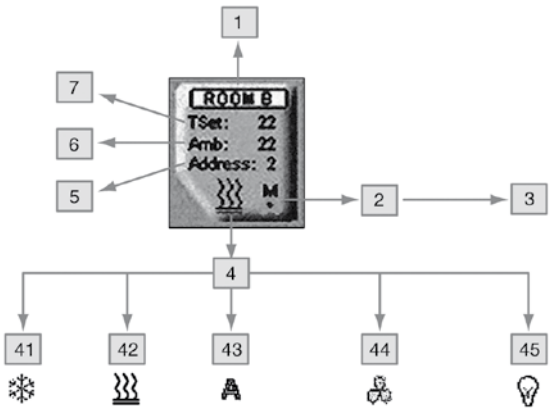
A = selection of the viewing mode
B = selection of the different units
C = control parameters
D = controls
E = unit
F = floors /sections selection
G = working mode of every unit
H = main menu

The main program screen can display and interact with the entire network of units. An individual unit, a group of units or the entire network can be called so as to make modifications to the operating mode and the set point. The user can then check the operating status of each individual unit, read the room temperature, the coil temperature and the operating status of the condensate drain pump or any alarms.

Legend

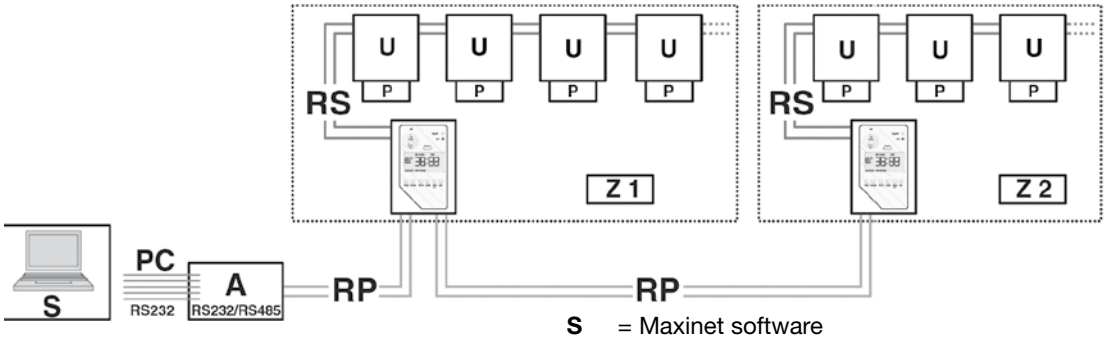
1 = room (name/number)
2 = fan
3 = auto fan
4 = mode
- **41** = cooling
- **42** = heating
- **43** = auto
- **44** = fan only
- **45** = off

5 = address
6 = temperature
7 = set



PC Maxinet Software

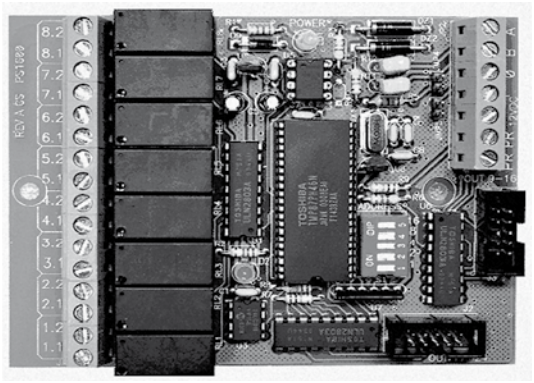
Connection of a YFCC cassette network of more than 60 units.



Legend

U = YFCC unit
P = panel
Z1 = zone 1
Z 2 = zone 2
S = Maxinet software
A = adaptor
RP = main network
RS = secondary network
PC = PC connector

ID	Code
S08R	9079105



In addition to the air-conditioning units, MaxiNet can also work with general output cards. Each card contains 8 outputs which can be connected to “On / Off” devices.
The contact of each relay may therefore be used by connecting it in series with the coil of the remote on/off switches of the motor of a pump, a chiller or a boiler, or with the coils of the remote switches controlling “lights”, air extractor fans, opening and closing of doors and electrically-driven devices such as gates or shutters.
The Out-Put card can be connected in a Maxinet network and controlled by the software. Up to 10 cards can used.

Description	ID	Code
ETN +/-3°C with electronic board fitted on the unit	IRC-ETN-M	9060166
ETN +/-3°C with electronic board not fitted on the unit	IRC-ETN-S	9060167

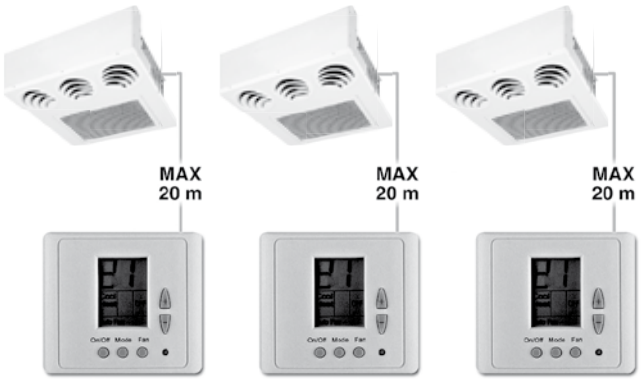
The IRC with ETN +/- 3 is a wall-mounted controller that can be connected to fan coils fitted with the IR electronic board and connected in an RS 485 network managed by the Maxinet supervisor system. The controller allows to adjust the set-temperature by raising or lowering the temperature set, defined with Maxinet, by increments of 1°C in a range of +/- X°C.

The controller features the following functions:
- switch the appliance on and off
- set the fan speed
- set the range of temperature settings (default +/- 3 °C, modifiable on site up to +/- 9°C)
- modify the set point determined by the MaxiNet system by a value of +/- X°C.

The Maxinet system can set the operating mode, the set point and all other operating parameters of the unit, as well as display the settings made by the user. The Maxinet system always has priority over the ETN controller. For the correct use of the system, also see the manual for the cassette with remote control and the Maxinet supervision program.

IRC control with ETN +/-3°C

One control for each unit
(Maximum Length of the connection cable = 20 m)



YORK
BY JOHNSON CONTROLS

YFCC - 10/10
COD. A4640142 A/10/10