
ROOMTOP

Horizontal Air/Air Unit

TECHNICAL GUIDE
Cooling Only Air Conditioner
Models RTC 07 to 30B

R-22



RTC



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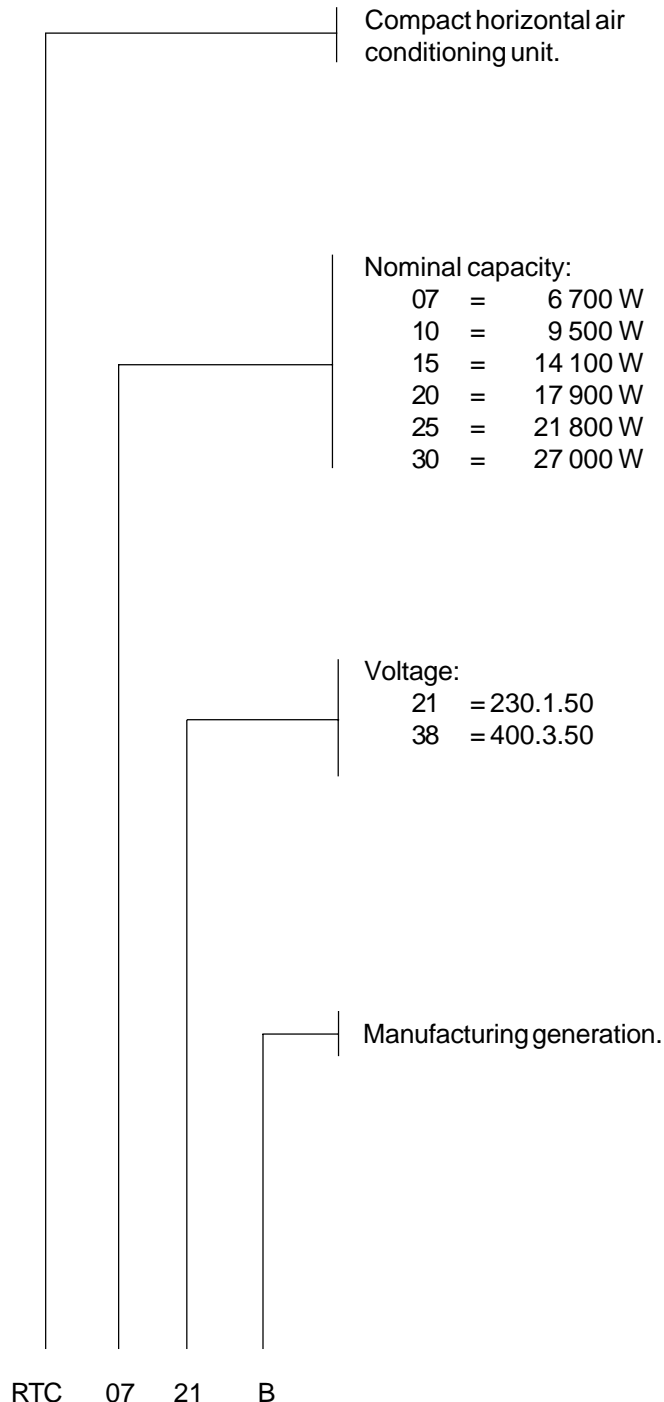
General information

General description

The RTC-B model air conditioners are packaged compact units, condensed by air.

They can be installed either indoors or outdoors, and the fans are of the centrifugal type, and therefore allow connection to ductwork.

Nomenclature



Control

To achieve maximum savings in energy, a correct operation of the equipment, avoid breakdowns and prolong the service life of same, it has the following functions:

Safety features of the compressor

A temperature sensor protects the compressor against very high discharge temperatures. It is also activated in the case of refrigerant leaks, or insufficient air flow through the condensing coil.

Another temperature sensor protects the compressor against very low suction temperatures in the cooling cycle.

A set of pressure switches turns the compressor off when the discharge pressure is too high, or suction pressure is too low.

Start timer

Avoids continuous starting and stopping. After a stop, the unit does not start-up again until after 2 or 5 minutes, adjustable at will.

Thermostat

Operation is controlled by means of a thermostat that allows the following functions:

1- Adjust desired temperature.

2- Have cooling or heating, as needed (optional electric heater).

3- Adjust continuous or intermittent operation of the indoor fan, in accordance with compressor operation.

Technical specifications

Mechanical specifications

Compressor

Of the vertical hermetic type, mounted on shock absorbers and with internal motor protection and an electric heater for heating the oil.

Coils

Made of copper tubing and aluminium fins. Located within the cabinet and completely protected against damage during transportation or installation.

Indoor and outdoor fans

Of the centrifugal type with directly fitted motor or belt drive. These fans have sufficient available pressure for the installation of optional ducts and accessories.

Casing

Made of galvanized aluminium steel sheeting and finished with oven-polymerized powdered paint, for outdoor installation.

Electric heater (optional)

Of the exposed wire type to allow fast heat dispersion, avoiding temperature inertia that could affect the components. Equipped with a contactor and thermal protectors: automatic and manual reset.

Physical data

Model		RTC-07B	RTC-10B	RTC-15B	RTC-20B	RTC-25B	RTC-30B	
Compressor	Quantity	1						
	Nominal power	kW	2.7	3.2	4.7	5.2	7.9	9.2
	Power supply	V.ph.Hz.	230.1.50	400.3.50	400.3.50	400.3.50	400.3.50	400.3.50
Outdoor coil	Quantity	1						
	Tubing depth x height		5 x 18	5 x 21	5 x 21	5 x 21	5 x 24	5 x 24
	Fins per inch		12	12	12	12	14	14
	Front area	m ²	0.32	0.41	0.51	0.65	0.71	0.87
	Tubing diameter	mm (inches)	9.52 (3/8")					
Indoor coil	Quantity	1						
	Tubing depth x height		3 x 18	4 x 21	4 x 21	4 x 21	3 x 24	4 x 24
	Fins per inch		12					
	Front area	m ²	0.22	0.25	0.37	0.47	0.61	0.73
	Tubing diameter	mm (inches)	9.52 (3/8")					
Outdoor fan motor	Quantity	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	400.3.50	400.3.50	400.3.50
Indoor fan motor	Quantity	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	400.3.50	400.3.50	400.3.50
Refrigerant charge R-22	kg	2.05	2.80	3.25	4.1	5.3	6.5	
Approximate nett weight	kg	154	180	214	265	345	405	
Approximate gross weight	kg	165	195	230	285	365	440	
Dimensions with standard packing	cm	114x120x61	119x125x69	135x141x69	167x161x69	176x180x78	181x216x78	

(1) Belt drive

Nominal capacities

Unit	Cooling capacity W	Consumption W
RTC-07B	6 700	3 600
RTC-10B	9 500	4 600
RTC-15B	14 100	6 900
RTC-20B	17 900	7 600
RTC-25B	21 800	10 400
RTC-30B	27 000	12 300

Test conditions

Voltage	Outdoor temp. °C		Indoor temp. °C	
	DB	WB	DB	WB
230 or 400	35	24	27	19

Correction factors

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

Indoor intake air temperature. °C WB	Outdoor air intake temperature. °C					
	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 intake temperatures DB to the evaporating coil 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 evaporating 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 to the condensing coil in °C, 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 to the outdoor coil	5	3	1.5	0	-1	-2	-2.5

Nominal flows

Model	Indoor fan, m³/h	Nominal pressure available Pa	Outdoor fan, m³/h	Nominal pressure available Pa
RTC-07B	1 970	25	2 380	50
RTC-10B	2 430	37	3 450	50
RTC-15B	4 000	50	4 350	50
RTC-20B	4 485	50	5 255	50
RTC-25B	5 000	62	5 200	50
RTC-30B	5 850	62	6 400	50

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

Sensible cooling capacities

Model	Temperature of air on to condenser °C (DB)	Temperature of air on to evaporator °C (WB)	Total capacity	Sensible capacity (W)				Compressor absorbed power
				Entering air temperature to coil, °C (DB)				
				22	24	27	29	
			W	W	W	W	W	kW
RTC-07B	25	22	8 040	2 397	3 502	5 158	6 264	2.27
		19	7 236	4 114	5 218	6 875	7 236	2.38
		17	6 700	5 243	6 348	6 700	6 700	2.49
	35	22	7 437	2 199	3 303	4 960	6 064	2.57
		19	6 700	3 916	5 021	6 677	6 700	2.71
		17	6 164	4 531	5 636	6 164	6 164	2.84
	45	22	6 700	1 978	3 082	4 739	5 843	2.98
		19	6 030	3 691	4 795	6 030	6 030	3.11
		17	5 494	4 769	5 494	5 494	5 494	3.25
RTC-10B	25	22	11 400	3 422	4 897	7 110	8 587	2.72
		19	10 260	5 715	7 190	9 403	10 260	2.85
		17	9 500	7 224	8 698	9 500	9 500	2.97
	35	22	10 545	3 138	4 613	6 825	8 300	3.07
		19	9 500	5 433	6 908	9 120	9 500	3.23
		17	8 740	6 489	7 964	8 740	8 740	3.39
	45	22	9 500	2 821	4 296	6 508	7 983	3.56
		19	8 550	5 111	6 586	8 550	8 550	3.72
		17	7 790	6 545	7 790	7 790	7 790	3.88
RTC-15B	25	22	16 920	4 991	7 562	11 417	13 991	3.99
		19	15 228	8 982	11 552	15 228	15 228	4.18
		17	14 100	11 613	14 100	14 100	14 100	4.37
	35	22	15 651	4 581	7 151	11 007	13 577	4.52
		19	14 100	8 573	11 143	14 100	14 100	4.75
		17	12 972	10 446	12 972	12 972	12 972	4.99
	45	22	14 100	4 122	6 692	10 548	13 119	5.23
		19	12 690	8 105	10 676	12 690	12 690	5.47
		17	11 562	10 628	11 562	11 562	11 562	5.70

Sensible cooling capacities

Model	Temperature of air on to condenser °C (DB)	Temperature of air on to evaporator °C (WB)	Total capacity	Sensible capacity (W)				Compressor absorbed power
				Entering air temperature to coil, °C (DB)				
				22	24	27	29	
			W	W	W	W	W	kW
RTC-20B	25	22	21 480	6 463	9 189	13 279	16 009	4.39
		19	19 332	10 702	13 429	17 519	19 332	4.60
		17	17 900	13 490	16 216	17 900	17 900	4.81
	35	22	19 869	5 925	8 652	12 742	15 468	4.97
		19	17 900	10 169	12 895	16 985	17 900	5.23
		17	16 468	12 115	14 841	16 468	16 468	5.49
	45	22	17 900	5 326	8 053	12 143	14 869	5.75
		19	16 110	9 559	12 286	16 110	16 110	6.02
		17	14 678	12 209	14 678	14 678	14 678	6.28
RTC-25B	25	22	26 040	7 986	10 822	15 075	17 915	6.63
		19	23 436	12 398	15 233	19 487	22 327	6.95
		17	21 700	15 291	18 126	21 700	21 700	7.26
	35	22	24 087	7 314	10 149	14 403	17 238	7.50
		19	21 700	11 732	14 568	18 821	21 657	7.90
		17	19 964	13 049	15 884	19 964	19 964	8.29
	45	22	21 700	6 566	9 402	13 655	16 491	8.69
		19	19 530	10 974	13 810	18 064	19 530	9.08
		17	17 794	13 699	16 535	17 794	17 794	9.48
RTC-30B	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	27 000	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 performance

Model	Available static pressure		Air flow		Absorbed power W
	mm WG	Pa	m³/h	m³/s	
RTC-07B	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
	RTC-10B	10	98	2 100	0.58
8		78.4	2 200	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
RTC-15B	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
RTC-20B	0	0	4 190	1.15	1 100
	20	196	3 620	1	900
	16	156.8	4 015	1.12	9 80
	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
RTC-25B	2	19.6	4 610	1.28	1 205
	0	0	4 710	1.31	1 240
	16	156.8	4 150	1.15	940
	12	117.6	4 600	1.27	1 050
	10	98	4 800	1.33	1 100
	8	78.4	4 975	1.38	1 160
	6.3	61.7	5 100	1.41	1 220
	4	39.2	5 330	1.48	1 290
RTC-30B	2	19.6	5 500	1.52	1 345
	0	0	5 625	1.56	1 390
	16	156.8	4 850	1.34	1 220
	12	117.6	5 380	1.49	1 365
	10	98	5 500	1.52	1 430
	6.3	61.7	5 950	1.65	1 585
	4	39.2	6 150	1.70	1 680
	2	19.6	6 390	1.77	1 750
0	0	6 500	1.80	1 810	

Outdoor fan performance

Model	Available static pressure		Air flow		Absorbed power W
	mm WG	Pa	m³/h	m³/s	
RTC-07B	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	2 550	0.71	500
	0	0	2 665	0.74	514
RTC-10B	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	3 400	0.98	980
	2	19.6	3 625	1.00	1003
	0	0.0	3 735	1.04	1033
RTC-15B	10	98.0	3 970	1.10	9000
	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	4 635	1.29	1235
RTC-20B	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
RTC-25B	0	0.0	5 525	1.54	1 305
	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	5 200	1.44	1 295
	4	39.2	5 250	1.45	1 320
	2	19.6	5 350	1.48	1 335
RTC-30B	0	0	5 450	1.51	1 388
	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

Installation instructions

General information

The RTC-B air conditioners are horizontal compact units, factory charged and tested. They are designed to be installed on terraces, rooftops, attics or basements.

Environmental protection



Packing

Packing is made of recyclable material. Its elimination should be carried out in accordance with existing local regulations on collection of residual material.

Elimination of the unit

Upon disassembly after a long service life, the components of the unit should be recuperated ecologically. The cooling circuit contains HCFC-22 refrigerant, which should be recuperated and then returned to the gas manufacturer for recycling.

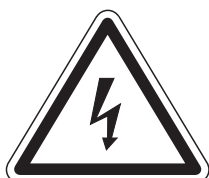
Oil will remain in the hermetic compressor and, therefore, must be returned with its circuit sealed.

The air conditioning unit will be deposited in an area determined by the local authorities, for its selective recuperation.

Warning signs

The following signs indicate the existence of potentially dangerous conditions for users or servicing personnel.

Whenever found on the unit itself, their meaning should be taken into account.



This symbol indicates an electrical danger or risk.



Attention: It is obligatory to read the instructions prior to any handling.



Attention: Fan in operation.



Attention: The unit is equipped with remote control and can run automatically. Two minutes prior to having access to the interior, disconnect the power supply so as to avoid any contact with the fan turbine in motion.



Attention: Do not touch hot surfaces.

Transportation

The units should always be transported in a horizontal position so as to avoid oil leakage from the compressor. If this position has to be changed for any reason, it should be done only for the time strictly necessary.

Location

Location should be selected foreseeing a permanent access for maintenance servicing, either by means of the side panels or the upper cover.

Can be installed directly outdoors.

If installed indoors, in a basement, attic, etc., the outdoor air intake and extraction ducts should be connected.

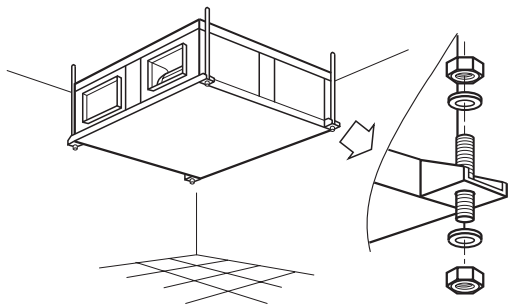
When installing the unit, leave sufficient room for electrical and drain connections.

Securing the unit

To the ceiling

The air conditioner is secured to the ceiling by means of M-10 bolts, as indicated in the drawing. It is recommendable to install antivibratory supports for this sort of assembly.

Upon securing, make sure it is completely horizontal, or very slightly sloped towards the drain, so as to avoid possible drops of condensed water (use a bubble level).



Attention: It is mandatory to use all fastening points of the air conditioning unit.

The RTC-07B, 10B, 15B & 20B units have 4 fastening points.

The RTC-25B & 30B units have 6 fastening points.



CAUTION

It is of great importance to be very careful with the support of the unit from the ceiling. Make sure the ceiling is strong enough to withstand the weight of the unit. Prior to hanging, check each mounting bolt.

Floor mounted

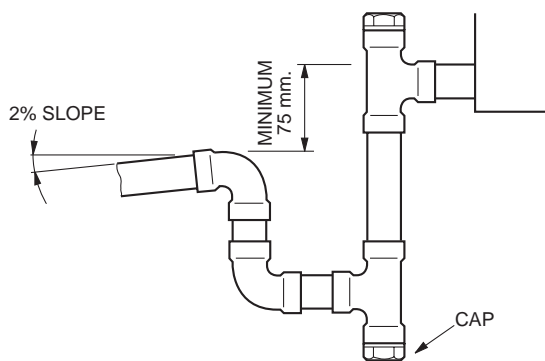
When setting the unit on the floor, if outdoors, it should be placed on supports so as to insure free circulation of water and air beneath the base.

Drainage connection

Install the drainage tubing through a siphon and leave a minimum level difference of 75 mm. (see drawing) between the height of the unit connection and the tubing line after the siphon. This is to avoid that the depression produced by the fan may hinder tray drainage.

The drainage line should be sloped at least 20 mm. per meter in length.

Unit connections are carried out by means of copper tubing with a 22 mm. outer diameter.



Clearances

Clearances should be left in the installation of each unit for:

- Air intake and discharge of the condensing unit.
- Connecting the drainage tubing.
- Air ducting.
- Maintenance servicing.
- Power supply and control wiring.

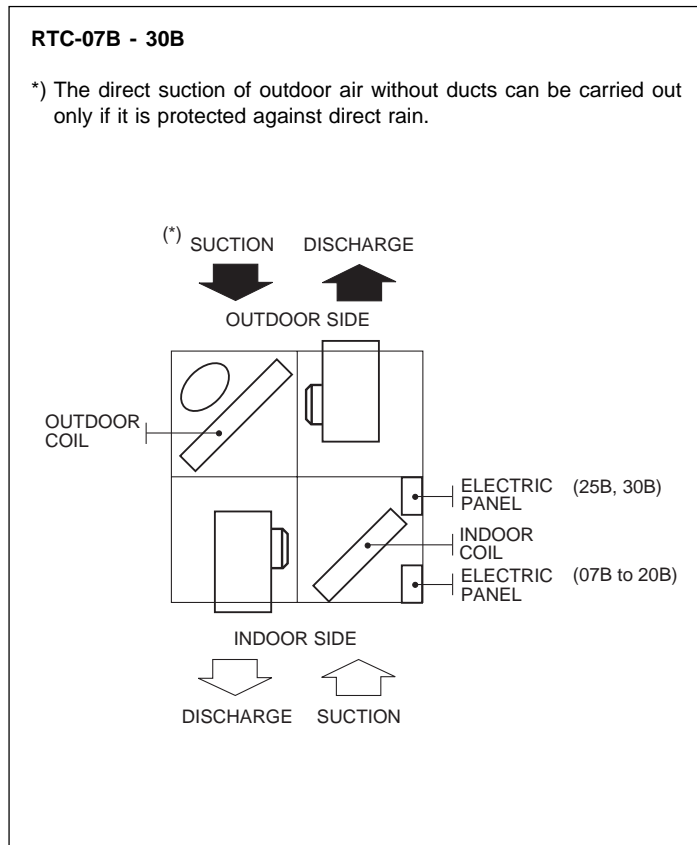
For proper operation, the minimum clearances indicated in the general dimension diagrams should always be respected with regard to possible obstruction avoiding free air circulation or servicing.

Air ducts

- Connect the ducts, isolating them from the unit by means of a flexible hose (preferably of non-combustible material) so as to avoid the transmission of vibrations of the unit. If the ducts are made of flexible material, they do not transfer vibrations.
- It is advisable to fit a damper at each discharge duct so as to be able to carry out an appropriate balance of the system.
- Make sure to have easy access for cleaning and changing the air filters.

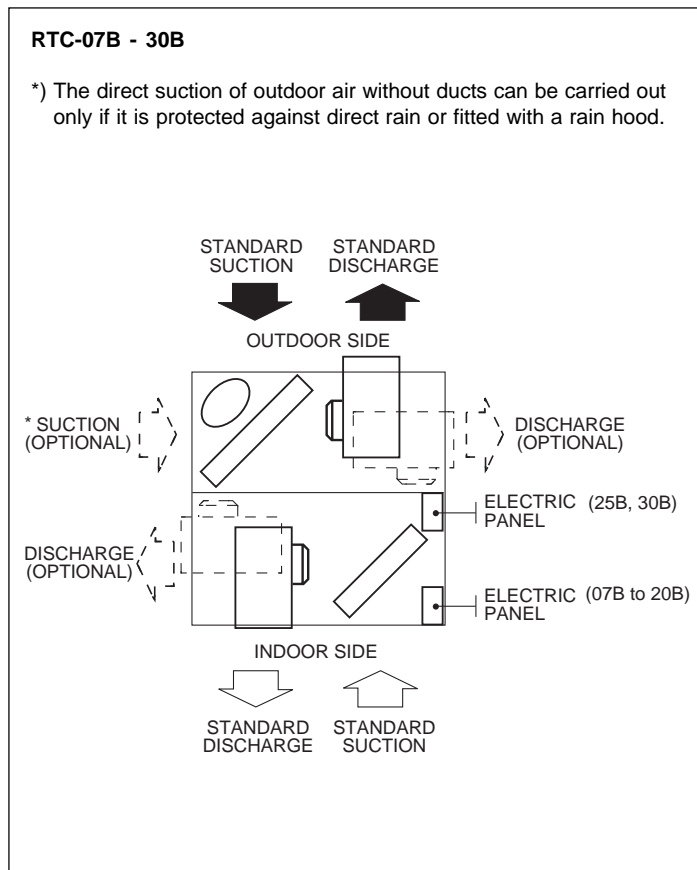
Orientation of air suction and discharge

Orientation supplied from factory.



Variations to be carried out at job site

Based on the standard unit, the orientation of the air suction and discharge of the condensing unit and evaporating unit fans can be varied until any of the indicated combinations is achieved.



Wiring

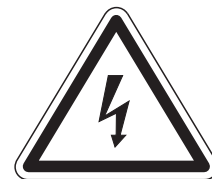
The established national regulations should be followed in all cases.

Each air conditioner is supplied with a control box, to which the power supply will be connected by means of a fused main switch, or an automatic switch.

The electric heater, if used, should be installed with independent power supply and switches.



Loose cables can produce overheating at the terminals, or incorrect operation of the unit. A fire hazard may also exist. Therefore, make sure all cables are firmly connected.



Do not connect the power supply to the unit, nor start it up until all tubing and wiring connections are completed. Make sure the power supply is connected correctly to the unit, as show in the wiring diagrams.

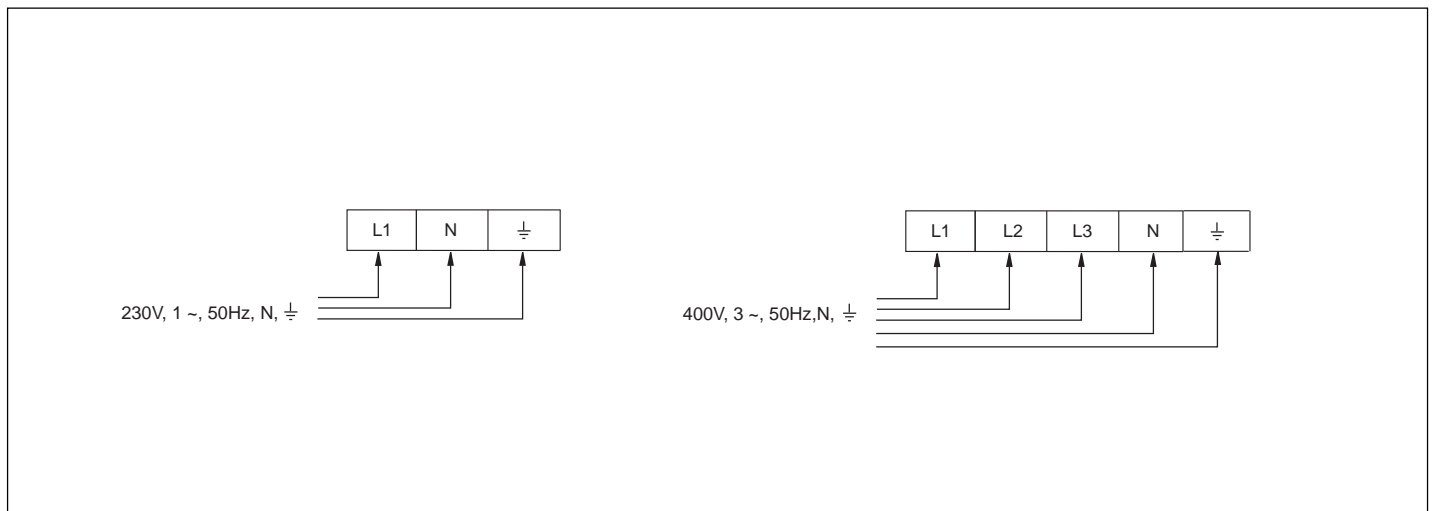
Electrical characteristics

Model	Power supply V.ph.Hz.		Consumption A			Minimum power supply cable section (2) mm ²	Automatic switch (Curve K)(1) A
	Compressor	Fan	Compressor Nominal	Outdoor fan Run	Indoor fan Run		
		Indoor - Outdoor					
RTC-07B	230.1.50		13	2	1.9	4	25
RTC-10B	400.3.50	230.1.50	5.5	4.5	2	2.5	20
RTC-15B	400.3.50		7.5	5.4	5.1	4	25
RTC-20B	400.3.50	400.3.50	9.6	2.8	2.9	4	25
RTC-25B	400.3.50	400.3.50	12.9	2.9	2.8	4	25
RTC-30B	400.3.50	400.3.50	15	4.1	2.6	6	32

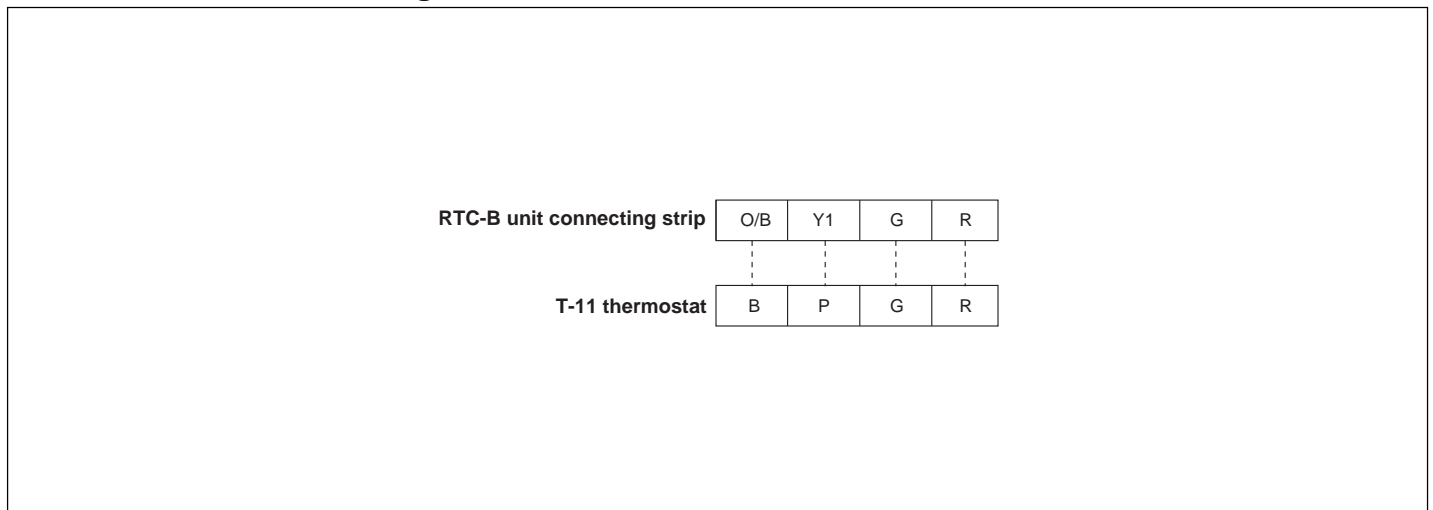
Important: Automatic switch dimensioning and power supply and operating line sections are orientative and should be corrected in accordance with conditions at job site, length between units and legislation in force.

Notes: 1.- K curve (DIN, VDE 0660-104). 2.- Based on copper conduction.

Power supply connection diagram



Thermostat connection diagram

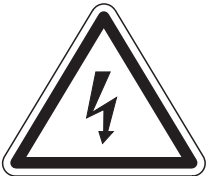


Limits of Use

Voltage limits				DB air intake temperature to outdoor coil °C		Air intake temperature to indoor coil	
Nom. 230 V		Nom. 400 V		Maximum °C	Minimum °C	Maximum °C	Minimum °C
Maximum	Minimum	Maximum	Minimum	Maximum °C	Minimum °C	Maximum °C	Minimum °C
254	198	436	342	46	14	22	14

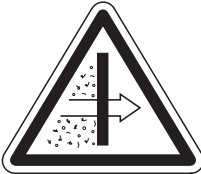
Notes: WB = Wet bulb. DB = Dry bulb.

Before final approval of the installation




Make sure that:


- The voltage is always between 198-254 V, or 342-436 V.
- The power supply cable section is, at least, that recommended in the corresponding wiring diagrams.




- Information has been given on the need to clean the air filter regularly.



- Condensed water drainage is carried out correctly, and there are no leaks in the water circuit.



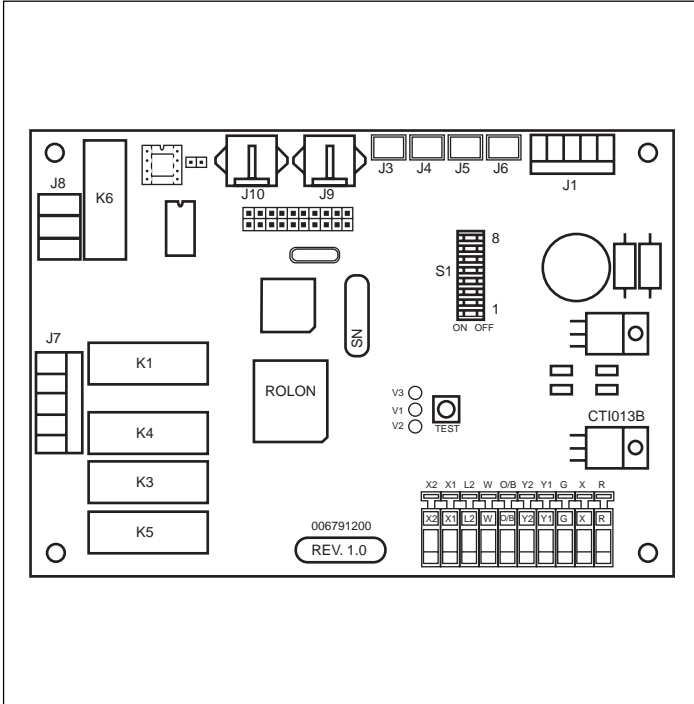
- The guarantee card has been filled out.
- Maintenance instructions have been given, or a contract has been made for periodical servicing.



- Operating instructions have been given to the user.

Operation

The control board of these units is common to both the cool only as well as the heat pump units. System control is carried out 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.



Indoor fan

Operation can be continuous or automatic. For continuous operation, select said operation on the thermostat.

Outdoor fan

The outdoor fan starts 5 seconds before the compressor. And stops after the compressor stops.

B/O signal in cool mode

When signal B (or O, depending upon SW7) of the thermostat is activated, and the unit is cool only (SW5 on ON), the auxiliary heaters, if installed, should also be activated.

Compressor

When signal Y1 is present, the board commands the outdoor fan to become operative, and then the compressor. The compressor, along with the outdoor fan, does not start until after a minimum off time, so as to avoid consecutive start-ups. This period of time can be set by means of microswitches SW4; ON = 2' and OFF = 5'.

Test button and LEDs

Pressing Test shortens certain timings, resets any failure detected and also acts as a LonWorks service pin.

There are three signalling LED diodes:

- The green LED indicates correct operation of the equipment and incidents. If the equipment is operating correctly, this LED flashes at a frequency of 1.6 Hz.
- The red LED indicates failures. If no failure is present, this LED remains off.
- The yellow LED is the LonWorks service LED, and also indicates, by flashing, that the operating compressor is timed.

Configuration

Each time the electronic board is powered, system configuration will be checked, with the exception of the accessories. Below we can see how the different options are configured.

Microswitches

They are read after power supply connection, and the board will act in accordance with their position. Switches SW1 and SW2 set to OFF indicates that the configuration is carried out by remote control, and the parameters stored in the EEPROM memory are use.

Configuration of switches

The microswitches establish the following configurations:

Number	State	Meaning
1 / 2	OFF	Ignore SW, programmed via communications
	OFF	Defrost period 30'
	ON/OFF	Defrost period 60'
	OFF/ON	Defrost period 90'
3	ON/ON	Discharge temperature 115° C
	ON	Discharge temperature 130° C
4	OFF	Compressor delay 2'
	ON	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	OFF	NA
	ON	NA

Configuration of accessories

To carry out an accessory search and configuration, the test button should be pressed for over two seconds, until the red LED goes on. Once the search and configuration process begins, the red LED on the board goes on, and stays on until the operation is concluded. Once off, the board uses the accessories found.

Said search will also determine which optional probes are connected to the board. A incident will be given if one of the optional probes detected in the configuration process does not give valid values.

The following table shows the probe configuration.

Probe	RTC-B unit	
	Standard	Optional
Discharge	X	
Liquid		X
Outdoor		X
Suction	X	

Installation of accessories

The accessories are used to support extended functions of the unit.

Said accessories can be either factory mounted or installed on the jobsite. Power supply to the unit should always be disconnected. The accessory, along with the necessary elements, will then be assembled, and the power supply connected once again.

Once the search and configuration sequence is carried out, the new elements will be recognised and they will begin to operate.

The function of the different accessories is defined below.

Electric heating

In the case of the heaters, the relay is used to switch the power contactor on and off, as well as the thermal switch with automatic reset.

In the RTC-B, the response to a demand for first stage from the thermostat starts the heating stage. Whenever the electric heating is on, the indoor fan will also be operative.

Malfunctions

There are two different types of malfunctions: incidents that do not turn the unit off, and failures or lockouts, that inactivate the unit.

High and low pressure switch

Its activation turns the compressor and outdoor fan off. A high or low pressure failure of the switch is indicated.

Electric heating thermal switch (accessory)

Activation turns the electric heating off and indicates an incident. If this error occurs more than 3 times in an hour, an electric heater thermal switch incident is indicated, and the electric heater is turned off.

Thermostat errors

If signal Y is given without signal G, it acts as if signal G were active. An incident of signal Y1 without signal G is indicated.

Protection for temperature

- If the discharge temperature is above SW3; ON = 115°C, OFF = 130° C, the compressor and outdoor fan turn off. An excessive discharge temperature failure is indicated.
- If while the compressor is on for 5', the discharge temperature does not rise above 50° C, in cool mode, a low discharge temperature incident is indicated.
- If the suction temperature is very low, the compressor and outdoor fan turn off. If this is repeated 3 times in 35 minutes, a failure is indicated.

Open or short circuit of outdoor or suction liquid probes

An incident of the corresponding probe is indicated if the value read is below -40° C, or above 100° C.

Open or short circuit of the discharge probe

An incident of the discharge probe is indicated if its value is below -20° C, or above 150° C. If the probe is short circuited, a failure (lockout) is indicated.

Signalling

Failure signalling is carried out at two levels. One for incidents and another for failures (lockouts).

Incidents

Incidents do not turn the unit off, and are indicated by the green LED on the electronic board. If there is no failure present, this LED flashes at a frequency of 1 Hz.

When an incident occurs, the LED flashes in three sequences. The first indicates the compressor involved: one flash for stage 1, followed by a short pause. The second indicates the type of incident. Another short pause. The third indicates the incident detected, followed by a long pause, and the sequence is repeated again as long as the incident lasts.

The incidents reset when the cause disappears.

In the case of more than once incident at the same time, only the first one detected and not reset is indicated. As they reset, the other existing incidents will be indicated.

The following table shows the possible errors:

Type	Flashes	Incident
Probes	1	1 Discharge probe open or >150° C
	1	2 Liquid probe open or short circuited
	1	3 Outdoor probe open or short circuited
	1	4 Indoor probe open or short circuited
	1	5 Outdoor temperature too low
Thermostat	2	1 Signal Y1 or Y2 without signal G
	2	2 Signal W without signal B
	2	3 Signal W without signal G
	2	4 Signal Y2 without signal Y1
Electric heater	3	1 Electric heater thermal switch AUX1
	3	2 Electric heater thermal switch AUX2
	3	3 Electric heater thermal switch EM1
	3	4 Electric heater thermal switch EM2
Temperature	4	1 Repeated defrost cycles
	4	2 Discharge temperature low
	4	4 Temperature in heat does not recover
Others	5	1 ID of transceiver unknown
	5	2 Accessory removed

Faults (lockouts)

Failures or lockouts turn the unit off.

They are indicated by the red LED on the board, and by means of the thermostat (depending upon the model). A relay of the board is also activated. If no failure is present, this LED remains off.

When a failure takes place, this LED flashes in two sequences. The first indicates the compressor involved: one flash for stage 1 and two for stage 2, followed by a short pause. Then the detected failure is indicated, followed by a long pause and the sequence is repeated.

Should more than one alarm take place, only the first one detected and not reset is indicated.

The following table shows the possible errors:

Flashes	Meaning
1	Discharge temperature surpassed or probe short circuited
2	High pressure switch
3	Low pressure switch
4	Indoor or outdoor fan overload/klixon
5	Repeated start-ups in cooling
6	Low liquid temperature

Reset

The incidents, with a few exceptions, do not need to be reset. They reset automatically once the cause has disappeared. The following incidents require resetting, and are reset in the same way as the alarms:

- Accessory disappeared.
- Electric heating thermal switch.

These alarms can be reset as follows:

- Setting the thermostat to OFF, if communication with the thermostat has been implemented.
- Pressing the test button on the electronic board.
- Disconnecting and reconnecting power supply to the electronic board.
- By means of the communications bus.

It is worth pointing out that with a reset by means of setting the thermostat to OFF, the board cannot be reset more than 3 times a day.

Operating Instructions

General information

Automatic temperature start-up and regulation is carried out by means of an ambient thermostat.

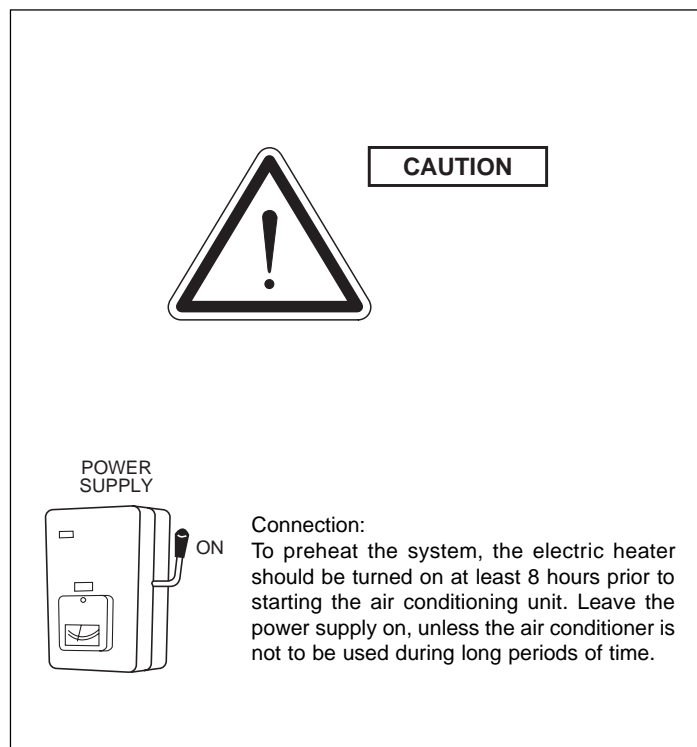
Locate the thermostat at approximately 1.5 m. above floor level, where no obstacle can avoid measuring the real temperature of the room.

Important warning

The thermostat should be placed on a wall not exposed to direct sunlight; otherwise, temperatures would not be real and operation would be inadequate. Before start-up, turn the general switch on so as to supply power to the electrical heater in the compressor crankcase.

The compressor should not be started until at least eight hours later.

This is done to evaporate any refrigerant in liquid form that may be mixed with the oil in the compressor.

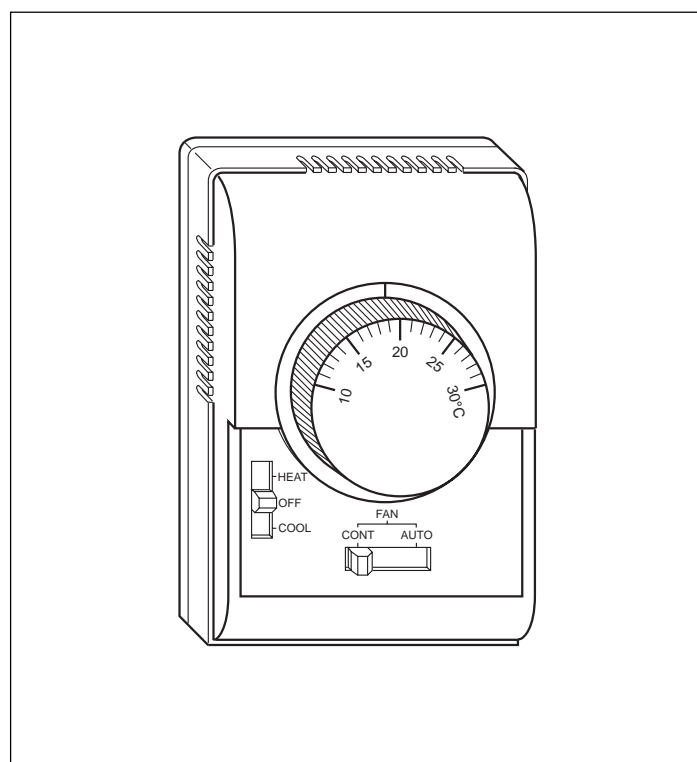


Recommendations for best operation

- Turn the air conditioning unit on before the room gets warm. Any heat accumulated on furniture, walls, etc., makes the unit take longer to reach the desired temperature.
- It is advisable to inspect and service your equipment whenever necessary; this avoids damage and insures long service life of your air conditioning unit.

Ambient thermostat T-11

24 V, electromechanical. Has a HEAT-OFF-COOL switch, as well as a second switch for continuous or automatic (CONT-AUTO) fan operation.



Maintenance

Clean the casing with a vacuum cleaner or a rag moistened in a mild liquid detergent.



Do not spill water on the unit for cleaning purposes. Water could damage internal components and cause electric discharges.

Discharge of indoor section with ducts

The discharge of the indoor units equipped for ducts is supplied without a protecting grill. When carrying out maintenance servicing, keep this in mind.



CAUTION

In the case of installing an indoor unit with free discharge and equipped for ducts, the outlet opening should be protected with a grill. The lack of this protection could provoke damage caused by the fan turbine.

Cleaning the filters

Keep the coil filters in good condition, checking them at least every month. If filters are dirty, they limit air flow and equipment performance.

Cleaning the outdoor coil

Dirt should not be allowed to accumulate in the outdoor coil. It should be cleaned as frequently as needed, with a brush, vacuum cleaner or detergent.



CAUTION

For safety reasons, make sure to turn the air conditioner off, and unplug the power supply, before cleaning.



CAUTION

Check the outdoor unit periodically to see if the air inlet or outlet are clogged by dirt or leaves, etc. The internal coil, and other components of the outdoor unit, should also be cleaned regularly. Contact your dealer or maintenance service.

Filling the drain trap

So as to avoid having problems with the condensed water, we recommend that, at start-up and before the beginning of each season, the drainage siphon be filled with water so as to avoid air being sucked in through this tubing.

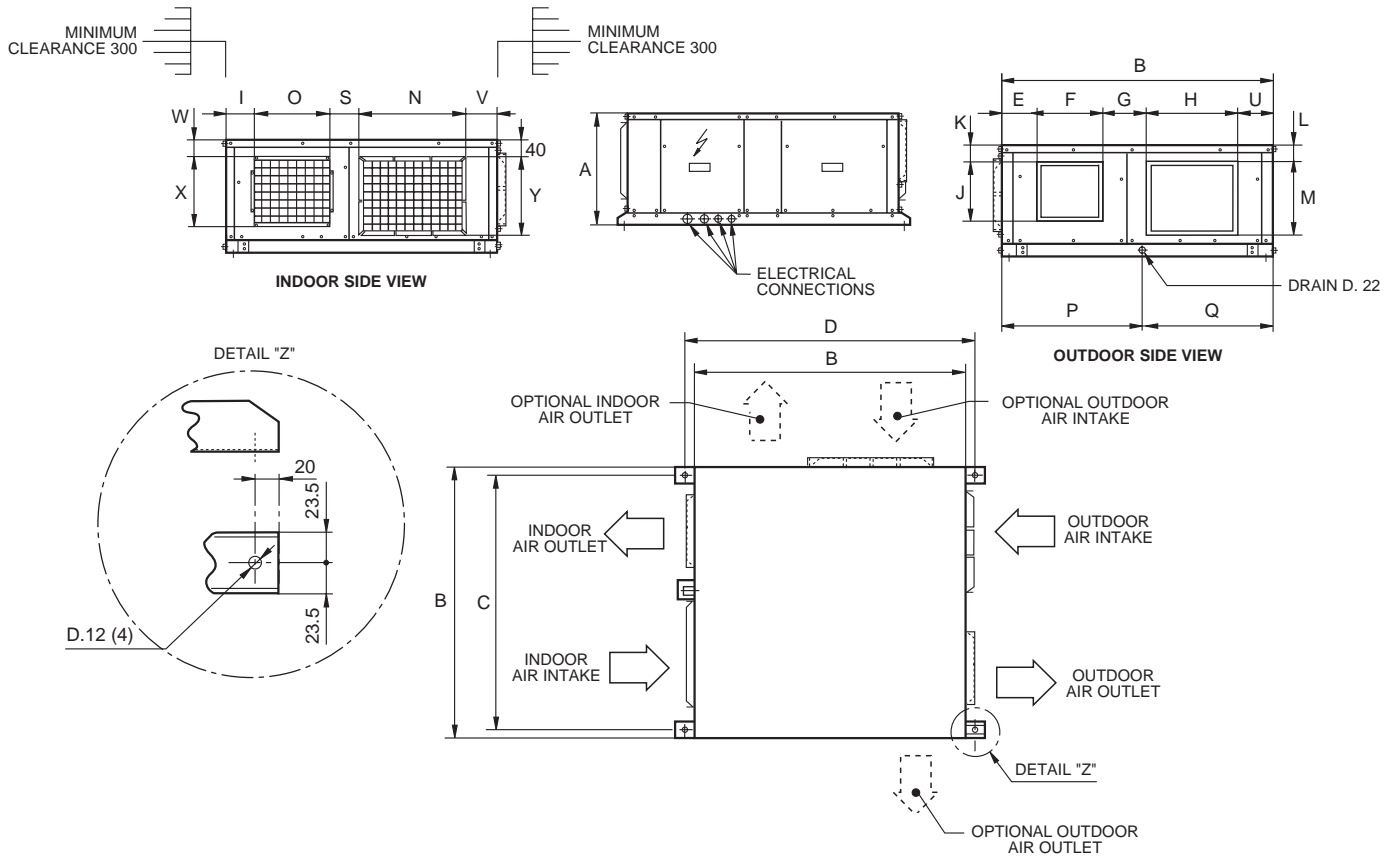
Access to units for maintenance servicing



Attention: The unit is equipped with remote control and can run automatically. Two minutes prior to having access to the interior, disconnect the power supply so as to avoid any contact with the fan turbine in motion.

General dimensions mm

RTC-07B, 10B, 15B & 20B



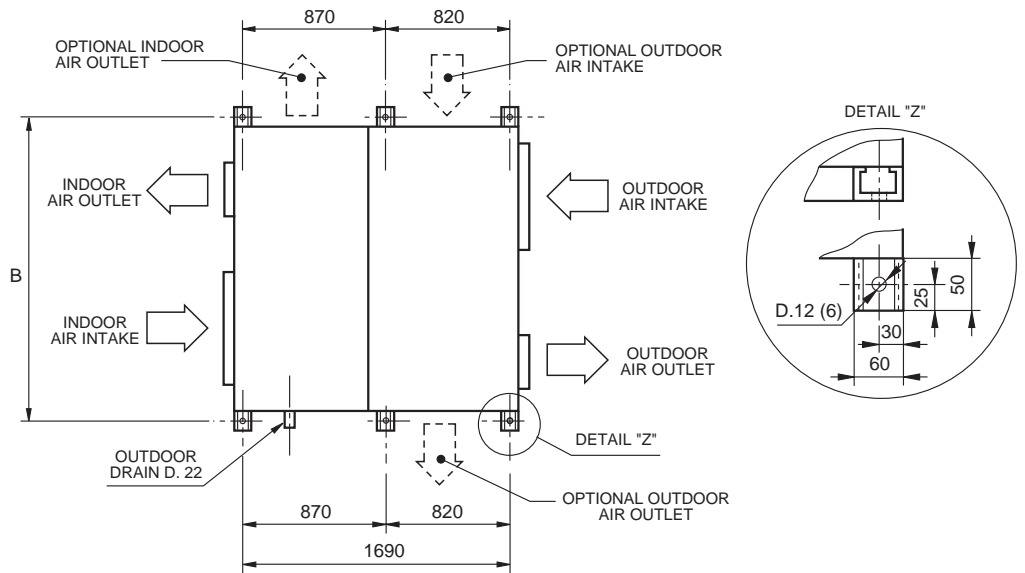
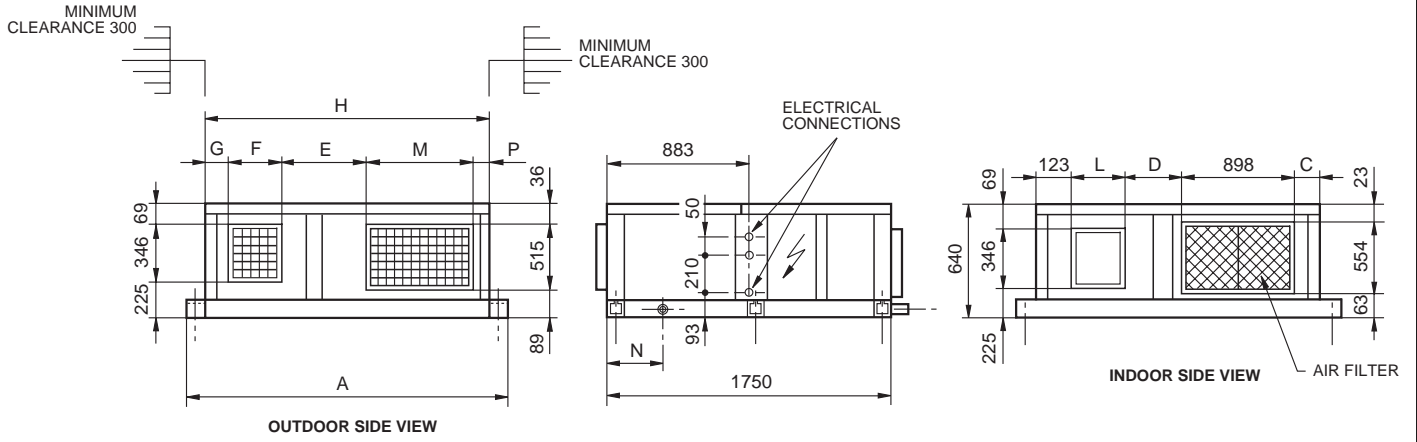
Note:

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	S	U	V	W	X	Y
RTC-07B	478	1100	1055	1150	117	302	136	425	82	262	72,5	60	300	425	347	600	500	165	120	82	18	305	342
RTC-10B	555	1150	1105	1200	130	270	210	375	82	294	101	50	420	404	323	600	550	220	165	117	20	353	430
RTC-15B	555	1310	1265	1360	140	316	154	600	87	346	24	45	425	554	323	600	710	225	100	121	20	353	430
RTC-20B	555	1570	1525	1620	140	316	210	750	85	346	24	50	420	770	407	622	950	206	154	102	20	353	430

General dimensions mm

RTC-25B & 30B



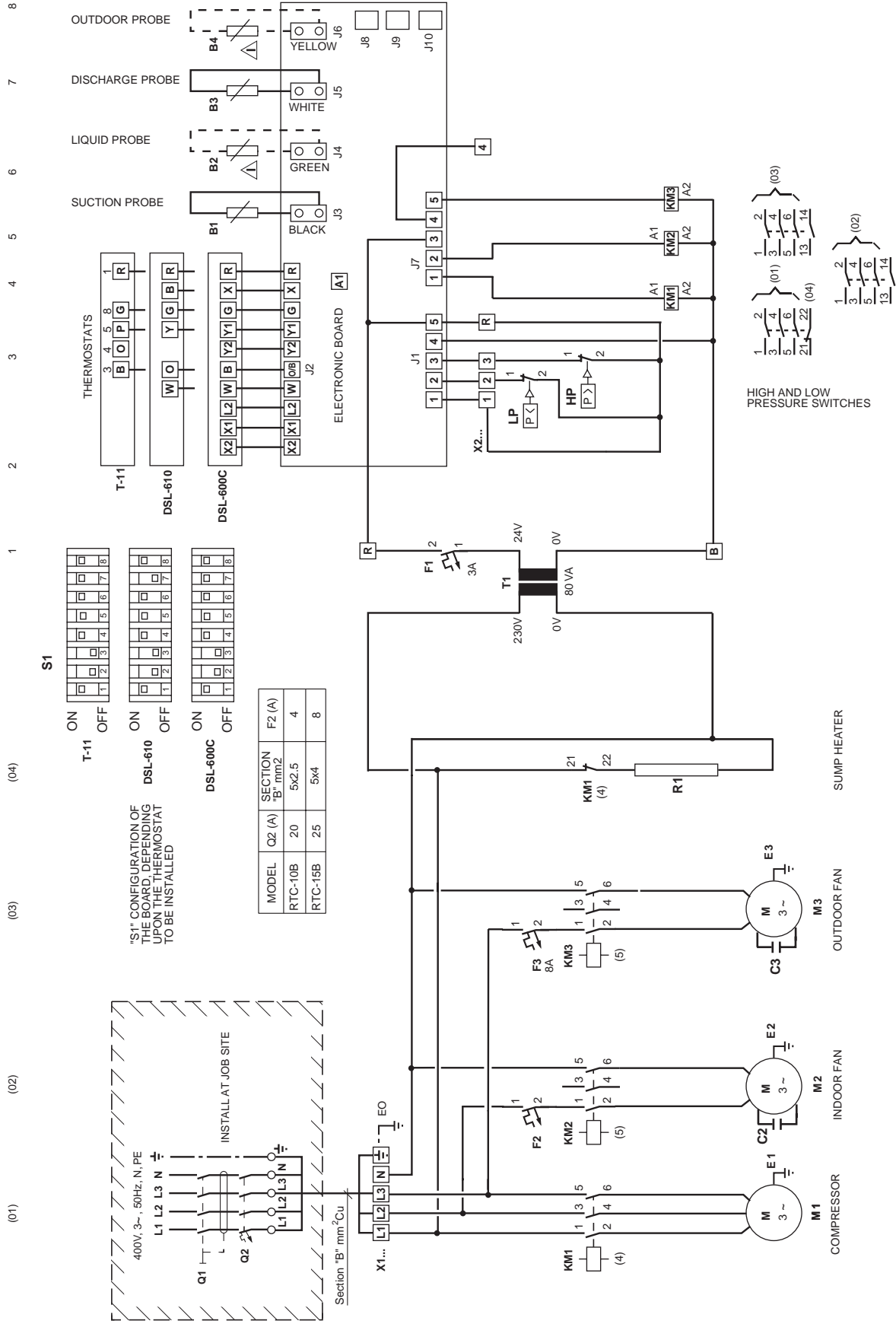
Note:

- 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.
- 2 - If a filter holder with a filter is applied to air suction, see duct dimensions in the information corresponding to that accessory.

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

Wiring diagram

RTC-10B & 15B, 400.3.50



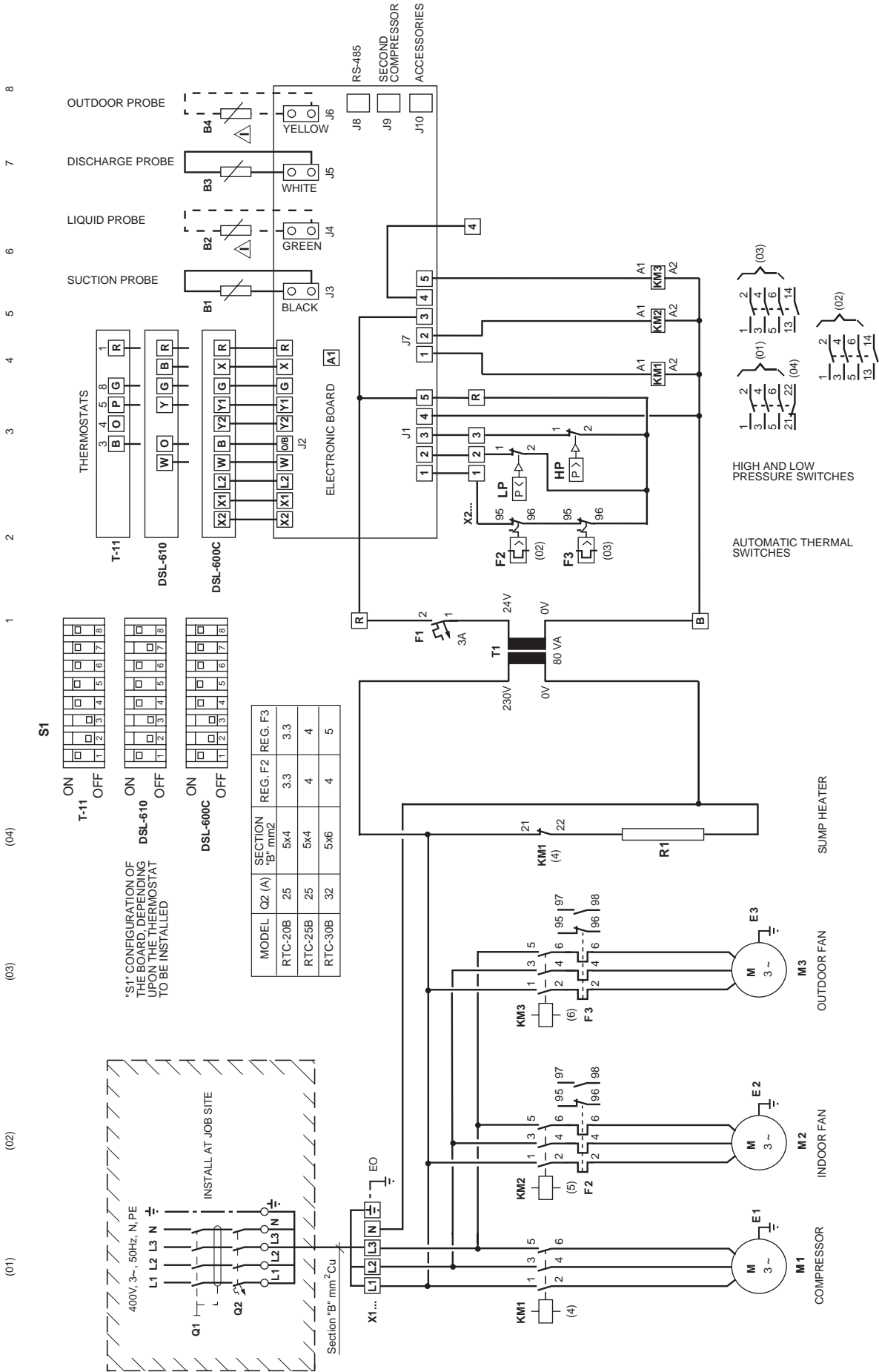
THE COMPONENTS INCLUDED IN THESE BOXES ARE NOT SUPPLIED BY THE MANUFACTURER.

NOTE: PROBES B2 AND B4 OF THE ELECTRONIC BOARD ARE OPTIONAL.

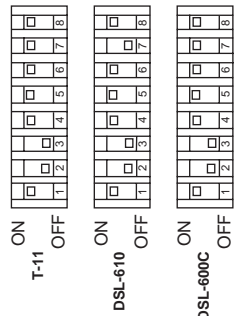
YKB-1977/a
RTC-10B & 15B
400.3.50

Wiring diagram

RTC-20B, 25B & 30B, 400.3.50



S1



S1 CONFIGURATION OF THE BOARD, DEPENDING UPON THE THERMOSTAT TO BE INSTALLED

MODEL	Q2 (A)	SECTION "B" mm ²	REG. F2	REG. F3
RTC-20B	25	5x4	3.3	3.3
RTC-25B	25	5x4	4	4
RTC-30B	32	5x6	4	5

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

NOTE: △ - PROBES B2 AND B4 OF THE ELECTRONIC BOARD ARE OPTIONAL.

YKB-1974/a
RTC-20B, 25B & 30B
400.3.50

Accessory

Duct electric heaters

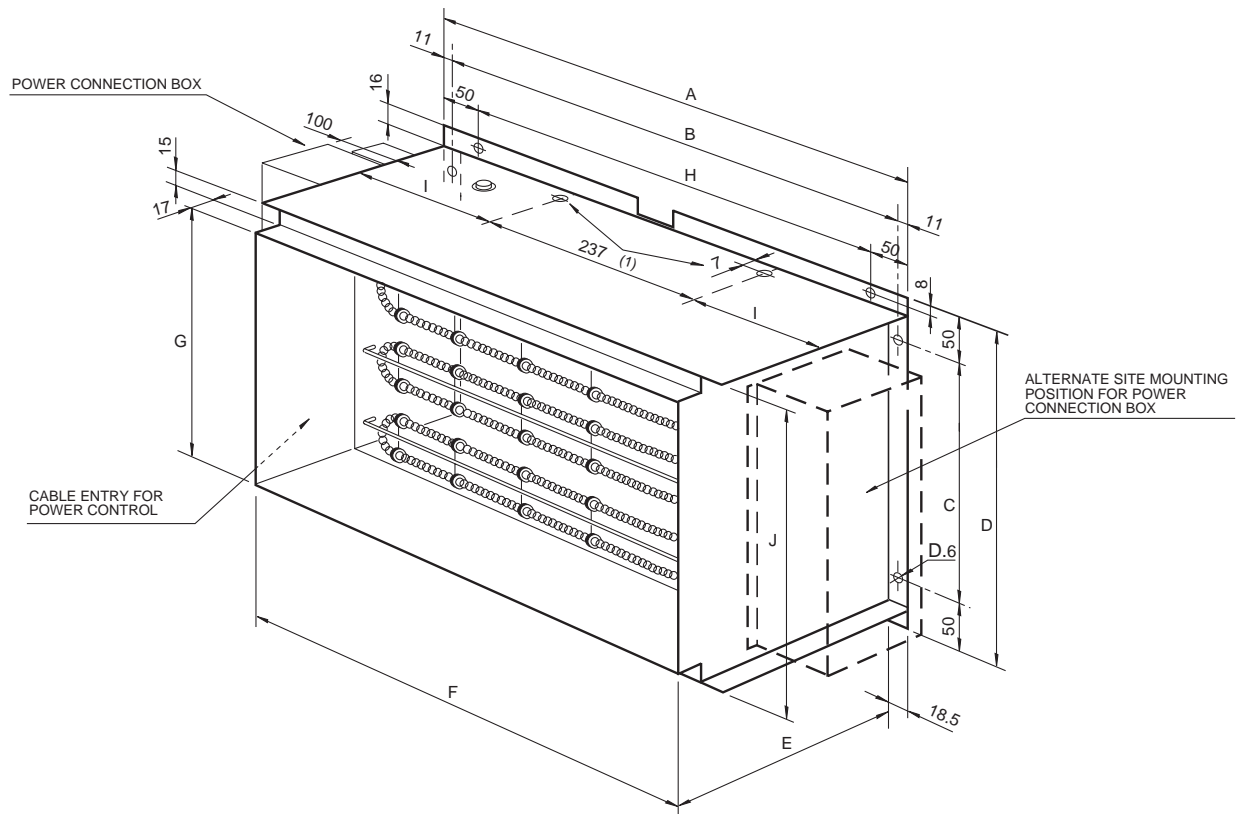
For installation in the indoor fan outlet (supply air).

Attention:

A flow rate control should be installed together with every electric heater, to prevent the heater from operating if the fan has not been switched on.

General dimensions mm

Note: For more detailed information see the manual for this accessory



Model	A	B	C	D	E	F	G	H	I	J
RTC-07B & 10B	400	378	285	385	275	362	320	300	-	353
RTC-15B to 30B	527	505	325	425	350	490	360	427	145	393

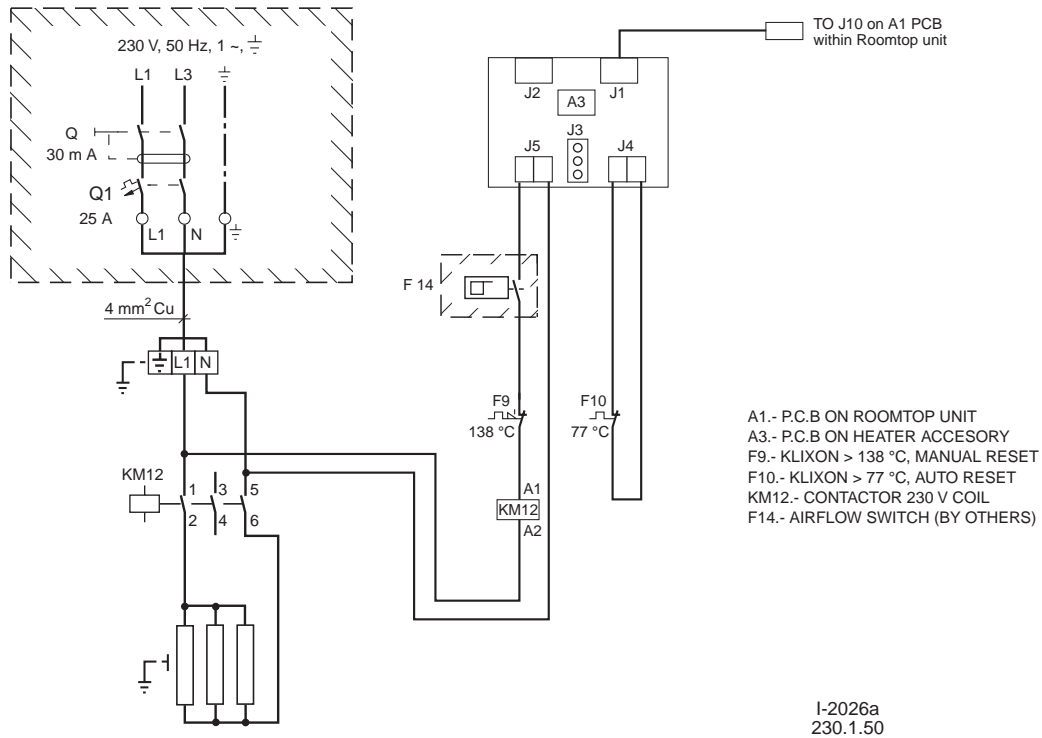
Note: To connect, see the separate manual for electric heaters.

Electric heater	Voltage	Power	Consumption	Stages	MCB Q1	Min power supply C.S.A.	Frontal area	Pressure drop
	V.ph.Hz	kW	A		A	mm ²	m ²	Pa
RTC-07B	230.1.50	5	22	1	25	4	0.12	6
RTC-07B & 10B	400.3.50	5	8	1	10	1.5	0.12	6
RTC-07B & 10B	400.3.50	10	15	1	20	2.5	0.12	6
RTC-15B to 30B	400.3.50	10	15	1	20	2.5	0.17	15
RTC-15B to 30B	400.3.50	15	22	1	25	4	0.17	15

Note: K Curve (DIN, VDE 0660-104).

Wiring diagram

Duct electric heater, 230.1.50 RTC-07B



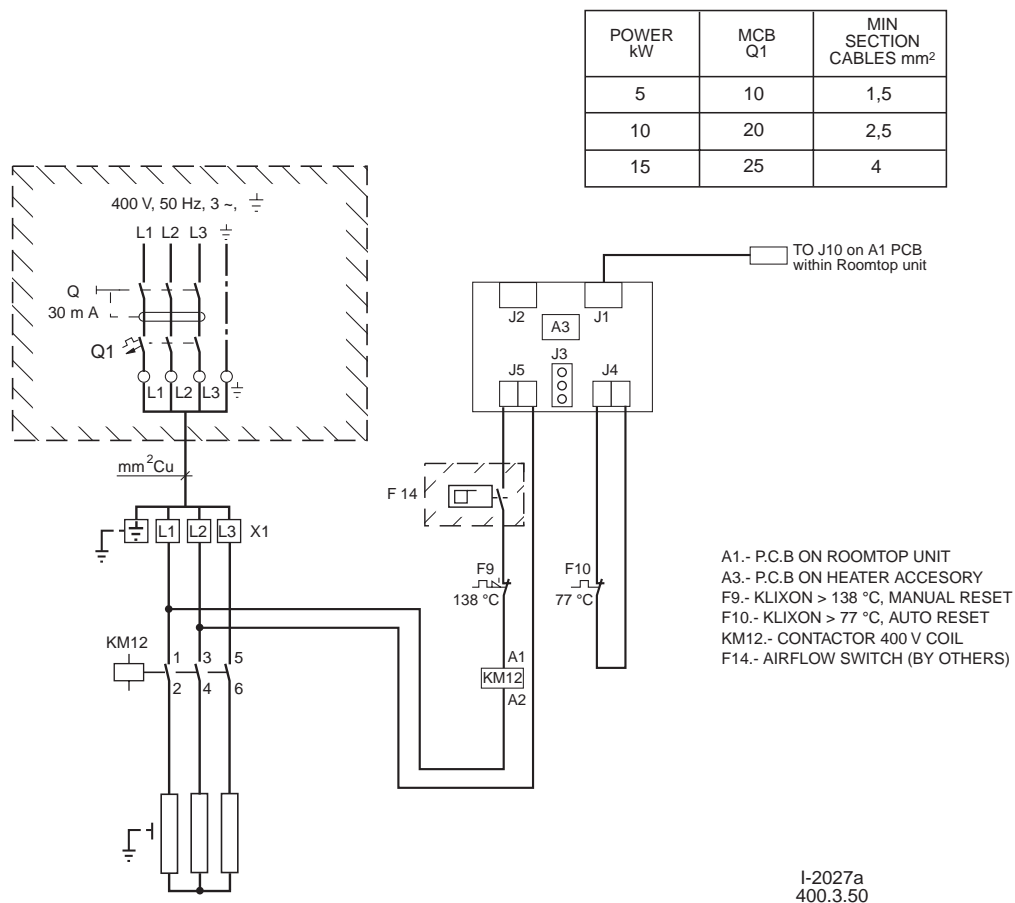
IMPORTANT: Q1 MCB AND POWER CABLE SECTION SHOULD BE SIZED TO SUIT THE HEATER POWER CONSUMPTION AND THE SITE CONFIGURATION

Installation of Accessory ARDH electric heater

- Isolate power to unit, connect the 5 mt cable supplied with telephone style plugs from socket J1 on A1PCB at electric heater to socket J10 an A3PCB in roomtop unit.
- Switch on the unit.
- To configure the accessory, press the "Test" button on A1PCB for > 2 seconds until the red LED is lit.
- Once the red LED goes out, the A1PCB has configured the ARDH electric heater.
- Check operation of the electric heater using the thermostat in Emergency heat function.

Wiring diagram

Duct electric heater, 400.3.50 RTC-07B/30B



IMPORTANT: Q1 MCB AND POWER CABLE SECTION SHOULD BE SIZED TO SUIT THE HEATER POWER COMSUMPTION AND THE SITE CONFIGURATION

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- Check operation of the electric heater using the thermostat in Emergency heat function.

All data subject to change without notice.

DEFINITIVE SHUTDOWN, DISASSEMBLY & DESTRUCTION

This product includes a refrigerant gas under pressure, moving parts and electric components which may be dangerous and cause injury!
All servicing must be done by qualified personnel, wearing protective clothing, in compliance with applicable safety rules.



Rear the Manual



Risk of electrocution



Remote-controlled unit
May start up unexpectedly



1. Cut off all electric power-supplies from the unit, as well as from the power supply of the control systems running it. Make sure that all electric cut-off devices are blocked in open position and the town-gas supply valves are in closed position. The power-supply wires and gas pipes may then be disassembled and removed. Consult the technical documentation in order to ascertain the unit's connection points.
2. Transfer all refrigerant from each system component to an appropriate recipient, or use a specially-designed recovery unit. The refrigerant can then be re-used or returned to the manufacturer for destruction/recycling, depending on the case. **It is strictly forbidden to discharge the refrigerant into the atmosphere.** Depending on the case, drain the refrigerant oil from each system into an appropriate recipient and eliminate it in accordance with local applicable regulations relative to hydrocarbon waste products.
3. As a general rule, the solid-block units are to be disassembled and removed in a single piece. Remove all fastening bolts and then raise the items with handling equipment with appropriate lifting capacity. It is absolutely essential to consult the information in the technical documentation as regards the weight and recommended handling procedures. The residual refrigerant oil and spills are to be sponged up and eliminated according to instructions given above.
4. After disassembly, the system components are to be destroyed/drained/put in a recycling dump in accordance with local applicable regulations.

E - TEC - R 0003

Manufacturer reserves the right to change specifications without prior notice.

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