

YORK AIR-CONDITIONING PRODUCTS

Large ACTIVA Rooftop



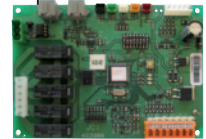
Large ACTIVA Rooftop

ARC-ARG-ARH-ARD

A complete range from 105 kW up to 169 kW



Available during 2013

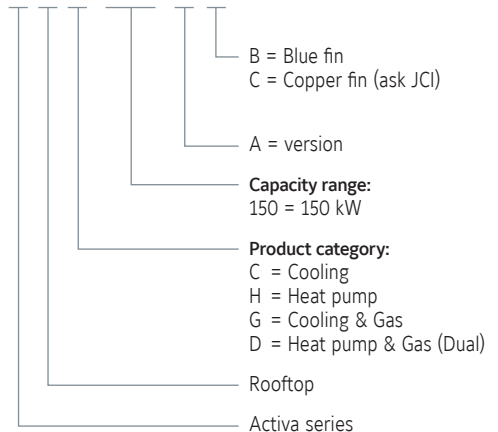


YKN2open

Features

- High efficiency EER and COP
- Quiet operation
- All configurations: Cooling only, Cooling + gas, Heating, Heating + Gas
- BMS communication as standard
- Partial loads
- Extended working range (up to 52°C outdoor temperature)
- F6 & F7 filters available
- Energy recovery (ask JCI for availability)
- EC supply fan (optional, ask JCI for availability)

A R C 150 A B Nomenclature



Large ACTIVA Rooftop

ARC-ARG-ARH-ARD 100 to 175 AB



Technical features (Preliminary data)

Cooling only models		ARC 100 AB	ARC 125 AB	ARC 150 AB	ARC 175 AB	
Net cooling capacities	kW	108.1	121.8	149.3	169.0	
Power input	kW	34	41	59	64	
EER		3.46	3.21	3.13	2.91	
Working range (full load / partial load) *	°C	7°C ~ 46°C / -10°C ~ 52°C				
Heat pump models		ARH 100 AB	ARH 125 AB	ARH 150 AB	ARH 175 AB	
Net cooling capacities	kW	108.1	121.8	149.3	169.0	
Power input in cooling	kW	34	41	59	64	
EER		3.46	3.21	3.13	2.91	
Heating capacities (1)	kW	104.6	118.4	152.0	166.7	
Power input in heating	kW	33	37	53	61	
COP		3.48	3.44	3.20	2.96	
Working range (full load / partial load) *	°C	-10°C ~ 46°C / -10°C ~ 52°C				
Cooling only + Gas heating models		ARG 100 AB	ARG 125 AB	ARG 150 AB	ARG 175 AB	
Net cooling capacities	kW	108.1	121.8	149.3	169.0	
Cooling power input	kW	34	41	59	64	
Standard Heating capacities (1)	kW	125.0	125.0	170.0	170.0	
Natural gas 2ND-H, G20	m³/h	14.1	14.1	19.1	19.1	
Working range (full load / partial load) **	°C	-20°C ~ 46°C / -20°C ~ 52°C				
Heat pump + Gas heating models		ARD 100 AB	ARD 125 AB	ARD 150 AB	ARD 175 AB	
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Natural gas 2ND-H, G20	m³/h	14.1	14.1	19.1	19.1	
Working range (full load / partial load) **	°C	-20°C ~ 46°C / -20°C ~ 52°C				
Common characteristics						
Power supply		400V / 3 / 50Hz				
Main switch	A	100	125	160	200	
Main cable	Nbr. x mm²	3 x 35	3 x 50	3 x 50	3 x 70	
Cable to thermostat	Nbr. x mm²	10 x 0,22				
Number of circuits / Compressor type		2 (tandem) / 4 x scroll				
Evaporator fan at nominal airflow	Airflow	m³/h	19 000	21 000	27 000	31 000
	Power input	kW	3.0	3.3	8.3	9.1
Nett dimensions	Height	mm	2 138		2 138	
	Length	mm	4 030		5 080	
	Depth	mm	2 240		2 240	
Nett weight	ARC / ARG	kg	1 975 / 2 080	2 010 / 2 125	2 295 / 2 410	2 335 / 2 450
Nett weight	ARH / ARD	kg	2 015 / 2 125	2 060 / 2 170	2 350 / 2 460	2 390 / 2500

All the data are at EUROVENT conditions with 400V/3+N/50Hz.

Cooling : Entering indoor coil temp. 27°C / 19°C WB and outdoor temperature 35°C - Heating : Entering indoor coil temp. 20°C and outdoor temperature 7°C / 6°C WB

(1) Add indoor fan motor consumption to know total heating capacity.

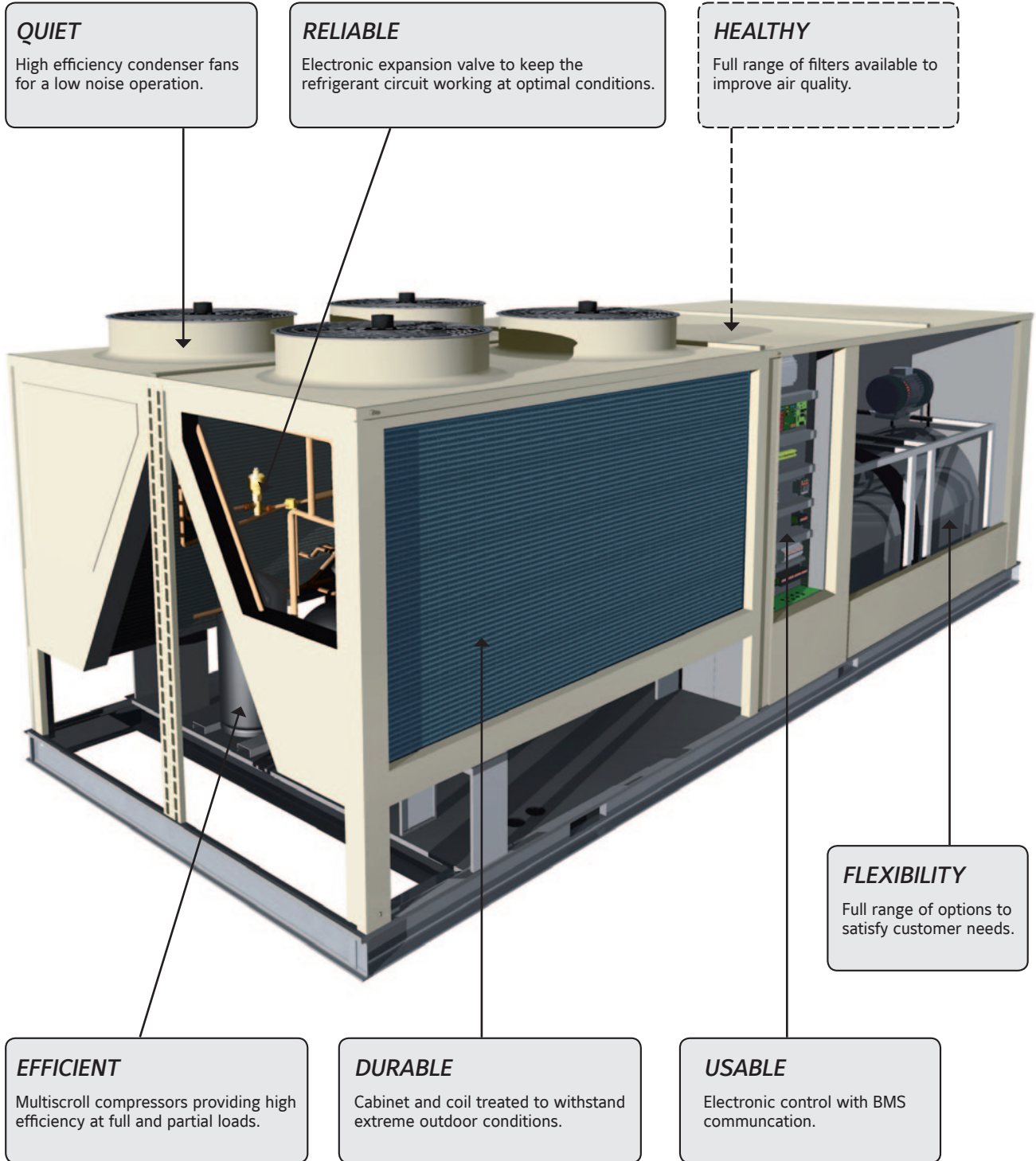
* With Premium kit (full load / partial load): -10°C ~ 50°C / -10°C ~ 52°C

** With Premium kit (full load / partial load): -20°C ~ 50°C / -20°C ~ 52°C

Codes

Cooling only models	ARC 100 AB	ARC 125 AB	ARC 150 AB	ARC 175 AB
	S661852400	S661852420	S661852450	S661852480
Heat pump models	ARH 100 AB	ARH 125 AB	ARH 150 AB	ARH 175 AB
	S661852403	S661852423	S661852453	S661852483
Cooling only + Gas heating models	ARG 100 AB	ARG 125 AB	ARG 150 AB	ARG 175 AB
	S661852401	S661852421	S661852451	S661852481
Heat pump + Gas heating models	ARD 100 AB	ARD 125 AB	ARD 150 AB	ARD 175 AB
	S661852402	S661852422	S661852452	S661852482
Thermostat	DPC-1			
to be ordered separately				

Large Activa rooftop details



Accessories & options

Accessories & options

	Code	Cooling only				Heat pump				Cooling + gas heating				Heat pump + gas heating			
		100	125	150	175	100	125	150	175	100	125	150	175	100	125	150	175
Thermostat DPC-1	S603786044	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
Dry bulb triple input economizer or motorized air damper with rain hood	S611751011	O	O			O	O			O	O			O	O		
	S611751511			O	O			O	O			O	O			O	O
Enthalpy probes	S613990081	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Indoor air quality sensor	S606819964	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A
Power Exhaust	S611751021	A	A			A	A			A	A			A	A		
	S611751521			A	A			A	A			A	A			A	A
Barometric relief damper	S611751031	A	A			A	A			A	A			A	A		
	S611751531			A	A			A	A			A	A			A	A
Fresh air damper	S613751021	A	A			A	A			A	A			A	A		
	S613751521			A	A			A	A			A	A			A	A
High speed drive	S611751091	O	O			O	O			O	O			O	O		
	S611751591			O	O			O	O			O	O			O	O
Side duct supply	S611751061	A	A			A	A			A	A			A	A		
	S611751561			A	A			A	A			A	A			A	A
Soft start indoor fan	5.5 kW S606744690	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
	11.5 kW S606744691	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Premium Kit (LAK included) *	S611751071	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Fixed roof curb	S611751081	A	A			A	A			A	A			A	A		
	S611751581			A	A			A	A			A	A			A	A
Adjustable roof curb	S611751082	A	A			A	A			A	A			A	A		
	S611751582			A	A			A	A			A	A			A	A
Dirty filter switch	S613990085	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Smoke detector	S613995382	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Fire detection thermostat	S613903003	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Hot water coil	S611751051	O	O			O	O										
	S611751551			O	O			O	O								
Electric heaters	37 kW S611751037	O	O	O	O	O	O	O	O								
	50 kW S611751050	O	O	O	O	O	O	O	O								
	60 kW S611751060	O	O	O	O	O	O	O	O								
Filter kit F6	S611751046	O	O			O	O			O	O			O	O		
	S611751546			O	O			O	O			O	O			O	O
Filter kit F7	S611751047	O	O			O	O			O	O			O	O		
	S611751547			O	O			O	O			O	O			O	O
Grill condenser coil protection	S611751041	O	O			O	O			O	O			O	O		
	S611751541			O	O			O	O			O	O			O	O
Antivibration mounting kit	S613751011	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O
Energy recovery	Contact us	A	A			A	A			A	A			A	A		
	Contact us			A	A			A	A			A	A			A	A
Filter kit F6 heat recovery	Contact us	O	O			O	O			O	O			O	O		
	Contact us			O	O			O	O			O	O			O	O
Filter kit F7 heat recovery	Contact us	O	O			O	O			O	O			O	O		
	Contact us			O	O			O	O			O	O			O	O
Alarm relay board	S606791243	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A	O/A
Copper-copper coil	Contact us	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O	O

O=Option (factory fitted). A=Accessory (supplied loose). O/A=If you want this item factory fitted, precise it in the order form.

* Features: increased efficiency by 0.15, extended max outdoor temperature up to +50°C at full load, Low ambient kit.

Accessories & options



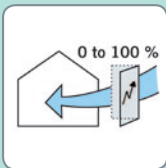
Triple input economizer

This system utilizes 3 probes: Return Air, Outdoor Air and Supply Air. The Outdoor Air damper and the Return Air dampers are mechanically interconnected in order to provide the same airflow at the coil inlet, with a single damper motor. The PCB compares sensor values and modulates the dampers providing maximum efficiency of the economiser system (free cooling) and comfort (Supply Air > 12°C). Combined with the air quality sensor, your payback will be ensured within few months. The rain hood is painted to match the basic unit and aluminium mesh pre-filter prevents water penetration.



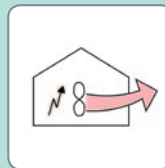
Indoor air quality

This sensor measures concentrations of pollutant gases, such as tobacco smoke, human body odours, kitchen odours, carbon monoxide, etc... It automatically overrides the economizer when pollutant levels rise above preset limits. A shorting plug will set the algorithm to acceptable, good or very good air quality. This VOC sensor (Volatile Organic Compounds) sends an ON/OFF signal to the control PCB. The YKlon will then adjust the fresh air damper, optimising indoor air quality and minimising the energy consumption.



Motorised outdoor air damper

Equipped with the same dampers as the economizer, the Return Air probe is not used. Outdoor air damper opens to pre-set position whenever the indoor fan is operating (selected from the thermostat, the indoor fan can be activated with the compressor or to operate continuously) and will drive fully closed when the indoor fan shuts down. The rain hood is painted to match the basic unit and aluminium mesh pre-filter prevents water penetration.



Power Exhaust

Used to mechanically relieve internal air pressure from the Return Air section and ensure efficient fresh air introduction on units equipped with triple input economiser or motorised air damper. The power exhaust fan motor works when enough Outdoor Air is blowing into the room and if Outdoor Air temperature is acceptable (12°C < t° < 30°C).



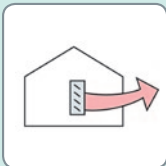
Enthalpy sensors

To control the economizer in humid areas, or when indoor air humidity needs to remain dry, you should select enthalpy regulation. Enthalpy sensors will be used with the triple input economizer.



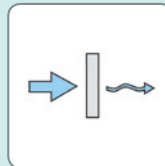
High speed drive

The high speed drive will increase the supply fan performance for applications requiring greater air flow and/or static pressure. Please consult technical guide for more information.



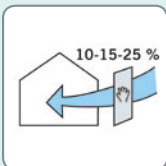
Barometric relief damper

This accessory can be used to relieve internal air pressure on units equipped with triple input economiser or motorised air damper but no power exhaust. When the rooftop is working in free cooling or introducing fresh air, the damper opens to relieve over pressure from the return air section. This accessory is comprised of a rain hood, a protective grille and a fully assembled damper.



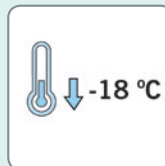
Dirty filter switch

Ensures that clean air is being supplied, advises when maintenance is required to prevent excessive depression and ensures water integrity of the AHU. These are the main advantages of filter dirty switch. Connected with the DPC-1 thermostat, the filter icon will appear on the thermostat screen when a filter change is required.



Fresh air damper and rain hood

The most cost effective method with a complete rain hood and a fixed damper that can be adjusted to provide approximately 10, 15 or 25% of fresh air.



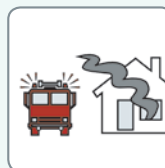
Low ambient control

All our rooftops are designed to work in cooling mode down to 7°C ambient temperatures. Although this working range suits most applications, the units can operate correctly down to -18°C with optional low ambient control.



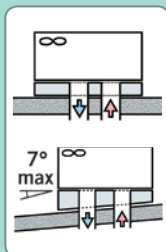
Fire detection thermostat

This fire detection thermostat is protecting the AHU but must not be used to ensure a full building protection against fire danger. The standard AHU is protected as standard with a Supply Air probe that shuts the unit down (lockout) when temperature exceeds 80°C. The electro-mechanical fire detection thermostat is used to fulfil specific local requirement. A manual reset is necessary.



Smoke detector

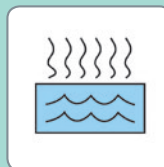
The smoke detector is protecting the AHU but must not be used to ensure a full building protection against smoke danger. If smoke is detected the AHU is shutdown (lockout). A manual reset is necessary.



Fixed and adjustable roof curbs

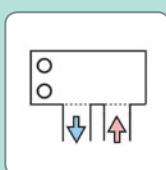
Ideal for down-flow applications, it is a great help for installation allowing duct connections, electrical connection and weatherproofing between the roof curb and the roof of the building. Shipped in kit form, it also gives sufficient height for condensate trap operation.

The adjustable roof curbs have the same benefits as the fixed roof curb, it allows the rooftop to be levelled on a roof with up to 7° slope (4%).



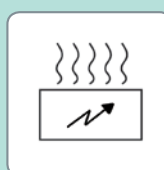
Hot water coil with control

The hot water coil and his control are always fitted, wired and factory tested. Located in the supply air section, side or bottom duct connection is possible without any modification. Complete with an anti-frost thermostat, the PCB will activate the modulated valve (24V supply, 0 - 10V modulating signal) in order to get the best comfort. A jumper will allow using hot water coil as 1st heating stage.



Side duct flanges

Fitted as standard on units 90, 120 and 150, this accessory is composed of easy to install sheet metal panels to allow ductwork connections on the side of the AHU for horizontal return air and/or supply air.



Electric heaters

Available on cooling only and Heat pump units, the electric heater is protected with two overheats per element. When the overheat operates, there is a lock out of the faulty electric heater stage and the PCB starts automatically another heat stage.



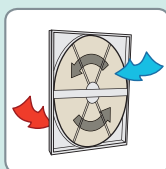
Kit conversion propane

This kit comprises replacement burner, pilot injectors and all necessary instructions for converting the natural gas burner to propane gas. The nominal pressure of the propane gas should be 37 mbar.



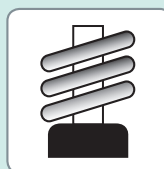
High heat gas

This kit comprises replacement burner injectors and all necessary instructions to provide high heat capacity for gas rooftop.



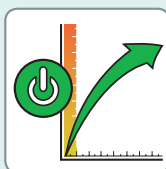
Energy recovery

Attached to the return air box of the rooftop, a rotary enthalpy wheel retrieves the energy of the exhausted air and transmits it to the fresh air intake. A special material used in the wheel allows that latent heat as well as sensible heat are transmitted.



Antivibration mounting kit

It is composed by a set of stainless steel springs, to be assembled underneath the rooftop in a specific position. Their installation avoids the potential vibration transmission of the equipment to the building and reduces therefore the noise level (compressors have their own shock absorbers delivered as standard).



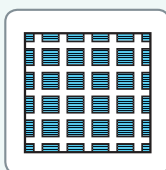
Indoor fan soft start

Compact control unit with a motor with AC semiconductors, designed for soft starting and stopping of three-phase motors for centrifugal fans. The starting time, the stopping time and the initial torque are adjusted by mean of independent potentiometers.



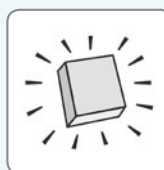
Return fan

Used to overcome high return path pressure drops, works in series with the indoor fan to maintain the air pressure of the conditioned space within acceptable levels.



Grill condenser protection

Metallic frame painted with oven-baked polymerized paint (800h salt spray resistance) to protect the fins of the coils from external damages.

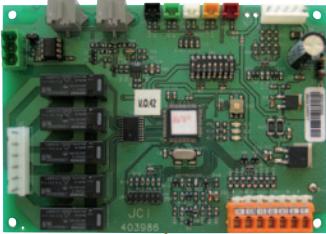


Air filters

G4, F6 and F7 filters are available to purify the air in the room. M1 fire class and manufactured in sheet metal frame, they are easy to install and clean.

Control System

YKN2open



The YKN2open is a controller regulating all components and accessories. It will pro actively manage cool and heat stages to maintain a stable room temperature maximizing the efficiency.

Additionally, the benefits are:

- Redundancy on cool and heat stages (if one step is locked out, the PCB starts another one automatically).
- Random start between units to minimise electrical tariff.
- All stages will start in sequence to reduce peak inrush.
- Reduces nuisance calls by using 3 times "you are out" on all safeties before a hard lockout occurs.
- Automatic restart after power failure. Compressors run time priority.
- Alarm output relay and led diagnostic code. No parameters to check before starting.
- Lockout and incident level of protection. Last 10 lockouts stored in a non-volatile memory.
- 4 heating stages on hot water heating.
- **BMS connection (N2 Open protocol).**



Yktool N2open

The Yktool is the perfect tool to use on a regular basis for comissioning and service on site. For comissioning, it will override the thermostat and start the cooling or heating stages. Being a plug and play device, you will have direct access to all sensors and status of each components and accessories installed (lockout & incidents, temperatures, defrost test...).

Code: S613786031



Thermostat DPC-1

- Day (normal), night (economy) and unoccupied (stand by).
- Lockout code on screen gives direct diagnostics.
- ON/OFF or programmable from dip switch setting.
- Day or night programmable state avoids wide internal temperature variation.
- 3 preset and 3 programmable profiles.
- Temperature override.
- Select the control sensor you want to use (integrated in the thermostat, return air in duct or room sensor).
- Turbo, normal or economy logic from dip switch setting.
- From -3°C to $+3^{\circ}\text{C}$ sensor offset.
- Average temperature with room or duct sensors.

Thermostats with integrated sensors

Thermostat models		DPC-1	DPC-1R
	Code	S603786044	S603786045
Roomtop	RTC and RTH	X	0
Rooftop	All models	0	0
Split system	VAC and VAH	X	0
	VCH	X	0

Main features			
Strategy	Turbo, normal or economy		
Auto restart after power failure	•		•
Number of cool stages	2	1	2
Number of heat stages	2	1	2
Auxiliary Heat	•		•
Automatic Heat/Cool change over	•		•
Continuous or auto indoor fan	•		•
Manual setback (Day/Night key)	Day, night and unoccupied		
Override possibility	•		•
Compressor anti short cycle	•		•
$^{\circ}\text{C}$ Range cooling / heating	10 to 32°C / 9 to 32°C		
Programmable, 7-day	•		•
Lockout codes	•		•
Outdoor air temperature	•		with YKlon
Sensor selection	•		•

X : Delivered as standard with the unit.
O : Optional. • : Function available.



RS-1

Room sensor

Indoor remote probe to provide close control of the ambient temperature at a location away from the DPC-1 and DPC-1R thermostats.

Code: S603786042



AS-1

Ambiance sensor

Digital remote probe to provide close control of the ambient temperature at a location away from DPC-1 and DPC-1R thermostats. Up to 4 remote probes can be connected to make an average of the room conditioned.

Code: S603786049



DS-1

Duct sensor

Remote probe to provide close control of the return air temperature in the duct, at a location away from DPC-1 and DPC-1R thermostats. The use of this probe is recommended when an indoor remote probe cannot be installed in the area where temperature is to be controlled.

Code: S603786047

About Johnson Controls

Johnson Controls delivers products, services and solutions that increase energy efficiency and lower operating costs in buildings for more than one million customers. Operating from 500 branch offices in more than 150 countries, we are a leading provider of equipment, controls and services for heating, ventilating, air-conditioning, refrigeration and security systems.

We have been involved in more than 500 renewable energy projects including solar, wind and geothermal technologies. Our solutions have reduced carbon dioxide emissions by 15 million metric tons and generated savings of \$7.5 billion since 2000. Many of the world's largest companies rely on us to manage 1.5 billion square feet of their commercial real estate.

