Compact Horizontal
Air-Air Heat Pump
Model RTH-07K to 30K

Ref.: Y-R70129 0207

Technical information

ISO 9001 AENOR ER Empresa Registrada ER-0028/1991

ISO 14001 AENOR Gestión Ambiental CGM-97/013

CE

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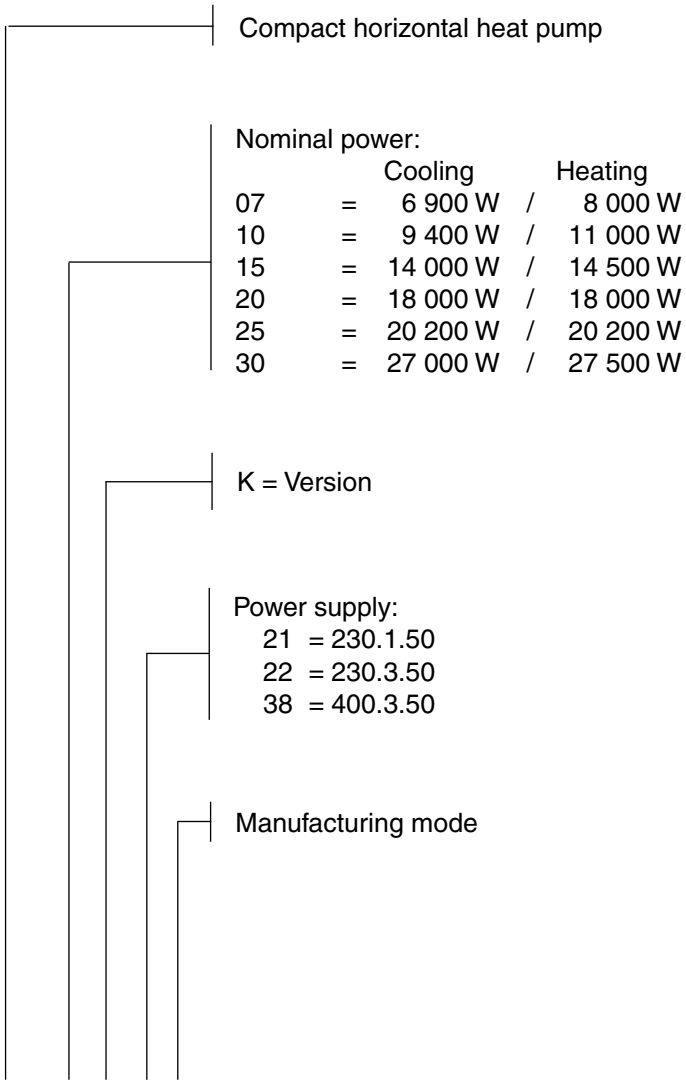
General information

General description

The RTH model heat pumps are compact horizontal units, condensed by air, that allow air conditioning, both in winter as well as in summer, by inverting their operating cycle.
They can be installed either indoors or outdoors, and the fans are of the centrifugal type, and thus accept air ducts.

Nomenclature



RTH 07 K 21 A

Technical specifications

Mechanical specifications

Compressor

Of the vertical hermetic alternative type, mounted on shock absorbers and with internal motor protection. Includes an electric heater for heating the oil sump, which makes start-ups easier and avoids oil leaking from the compressor.

Coils

With a large surface, made of grooved copper tubing and notched aluminium fins.

Fans

Centrifugal with directly fitted motor or belt and pulley drive, depending upon the model. Have sufficient pressure for the installation of optional ducts and accessories.

Casing

Made of galvanised aluminium steel sheeting and finished with oven-polymerised powdered paint, for outdoor installation. The interior is lined with an insulation coating so as to avoid condensation and reduce noise levels. These units include galvanised sheeting trays with their corresponding drains for collecting condensates from the coils.

Cooling circuit

Made of welded copper tubing. The units are supplied with their optimum refrigerant loads and having gone through maximum pressure and air tightness tests. Both in the interior as well as exterior sections, the expansion of the refrigerant is carried out by means of calibrated and distributed holes. The circuit includes: four-way valve, suction accumulator, high and low pressure switches and suction and discharge pressure collectors.

Refrigerant

These units are manufactured in with R-407C.

Electric panel

Accessible directly from the exterior. Includes: connecting strip, protectors, electronic board and probes, power supply contactors, operating relay, phases control relay and transformer. In compliance with European standards in force.

Phase control relay

The electric panel of models RTH20K, 25K and 30K introduces a sequence and phase failure detector. In the case of detecting a phase sequence other than R-S-T, or a phase fails once the unit is in operation, this detector, by means of an internal volt-free contact, disconnects power supply to the main board of the unit, leaving it inoperative.

Electric heater (optional)

Of the uncovered wire tipe for quick heat dispersion, avoiding temperature intertia that could affect components, equipped with thermal contacts and protectors, automatic switch and manual reste.

Thermostat

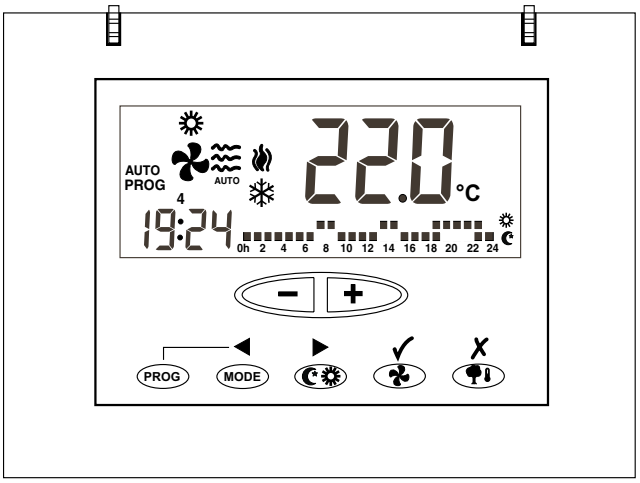
The RTH-07 to 30 units include, as standard equipment, the electronic DPC-1 thermostat.
To connect the thermostat to the board, 10x0.22mm^2 screened communication cable should be used.

Ambient thermostat DPC-1

Programmable digital thermostat with communication

This thermostat was designed to give close control of the ambient temperature and graphic information regarding the mode it is currently operating in. This control unit, in accordance with the differential between the programmed temperature and the ambient temperature, responds varying the on/off cycles.
The liquid crystal display (LCD) normally indicates the ambient temperature, operating mode and whether the system is in heat or cool.
It allows selecting different set point temperatures for cool and heat, besides choosing between °C and °F on the display.

Fan operation can be in continuous or automatic mode, off or in operation along with the compressor.



Physical data

Model			RTH-07K	RTH-10K	RTH-15K	RTH-20K	RTH-25K	RTH-30K
Compressor Indoor	Amount		1					
	Nominal power	kW	2.7	3.2	4.7	5.2	7.9	9.2
	Power supply	V.ph.Hz.	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
Outdoor coil	Amount					1		
	Tubing depth x height		5 x 18	5 x 21	5 x 21	5 x 21	5 x 24	5 x 24
	Front area	m^2	0.32	0.41	0.51	0.65	0.71	0.87
	Tubing diameter		3/8"					
coil Outdoor	Amount		1					
	Tubing depth x height		3 x 18	4 x 21	4 x 21	4 x 21	3 x 24	4 x 24
	Front area	m^2	0.22	0.25	0.37	0.47	0.61	0.73
	Tubing diameter		3/8"					
fan motor Indoor	Amount		1					(1)
	Turbine diameter	mm	270	320	320	320	320	320
	Turbine width	mm	270	240	240	320	240	320
	Nominal power	kW	0.58	0.99	0.99	1.1	1.1	1.5
	Motor nominal r.p.m.		900	900	900	900	900	1 420
	Power supply	V.ph.Hz.	230.1.50	230.1.50	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
fan motor	Amount		1				(1)	(1)
	Turbine diameter	mm	240	270	320	320	320	320
	Turbine width	mm	240	200	240	240	240	320
	Nominal power	kW	0.38	0.54	0.95	0.99	1.1	1.1
	motor nominal r.p.m.		900	900	900	900	1 410	1 410
	Power supply	V.ph.Hz.	230.1.50	230.1.50	230.1.50	230.3.50 400.3.50	230.3.50 400.3.50	230.3.50 400.3.50
Refrigerant load R-407C		kg	1.93	3.00	3.5	5.85	5.9	6.1
Dimensions with packing		mm	1140x1200x610	1190x1250x690	1350x1410x690	1670x1610x990	1760x1800x780	1810x2160x780
Weight	Nett	kg	163	190	224	275/285	350	412
	Gross	kg	174	205	240	295/305	370	452

(1) Pulley drive (adjustable on the motor).

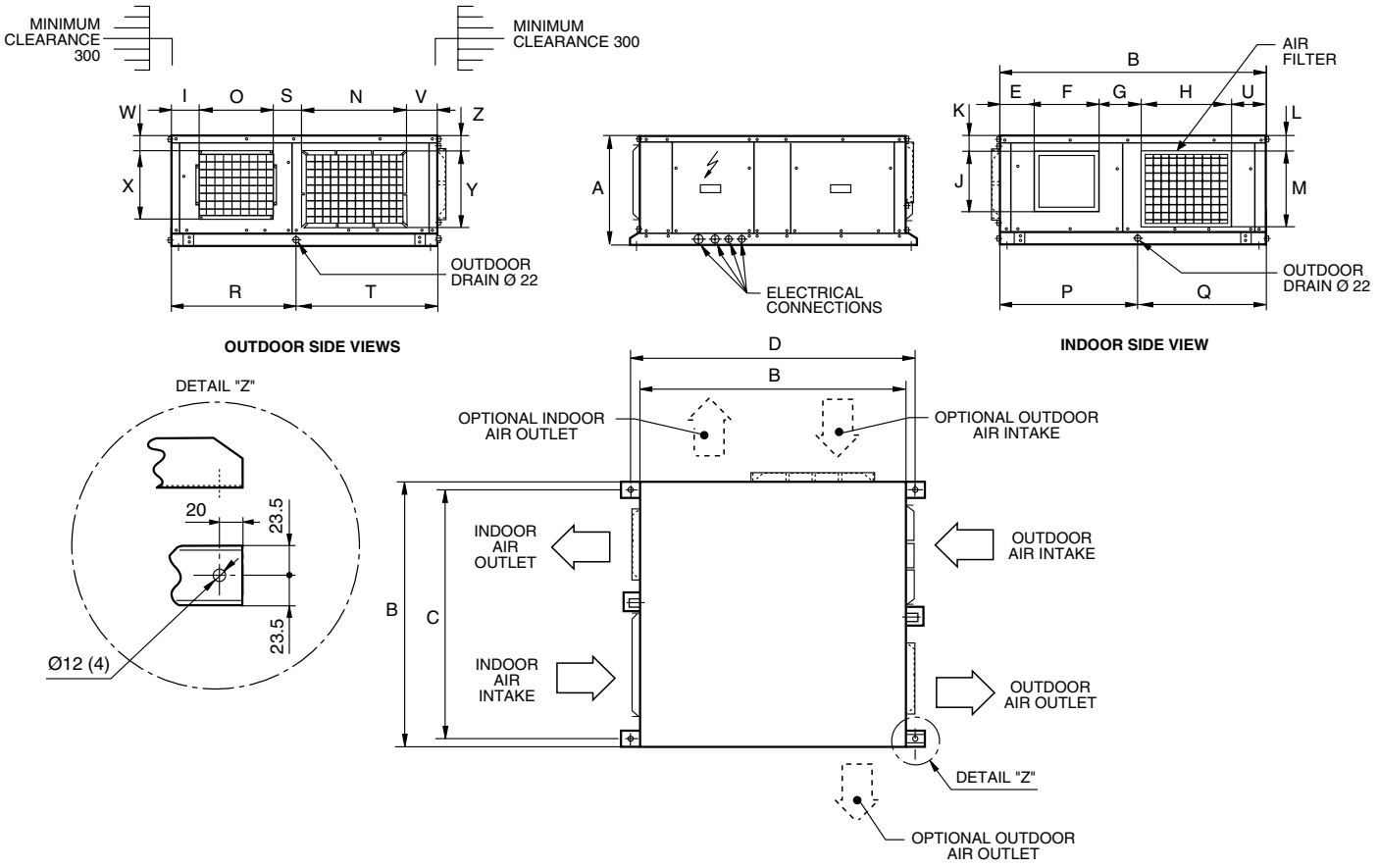
Limits of Use

Voltage limits				Air intake temperature to outdoor coil DB				Air intake temperature to indoor coil			
Nominal 230 V		Nominal 400 V		Operating cycle				Operating cycle			
				Minimum °C		Maximum °C		Minimum °C		Maximum °C	
Minimum	Maximum	Minimum	Maximum	Cool	Heat	Cool	Heat	Cool WB	Heat DB	Cool WB	Heat DB
198	254	342	436	19	-20 (1)	46	24	14	10 (2)	22	25

Notes: WB = Wet bulb. DB = Dry bulb. (1) At below -20°C, only the emergency electric heater (optional) remains operative. (2) This equipment can operate for a short period of time at a temperature below 10°C so as to increase the air temperature within the conditioned space to 10°C.

General dimensions mm

RTH-07K, 10K, 15K & 20K

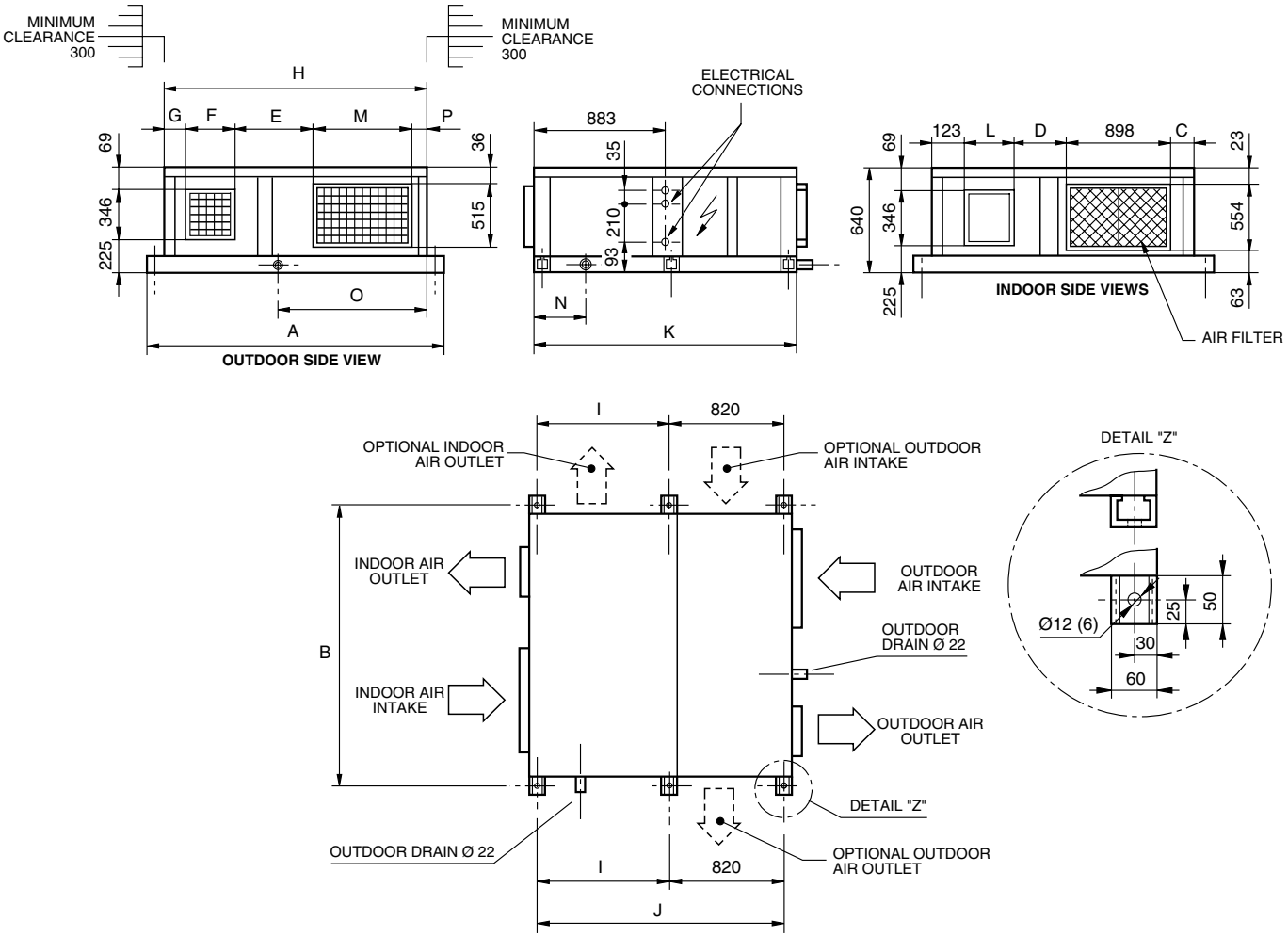


Note:
1- The solid arrows indicate the standard air intakes and outlets. The dotted arrows are the intakes and outlets that can be obtained at job site.

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
RTH07K	478	1100	1055	1150	117	302	136	425	82	262	72,5	60	300	425	347	600	500	602	165	500	120	82	18	305	342	40
RTH10K	555	1150	1105	1200	130	270	210	375	82	294	101	50	420	404	323	600	550	615	220	537	165	117	20	353	430	40
RTH15K	555	1310	1265	1360	140	316	154	600	87	346	24	45	425	554	323	600	710	590	225	720	100	121	20	353	430	40
RTH20K	585	1570	1525	1620	140	316	210	750	85	346	54	80	420	770	407	622	950	697	206	875	154	102	50	353	430	70

General dimensions mm

RTH-25K & 30K



Note:

1- The solid arrows indicate the standard air intakes and outlets. The dotted arrows are the intakes and outlets that can be obtained at job site.

Model	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P
RTH-25K	1 750	1 700	81	233	442	315	133	1 650	870	1 690	1 750	315	667	348	1 145	93
RTH-30K	2 150	2 100	130	499	648	400	138	2 050	890	1 710	1 770	400	732	368	1 495	132

Nominal capacities

Unit	Summer		Winter	
	Cooling capacity W	Consumption W	Heating capacity W	Consumption W
RTH-07K	6 900	3 600	8 000	2 800
RTH-10K	9 400	4 600	11 000	3 700
RTH-15K	14 000	6 900	14 500	5 000
RTH-20K	18 000	7 600	18 000	6 900
RTH-25K	20 200	10 000	20 200	7 500
RTH-30K	27 000	12 300	27 500	10 900

Test conditions

Voltage	Summer				Winter			
	Outdoor temp. °C		Indoor temp. °C		Outdoor temp. °C		Indoor temp. °C	
	DB	WB	DB	WB	DB	WB	DB	WB
230 or 400	35	24	27	19	7	6	20	12

Correcting factors

Correcting factors for cooling capacities

Correcting factors for cooling capacities in accordance with indoor and outdoor temperatures.

Indoor air intake temperature, °C WB	Outdoor intake air temperature,°C DB					
	19	25	30	35	40	46
23	-	1.20	1.15	1.11	1.06	1
19	1.10	1.08	1.04	1	0.96	0.90
14	0.88	0.86	0.84	0.82	0.79	0.74

Note: For indoor unit intake temperatures DB between 21 and 32°C. WB - wet bulb. DB - dry bulb.

Cooling capacity correcting factors for flows that differ from the nominal flows of the indoor coil.

Flow %	80	90	100	110	120	130
Total capacity	0.960	0.980	1	1.016	1.032	1.046
Sensible capacity	0.945	0.973	1	1.038	1.075	1.118
Comp. absorbed power	0.980	0.990	1	1.009	1.017	1.025

Correction of the real temperature of air intake of the outdoor coil for flows that differ from the nominal values.

Flow %	70	80	90	100	110	120	130
Correction in °C on real temperature of air intake of outdoor coil	5	3	1.5	0	-1	-2	-2.5

Correcting factors for the heating capacities

Indoor air intake temperature, °C DB	Outdoor air intake temperature, °C WB				
	14	10	6	0	-8
23	1.20	1.04	0.96	0.77	0.58
20	1.25	1.10	1.00	0.80	0.69
17	1.30	1.13	1.04	0.83	0.63

Correction of the real temperature of intake air to the outdoor unit coil for flows that differ from the nominal values.

Flow %	70	80	90	100	110	120	130
Correction in °C on real temperature of air intake of outdoor coil	-2	-1.5	-0.5	0	0.5	1	1.2

Nominal flows

The cooling and heating capacities that appear in the corresponding tables are valid for the following nominal flows:

Model	Nominal flow indoor fan m^3/h	Nominal pressure available Pa	Nominal flow outdoor fan m^3/h	Nominal pressure available Pa
RTH-07K	1970	25	2 380	50
RTH-10K	2 430	37	3 450	50
RTH-15K	4 030	50	4 270	50
RTH-20K	4 485	50	5 250	50
RTH-25K	5 000	62	5 250	50
RTH-30K	5 850	62	6 400	50

For other flows, apply the correcting factors of the corresponding table.

Sensible cooling capacities

Model	Dry temperature, outdoor air °C (DB)	Humid temperature, air intake, °C (WB)	Total capacity	Sensible capacity (W)				Compressor absorbed power
				Dry intake air temperature to coil, °C (DB)				
				22	24	27	29	
			W	W	W	W	W	kW
RTH-07K	25	22	8 280	2 477	3 581	5 238	6 344	2.27
		19	7 452	3 861	4 966	6 622	7 452	2.38
		17	6 900	5 323	6 248	6 900	6 900	2.49
	35	22	7 659	2 272	3 376	5 033	6 137	2.57
		19	6 900	3 662	4 766	6 423	6 900	2.71
		17	6 348	4 590	5 694	6 348	6 348	2.84
	45	22	6 900	2 043	3 147	4 804	5 908	2.98
		19	6 210	3 433	4 538	6 194	6 210	3.11
		17	5 658	4 833	5 658	5 658	5 658	3.25
RTH-10K	25	22	11 280	3 382	4 857	7 069	8 546	2.72
		19	10 152	5 230	6 705	8 917	10 152	2.85
		17	9 400	7 183	8 658	9 400	9 400	2.97
	35	22	10 434	3 101	4 576	6 789	8 264	3.07
		19	9 400	4 957	6 432	8 644	9 400	3.23
		17	8 648	6 457	7 932	8 648	8 648	3.39
	45	22	9 400	2 788	4 263	6 476	7 951	3.56
		19	8 460	4 645	6 119	8 332	8 460	3.72
		17	7 708	6 513	7 708	7 708	7 708	3.88
RTH-15K	25	22	16 800	4 985	7 399	11 020	13 437	3.99
		19	15 120	8 017	10 431	14 052	15 120	4.18
		17	14 000	11 205	13 619	14 000	14 000	4.37
	35	22	15 540	4 573	6 988	10 609	13 023	4.52
		19	14 000	7 616	10 030	13 651	14 000	4.75
		17	12 880	10 076	12 490	12 880	12 880	4.99
	45	22	14 000	4 114	6 528	10 149	12 563	5.23
		19	12 600	7 158	9 572	12 600	12 600	5.47
		17	11 480	10 220	11 480	11 480	11 480	5.70

Sensible cooling capacities

Model	Dry temperature, outdoor air °C (DB)	Humid temperature, air intake, °C (WB)	Total capacity	Sensible capacity (W)				Compressor absorbed power
				Dry intake air temperature to coil, °C (DB)				
				22	24	27	29	
			W	W	W	W	W	kW
RTH-20K	25	22	21 600	6 503	9 230	13 320	16 050	4.39
		19	19 440	9 915	12 641	16 731	19 440	4.60
		17	18 000	13 530	16 257	18 000	18 000	4.81
	35	22	19 980	5 962	8 689	12 778	15 505	4.97
		19	18 000	9 389	12 115	16 205	18 000	5.23
		17	16 560	12 147	14 873	16 560	16 560	5.49
	45	22	18 000	5 359	8 086	12 175	14 902	5.75
		19	16 200	8 788	11 514	15 604	16 200	6.02
		17	14 760	12 241	14 760	14 760	14 760	6.28
RTH-25K	25	22	24 240	7 366	10 202	14 455	17 295	6.63
		19	21 816	10 903	13 739	17 992	20 833	6.95
		17	20 200	14 673	17 509	20 200	20 200	7.26
	35	22	22 422	6 749	9 585	13 838	16 674	7.50
		19	20 200	10 305	13 141	17 394	20 200	7.90
		17	18 584	12 596	15 432	18 584	18 584	8.29
	45	22	20 200	6 063	8 899	13 152	15 988	8.69
		19	18 180	9 622	12 458	16 711	18 180	9.08
		17	16 564	13 209	16 044	16 564	16 564	9.48
RTH-30K	25	22	32 400	9 907	13 518	18 934	22 550	7.77
		19	29 160	15 524	19 135	24 551	28 169	8.14
		17	27 000	19 209	22 820	27 000	27 700	8.51
	35	22	29 970	9 074	12 685	18 101	21 712	8.79
		19	27 000	14 700	18 311	23 727	27 000	9.25
		17	24 840	17 274	20 884	24 840	24 840	9.72
	45	22	27 000	8 148	11 759	17 176	20 787	10.18
		19	24 300	13 761	17 372	22 788	24 300	10.64
		17	22 140	17 237	20 848	22 140	22 140	11.10

Indoor fan services

Model	Available static pressure		Air flow		Absorbed power
	mm WG	Pa	m^3/h	m^3/s	W
RTH-07K	8	78.4	1 615	0.45	395
	6	58.8	1 760	0.49	403
	4	39.2	1 865	0.52	410
	2	19.6	2 010	0.56	423
	0	0	2 120	0.59	433
RTH-10K	10	98	2 100	0.58	447
	8	78.4	2 220	0.61	455
	6	58.8	2 300	0.64	373
	4	39.2	2 410	0.67	480
	2	19.6	2 530	0.70	500
	0	0	2 645	0.73	518
RTH-15K	12	117.6	3 300	0.92	969
	10	98	3 600	1.00	990
	8	78.4	3 790	1.05	1018
	6	58.8	4 000	1.11	1055
	4	39.2	4 070	1.13	1078
	2	19.6	4 170	1.16	1087
	0	0	4 190	1.15	1 100
RTH-20K	20	196	3 620	1	900
	16	156.8	4 015	1.12	980
	12	117.6	4 305	1.96	1 050
	10	98.0	4 360	1.21	1 080
	8	78.4	4 380	1.22	1 110
	6	58.8	4 455	1.24	1 140
	4	39.2	4 525	1.26	1 170
	2	19.6	4 610	1.28	1 205
	0	0	4 710	1.31	1 240
RTH-25K	16	156.8	3 980	1.10	940
	12	117.6	4 400	1.22	1 050
	10	98	4 520	1.25	1 100
	8	78.4	4 750	1.31	1 160
	6.3	61.7	4 900	1.36	1 220
	4	39.2	5 180	1.43	1 290
	2	19.6	5 420	1.50	1 345
	0	0	5 500	1.52	1 390
RTH-30K	16	156.8	4 700	1.30	1 220
	12	117.6	5 200	1.44	1 365
	10	98	5 350	1.48	1 430
	6.3	61.7	5 800	1.61	1 585
	4	39.2	6 050	1.68	1 680
	2	19.6	6 280	1.74	1 750
	0	0	6 400	1.77	1 810

Outdoor fan services

Model	Available static pressure		Air flow		Absorbed power
	mm WG	Pa	m^3/h	m^3/s	W
RTH-07K	10	98	2 020	0.56	445
	8	78.4	2 190	0.61	460
	6	58.8	2 315	0.64	470
	4	39.2	2 430	0.68	486
	2	19.6	2550	0.71	500
	0	0	2665	0.74	514
RTH-10K	10	98	3 180	0.88	900
	8	78.4	3 310	0.92	930
	6	58.8	3 410	0.95	950
	4	39.2	3 510	0.98	980
	2	19.6	3 625	1.00	1 003
	0	0	3 735	1.04	1 033
RTH-15K	10	98.0	3 970	1.10	1000
	8	78.4	4 170	1.16	1070
	6	58.8	4 320	1.20	1142
	4	39.2	4 425	1.23	1180
	2	19.6	4 520	1.26	1205
	0	0.0	4 635	1.29	1235
RTH-20K	16	156.8	4 410	1.23	990
	10	98.0	4 970	1.38	1 130
	8	78.2	5 100	1.42	1 170
	6	58.7	5 210	1.45	1 205
	4	39.1	5 317	1.48	1 235
	2	19.6	5 428	1.51	1 275
	0	0.0	5 525	1.54	1 305
RTH-25K	14	137.2	4 500	1.25	1 130
	10	98	4 800	1.33	1 200
	8	78.4	4 910	1.36	1 250
	6	58.8	5 050	1.40	1 275
	5.1	50	5 250	1.44	1 295
	4	39.2	5 270	1.45	1 320
	2	19.6	5 350	1.48	1 335
	0	0	5 450	1.51	1 388
RTH-30K	14	137.2	5 490	1.52	1 355
	10	98	5 980	1.66	1 440
	8	78.4	6 200	1.72	1 500
	5.1	50	6 400	1.77	1 555
	4	39.2	6 480	1.8	1 585
	2	19.6	6 600	1.83	1 600
	0	0	6 700	1.86	1 665

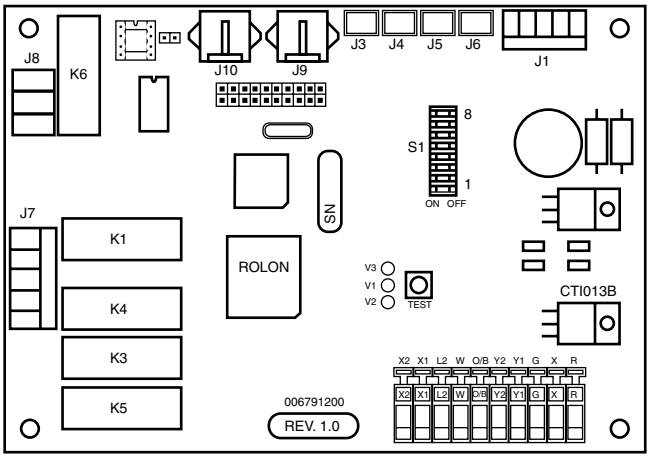
General characteristics

Model	Power supply V.ph.Hz.		Consumption A				Minimum power supply cable section (2)	Automatic switch (K curve) (1)
	Compressor	Fan	Compressor		Outdoor fan	Indoor fan		
		Out. - Ind.	Start	Nominal	Run	Run	mm^2	A
RTH-07K	230.1.50		72	13	2	1.9	4	25
RTH-10K	230.3.50		90	9.6	4.5	2	4	25
	400.3.50	230.1.50	45	5.5	4.5	2	2,5	20
RTH-15K	230.3.50		124	13.1	5.4	5.1	6	32
	400.3.50		62	7.5	5.4	5.1	4	25
RTH-20K	230.3.50	230.3.50	165	16.7	4.9	5.1	10	40
	400.3.50	400.3.50	79	9.6	2.8	2.9	4	25
RTH-25K	230.3.50	230.3.50	170	22.5	5.1	4.9	10	40
	400.3.50	400.3.50	77	12.9	2.9	2.8	4	25
RTH-30K	230.3.50	230.3.50	215	26.1	7.2	4.6	10	50
	400.3.50	400.3.50	80	15	4.1	2.6	6	32

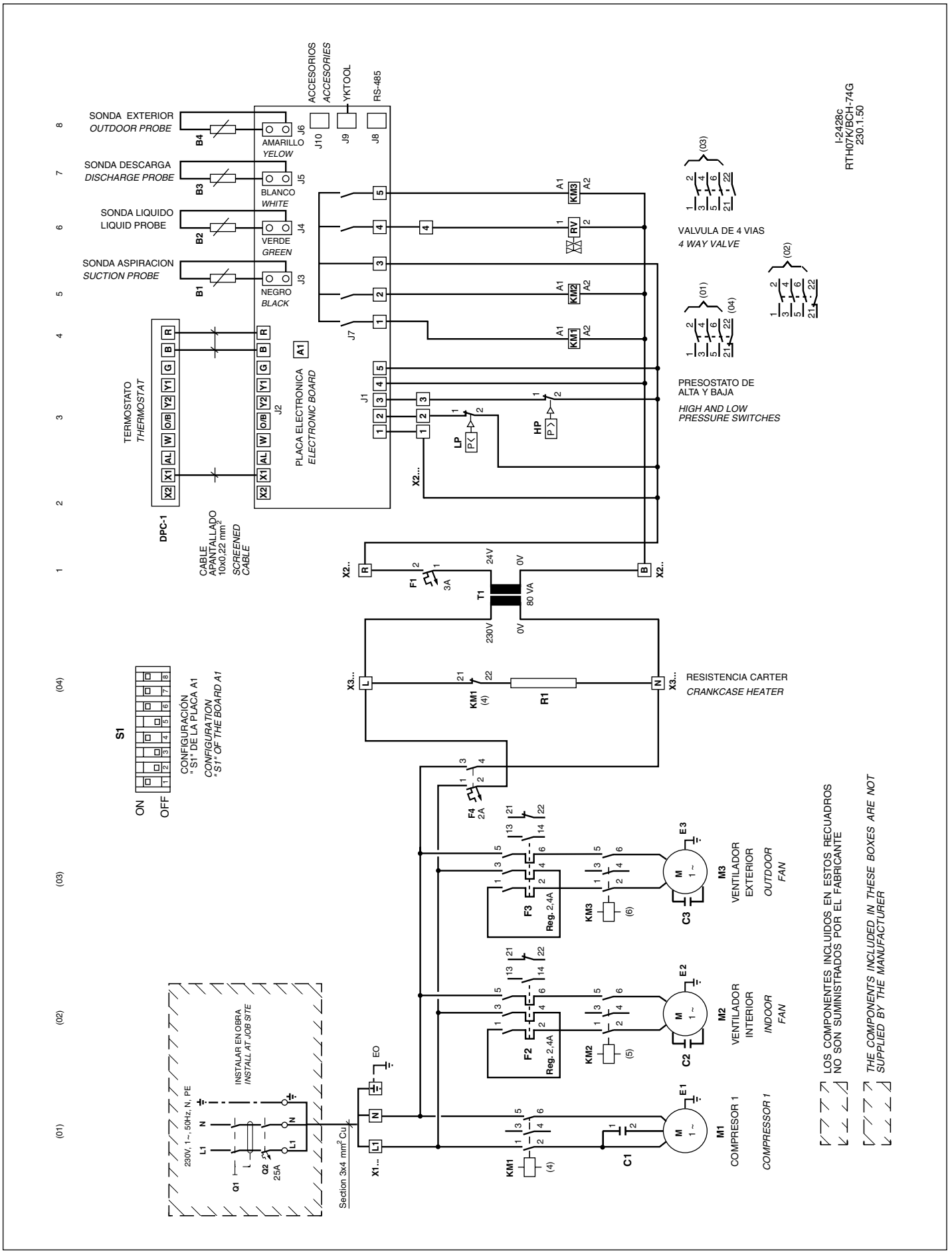
Important: Automatic switch dimensioning and power supply and operating line sections are orientative and should be corrected in accordance with conditions at job site, length between units and legislation in force.
Notes: 1.- K curve (DIN, VDE 0660-104). 2.- Based on copper conductors.

Control board

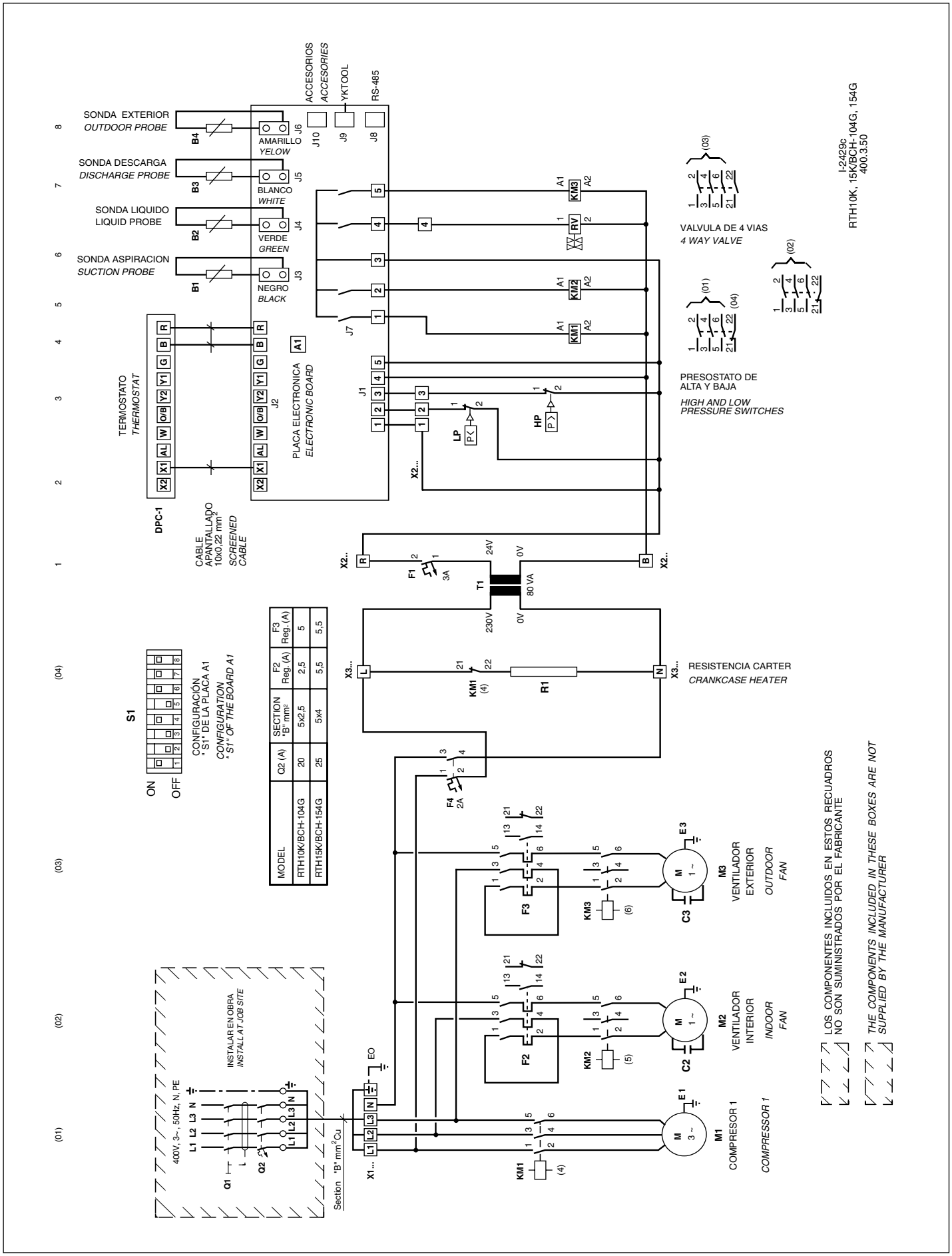
The control board of these units is common to both the cool only as well as the heat pump units. Equipment control is carried out by means of software that is resident in the board. The System operates in accordance with the position of the microswitches in the main board. There are also variations in the control algorithm, depending upon the accessories the board detects installed in the equipment.
For further details please see Technical Information of the control board.



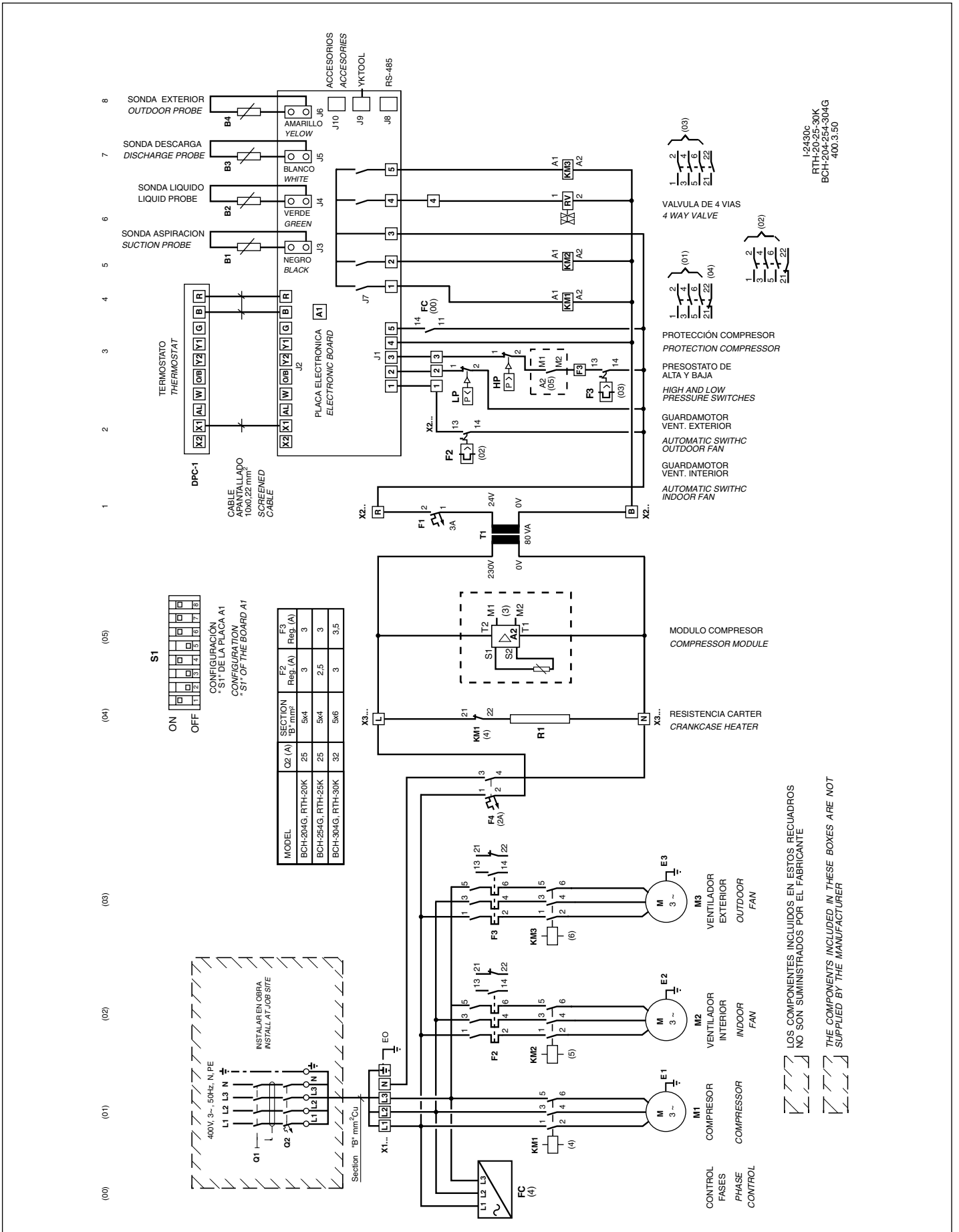
Wiring diagram, RTH-07K, 230.1.50



Wiring diagram, RTH-10-15K, 400.3.50



Wiring diagram, RTH-20-25-30K, 400.3.50



Configuration of switches

The microswitches establish the following configurations:

Number	Status	Meaning
1 / 2	OFF/OFF	Ignore SW, programs communication route
	ON/OFF	Defrost period 30'
	OFF/ON	Defrost period 60'
	ON/ON	Defrost period 90'
3	ON	Crossed coils
	OFF	Independent coils
4	ON	Compressor delay 2'
	OFF	Compressor delay 5'
5	ON	Cool mode
	OFF	Heat pump mode
6	ON	4-way valve active in heat
	OFF	4-way valve active in cool
7	ON	Receives signal B from thermostat (active in heat)
	OFF	Receives signal O from thermostat (active in cool)
8	ON	Fan on during defrost
	OFF	Fan off during defrost

It is necessary to disconnect power supply to the board to read the new configuration.

Failures (lockouts)

Failures or lockouts are indicated by the red led on the YKLON board. If no failure is present, this led remains permanently off. When a failure takes place, this led flashes in two constant sequences. The first indicates the circuit involved: one flash for compressor one two for compressor two, three for compressor three and four for accessories, followed by a short pause. The second series indicates the element or situation causing the lockout.

Table of lockouts (red led)

Flashes		Meaning
1 or 3	1	Discharge temperature exceeded
	2	High pressure switch, outdoor fan thermal switch or compressor module thermal switch
	3	Low pressure switch
	4	Indoor fan thermal switch
	5	Repeated start-ups in cool or suction temperature <-25°C
4	1	Failure of gas control 1 or heater 1
	2	Failure of gas control 2 or heater 2
	3	Failure heater 3 phase
	4	Failure heater 4 phase
	5	Failure in economiser or hot water coil (outdoor impulse probe, water return)
	6	Detection of smke or high temperature

Incidents

Incidents are indicated by the green led on the YKLON board. If there is no failure present, this led flashes at a constant frequency. When an incident occurs, the led flashes in three constant sequences. The first series indicates the circuit involved: one flsh for compressor one, two for compressor two, three for compressor three and four for incidences, followed by a short pause.
The second and third series indicate direct cause of the incicent.

Table of incidents (green led)

Flashes			Type	Incident
1 or 3	1	1	Probes	Discharge probe open or short circuited
		2		Liquid probe open or short circuited
		3		Suction probe open or short circuited
	2	1	Temperature	Repeated defrosts
		2		Discharge temperature not recovered
4	1	1	Probes	Impulse probe open or short circuited
		2		Return probe open or short circuited
		3		Outdoor probe open or short circuited
		4		Water probe open or short circuited
		5		Error on enthalpy probes
	2	1	Thermostat	Signal Y1 or Y2 without signal G
		2		Signal W without signal B
		3		Signal W without signal G
		4		Signal Y2 without signal Y1
	3	1	Auxiliary heat	Electric heater thermal switch 1
		2		Electric heater thermal switch 2
		3		Electric heater thermal switch 3
		4		Electric heater thermal switch 4
	4	1	Temperature	Water coil temperature not recovered
		2		Outdoor temperature too low
		3		Water coil in antifreeze operation
		4		Impulse temperature over 80°C
	5	1	Others	ID of transceiver unknown
		2		At least one accessory not found
		3		Call forair quality
		4		Dirty filters
		5		Presence sensor in unoccupied

Test button

- Pressing until the green led goes on shortens certain timings and resets any lockout detected.
- Pressing until the red led goes on identifies the optional accessories and probes connected to the board.
- If there is communication between units, pressing this button sends the Neuron ID by means of the LonWorks network.

DPC-1 thermostat

When a failure is detected and there is communication, the thermostat indicates, in al alternative way, the time and failure in accordance with the failure table of the unit.
Also indicated other thermostat incidents.

Type	No. thermostats		Incidents
Thermostat	9	1	Ambient probe open or short circuited
	9	2	Internal probe not calibrated
	9	3	Communication error
	9	4	Failure with terminal **AL** connected
	9	5	Digital probe S5 not detected
	9	6	Digital probe S6 not detected
	9	7	Digital probe S7 not detected
	9	8	Digital probe S8 not detected
	9	9	Outdoor digital probe not detected

I-2367b

Accessories

Duct electric heaters for RTC/RTH-07 to 30

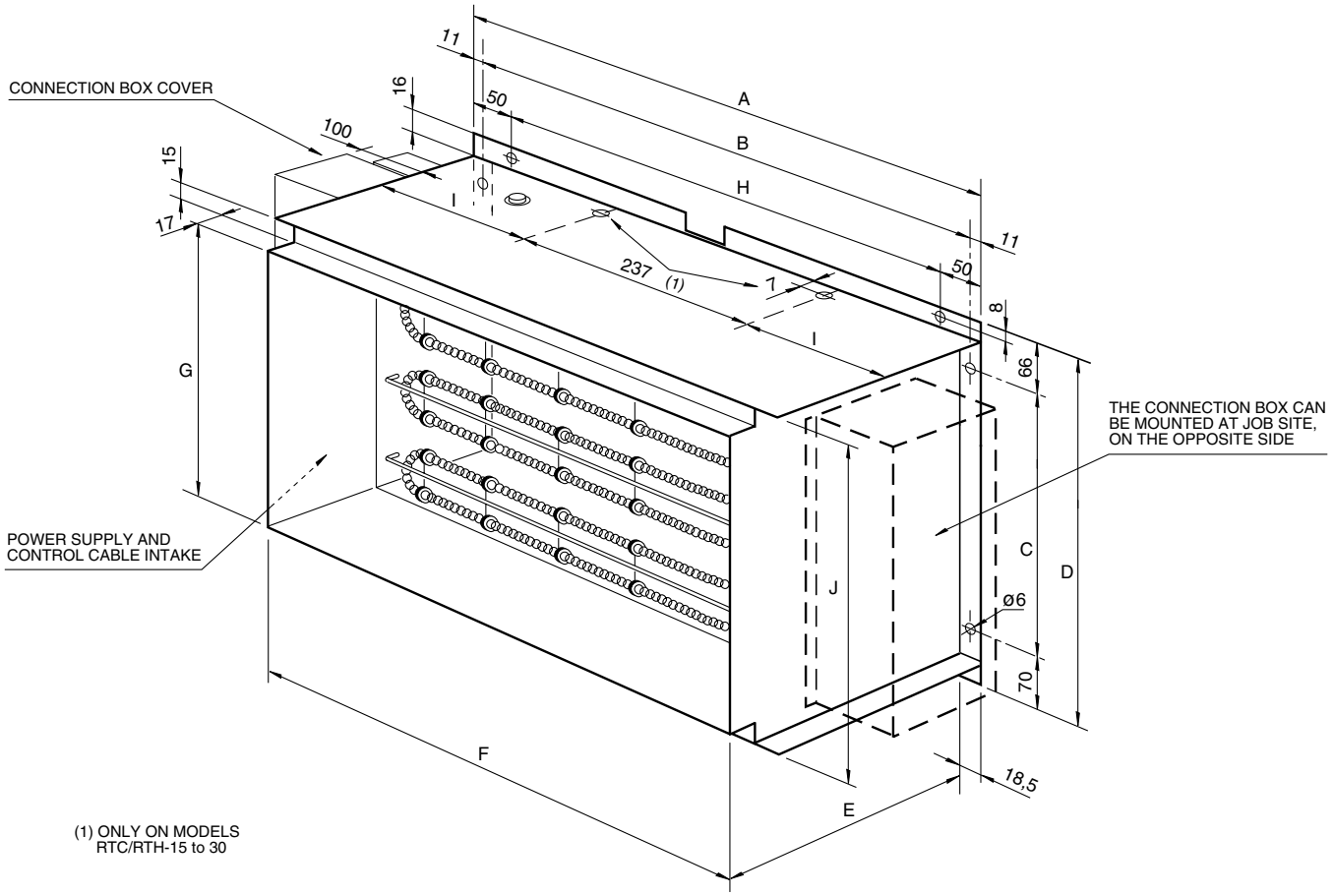
These duct electric heaters are designed to provide backup heat in the RTH units, and complementary heat in the RTC units. On and off cycles are governed by the air conditioning equipment control system. These should be fitted directly to the impulse outlet of the indoor section of the unit.

Technical specifications

These duct electric heaters include the following components:

- Galvanised sheet casing, covers and supports.
- Exposed nickel-chrome wire electric resistance mounted on steatite supports.
- Power supply contactor with a 230 V coil on one-phase heaters, and a 400 V coil on three-phase heaters.
- Two thermal switches located at the top of the heater. The first, with automatic reset, disconnects the heater when a temperature of 77°C is reached. The second, accessible externally and with manual reset, disconnects the heater when a temperature of 138°C is reached.
- Interlock with the indoor fan thermal relay on models RTC/RTH-20, 25 and 30. The control system of the unit does not allow operation of the heater when the indoor fan thermal relay fails.
- Plug-in connector for interconnection between the control panel of the air conditioning unit and the heater.
- PVC gasket for heater-air conditioner joint and self-threading screws for fastening the accessory.

General dimensions mm



Model	A	B	C	D	E	F	G	H	I	J
RTC/RTH-07 and 10K	400	378	285	385	275	362	320	300	-	353
RTC/RTH-15 to 30K	527	505	310	447	350	490	380	427	145	412

General characteristics

Model	Power supply	Power	Consumption	Stages	Automatic switch (1) Q1	Power supply cable section (2)	Front furface	Pressure drop (3)
	V.ph.Hz	kW	A		A	mm^2	m^2	Pa
RTC/RTH-07	230.1.50	5	22	1	25	4	0.12	6
RTC/RTH-07 & 10	400.3.50	5	8	1	10	1.5	0.12	6
RTC/RTH-07 & 10	400.3.50	10	15	1	20	2.5	0.12	6
RTC/RTH-15 to 30	400.3.50	5	8	1	10	1.5	0.12	6
RTC/RTH-15 to 30	400.3.50	10	15	1	20	2.5	0.19	15
RTC/RTH-15 to 30	400.3.50	15	22	1	25	4	0.19	15

Notes: 1.- K curve (DIN, VDE 0660-104). 2.- Based on copper conductors. 3.- Considered the nominal air flow of the indoor section.

Dimensions with packing and weights

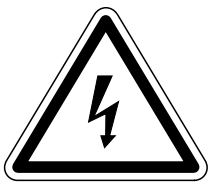
Heater model	Dimensions with packing mm			Weight kg
	Height	Width	Depth	
RTC/RTH-07 and 10	360	513	293	15
RTC/RTH-15 and 30	440	640	370	20

Installation

Install the electric heater in the RTC/RTH unit as follows:

1) In all cases, the **established national regulations** should be followed.
2) Disconnect the power supply to the air conditioning unit.
3) Install the magnetothermal and differential switches for the heater in accordance with the table of General Characteristics and the Wiring Diagrams.
4) Remove the access panels of the RTC/RTH unit control box.
5) Unpack the accessory, opening the top of the box. Make sure the heater assembly has not been damaged during transportation. Check the ceramic insulation and that the heater wires are not in contact with any metal parts.
6) Fit the electric heater in the mouth of the indoor fan panel housing and drill eight 3 diameter holes for fastening. Check to make sure that the reset push button of the F9 thermal switch is accessible and at the top. See Heater Location diagram.
7) Fasten the PVC gasket, supplied with the accessory, to the frame surface of the heater adjacent to the indoor fan panel.
8) Fasten the heater to the panel with the screws supplied.
9) Remove the electrical connections cover of the heater and connect the power supply cables to connecting strip X1. Connect the control cable supplied, between connector J1 of the A3 Auxiliary Resistance board, and connector J10 of the A1 control board of the air conditioning unit.
10) The installer should complete the electric circuit of the heater by fitting an air flow control F14 at the most convenient point of the ducts so as to make sure the heater operates only when there is sufficient air flow.
11) Connect power supply to the RTC/RTH unit and the heater.
12) To configure the accessory, press the test button of control board A1 for over 2 seconds, until the red led on the board goes on. Configuration will be complete when said led goes off.
13) Check operation of the heater by selecting the Emergency Heat mode at the ambient thermostat of the air conditioning unit.
14) Assemble the electrical box covers of the heater and the RTC/RTH unit.

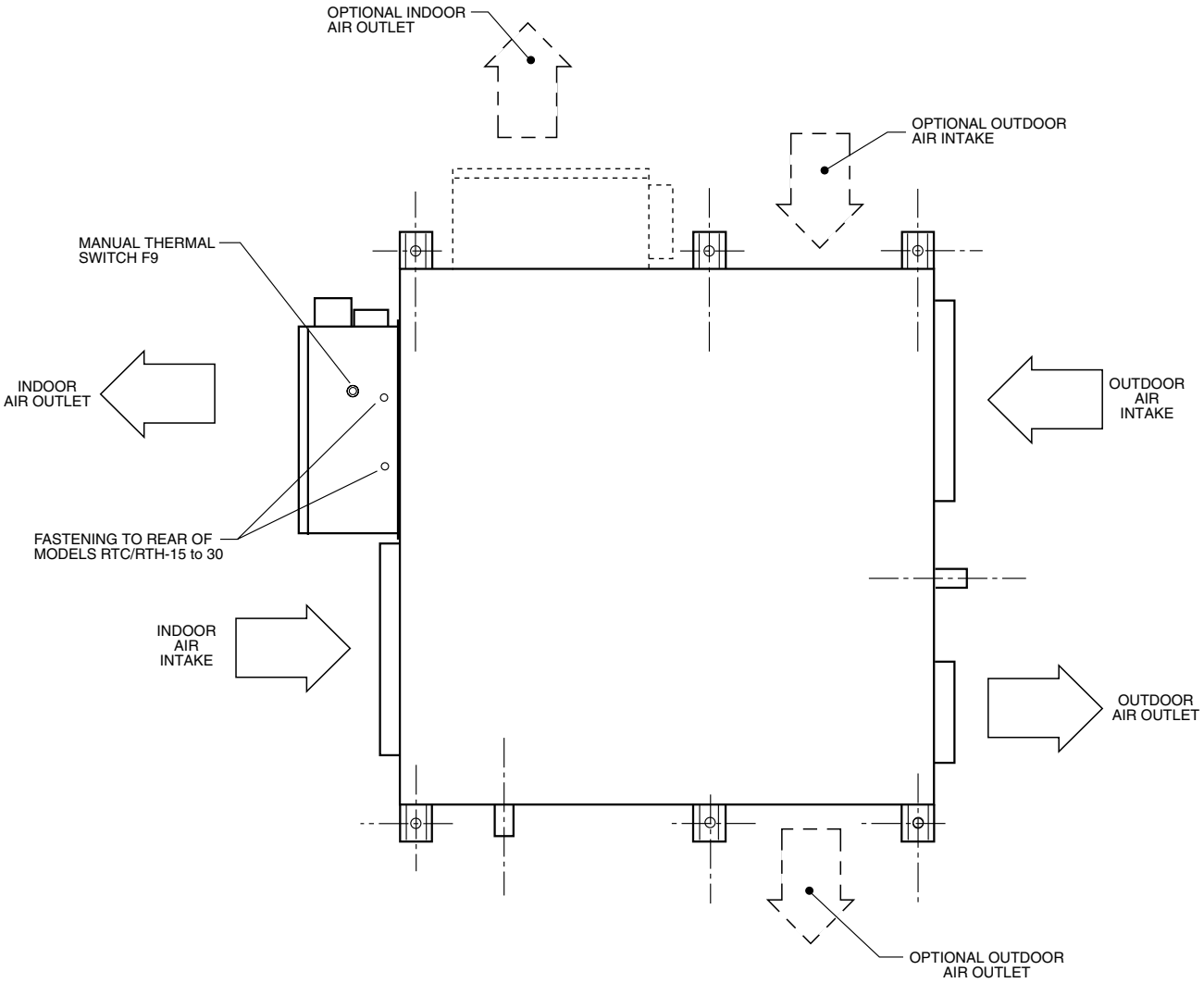
Note: Should an incorrect response of the system take place, see the Operation section of the RTC/RTH Installation Instructions. There you will find the control functions of the A1 electronic board on the heater, as well as its configuration, incidents identification, etc.

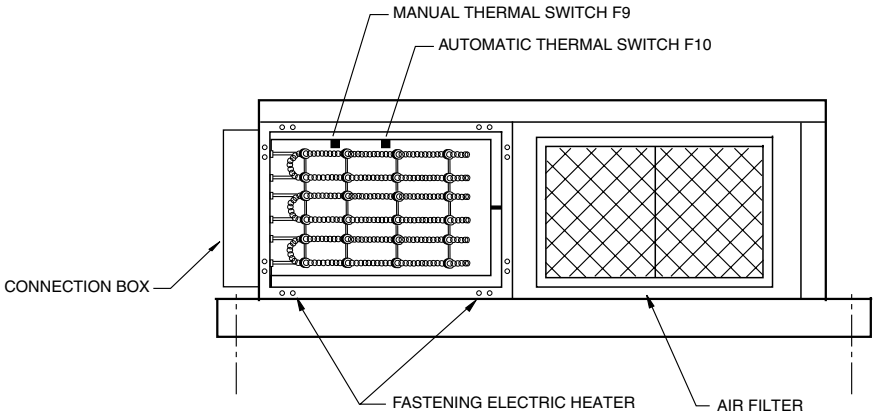


Loose cables can cause overheating of the terminals or incorrect operation of the unit. Fire hazards may also arise. Therefore, make sure all cables are connected tightly.

Heater location

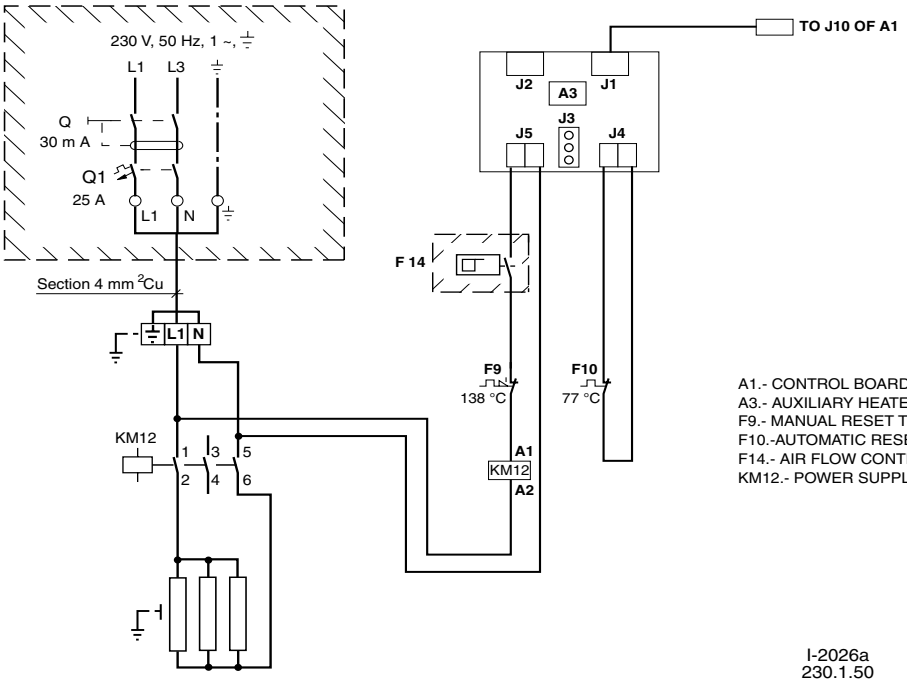
RTC/RTH - 07 to 30





Wiring diagram

Heater 5kW, 230.1.50
RTC/RTH-07 to 30



A1.- CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY - 1
F9.- MANUAL RESET THERMAL SWITCH, 138°C
F10.-AUTOMATIC RESET THERMAL SWITCH, 77°C
F14.- AIR FLOW CONTROL
KM12.- POWER SUPPLY CONTACTOR, 230 VAC COIL

I-2026a
230.1.50

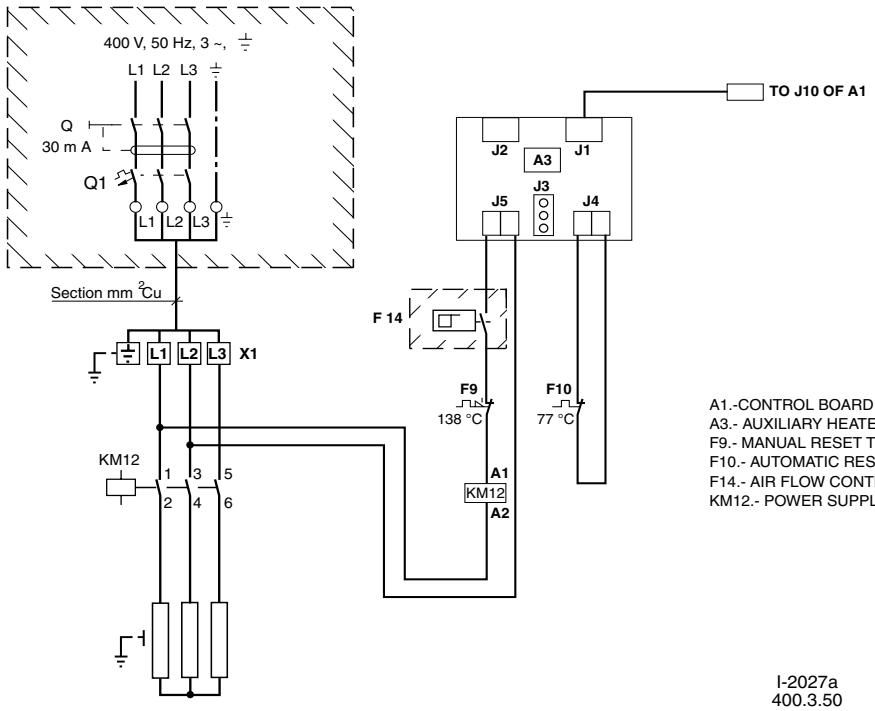
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

IMPORTANT: THE SIZE CIRCUIT BREAKER AND THE CROSS-SECTION OF THE SUPPLY AND CONTROL LINES ARE ONLY AS A GUIDE AND SHOULD BE CORRECTED IN ACCORDANCE WITH THE CONDITIONS AT THE JOBSITE, DISTANCE BETWEEN UNITS, AND CURRENT LEGISLATION.

Wiring diagram

Heater 5, 10, 15kW, 400.3.50
RTC/RTH-07 to 30

POWER kW	AUTOMATIC SWITCH Q1	MINIMUM CABLE SECTION mm^2
5	10	1,5
10	20	2,5
15	25	4



A1.-CONTROL BOARD
A3.- AUXILIARY HEATER ACCESSORY - 1
F9.- MANUAL RESET THERMAL SWITCH 138 °C
F10.- AUTOMATIC RESET THERMAL SWITCH 77 °C
F14.- AIR FLOW CONTROL
KM12.- POWER SUPPLY CONTACTOR 400 VAC COIL

I-2027a
400.3.50

THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

IMPORTANT: THE SIZE OF THE CIRCUIT BREAKER AND THE CROSS-SECTION OF THE SUPPLY AND CONTROL LINES ARE ONLY AS A GUIDE AND SHOULD BE CORRECTED IN ACCORDANCE WITH THE CONDITIONS AT THE JOBSITE, DISTANCE BETWEEN UNITS, AND CURRENT LEGISLATION.

Tray heaters

General Information

The tray heater accessory is designed for heat pump units with one and two compressors. The purpose of this accessory is to prevent freezing of the water in the tray and the formation of ice inside the outdoor coil. A flexible cable heater is fitted between the bottom of the outdoor coil and the drain tray. There are two connecting accessories: tray heater 1 for units with one single compressor, and tray heater 2 related to the board of the second compressor. These heaters are enabled only if the following conditions arise:

Condition 1. The operating mode of the air conditioning unit is in heat.

Condition 2. The compressor is in operation.

Condition 3. The temperature detected by the liquid probe is below -2° C.

The heater is disconnected when the temperature detected by the liquid probe is above -2° C.

Technical Specifications

This accessory includes the following components:

- Tray heater connecting board. If the unit is equipped with 2 compressors, two boards are provided; tray heater 1 and tray 2.
- 300 mm. long cable for interconnecting the accessory board. Accessory communication cable.
- Cable for connecting to 230 VAC of the heating cable.
- Heating cable, ref. AKO-71035 (35W/m).
- Fastening flanges.

Assembly

Install on the electric panel of the outdoor unit and fasten the board of the accessory by means of the holes drilled next to the electrical connections.

Installation

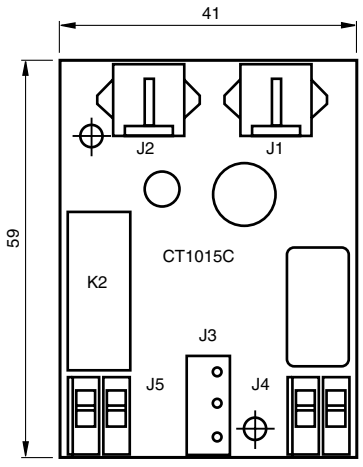
Install the tray heater accessory as follows:

1. Disconnect power supply to the outdoor unit.
2. Remove the control panel electrical connection covers of the unit.
3. Remove the access covers to the outdoor unit coil.
4. Install the tray heater along the condenser within the tray. Prevent the end protection and the connection from being in contact with the tray of the unit (see installation of the electric heater).
5. Avoid the cable for connecting to 230 VAC from being in contact with the tray of the unit (see installation of the electric heater).
6. Install the board of the accessory in the outdoor unit by means of the holes drilled next to the electrical connections. Connect the hose cables to 230 VAC. Then connect the operating cable provided, between connector J1 on the auxiliary board A3 and connector J10 on the control board A1 of the air conditioning unit (length of the cable 300 mm.). If the unit is equipped with 2 compressors, connect to connector J2 or J8 on A2.
7. Re-establish power supply to the air conditioning unit.
8. To configure this accessory, press the test button on control boar A1 for over 2 seconds, until the red LED on the board goes on. Configuration will be completed once this LED goes off.
9. Check operation of the accessory by selecting heat mode on the ambient control thermostat of the air conditioning unit. Have the outdoor fan go off so that the liquid probe may detect a temperature of below -2° C and the tray heater may be enabled. Once the temperature detected by the liquid probe rises to over 2° C, the heater is turned off.
10. Reassemble the air conditioning unit covers.

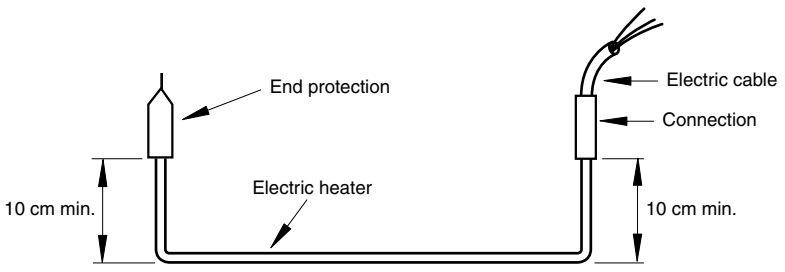
Note: Should the system produce an incorrect response, please see YKloon Board Technical Information.

General Dimensions mm.

CODE	DESCRIPTION
006791203	Tray heater 1
006791206	Tray heater 2

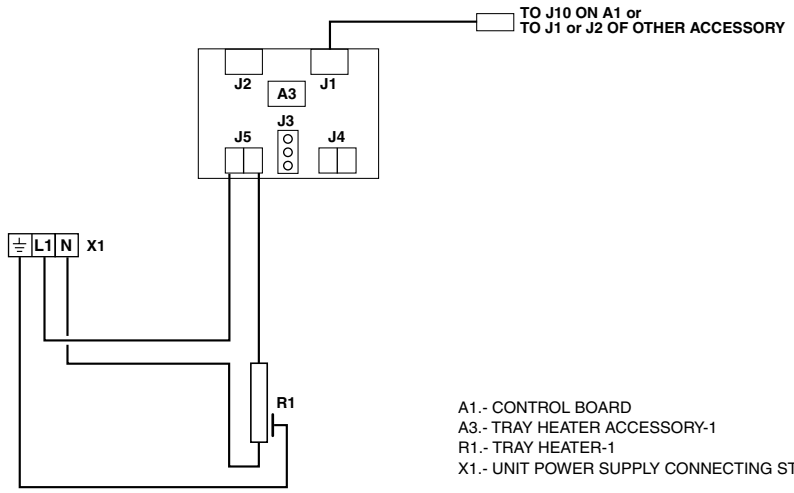


INSTALLATION OF TRAY HEATER



Wiring Diagrams

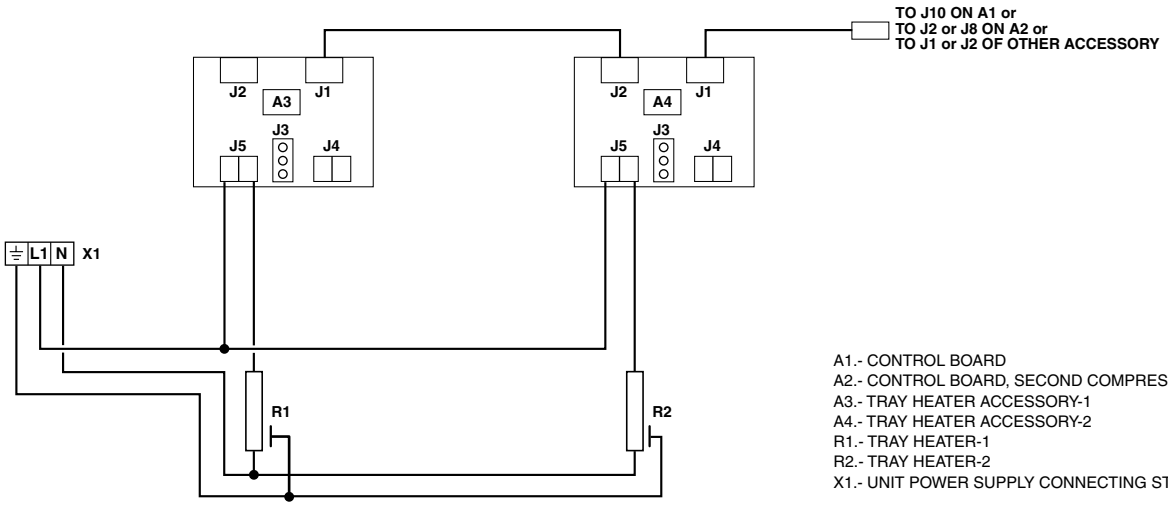
Tray heater accessory 1 - 230.1.50



A1.- CONTROL BOARD
A3.- TRAY HEATER ACCESSORY-1
R1.- TRAY HEATER-1
X1.- UNIT POWER SUPPLY CONNECTING STRIP

I-2215b
230.1.50

Tray heater accessory 2 - 230.1.50



A1.- CONTROL BOARD
A2.- CONTROL BOARD, SECOND COMPRESSOR
A3.- TRAY HEATER ACCESSORY-1
A4.- TRAY HEATER ACCESSORY-2
R1.- TRAY HEATER-1
R2.- TRAY HEATER-2
X1.- UNIT POWER SUPPLY CONNECTING STRIP

I-2216b
230.1.50

JOHNSON CONTROLS

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