

ACTIVA Roof-Mounted Air-Conditioning Unit

48 kW to 197 kW cooling and 50 kW to 187 kW heating, with R-410A refrigerant



Engineering Guide

Form: 150.85-EG1.EN.CE (1220) New Release

Issue Date: 2020-12-11

CE



Contents

General safety guidelines
Safety symbols
Changeability of this document6
Key points7
Specifications
Models designation 16
Refrigerant flow diagram 18
Aeraulic configuration 22
Energy performance
Operating limits
Correction factors
Technical data
Physical data 27
Weight
Electrical data
Dimensions
Duct outlet dimensions
Clearances

General safety guidelines

Important: Read before proceeding

This equipment is a relatively complicated apparatus. During rigging, installation, operation, maintenance, or service, individuals may be exposed to certain components or conditions including, but not limited to: heavy objects, refrigerants, materials under pressure, rotating components, and both high and low voltage. Each of these items has the potential, if misused or handled improperly, to cause bodily injury or death. It is the obligation and responsibility of rigging, installation, and operating/service personnel to identify and recognize these inherent hazards, protect themselves, and proceed safely in completing their tasks. Failure to comply with any of these requirements could result in serious damage to the equipment and the property in which it is situated, as well as severe personal injury or death to themselves and people at the site.

This document is intended for use by owner-authorized rigging, installation, and operating/service personnel. It is expected that these individuals possess independent training that will enable them to perform their assigned tasks properly and safely. It is essential that, prior to performing any task on this equipment, this individual shall have read and understood the on-product labels, this document and any referenced materials. This individual shall also be familiar with and comply with all applicable industry and governmental standards and regulations pertaining to the task in question.

Safety symbols

The following symbols are used in this document to alert the reader to specific situations:

DANGER

Indicates a possible hazardous situation which will result in death or serious injury if proper care is not taken.

Identifies a hazard which could lead to damage to the machine, damage to other equipment and/or environmental pollution if proper care is not taken or instructions and are not followed.

Indicates a potentially hazardous situation which will result in possible injuries or damage to equipment if proper care is not taken.

③ **Note:** Highlights additional information useful to the technician in completing the work being performed properly.



External wiring, unless specified as an optional connection in the manufacturer's product line, is not to be connected inside the control cabinet. Devices such as relays, switches, transducers and controls and any external wiring must not be installed inside the micro panel. All wiring must be in accordance with Johnson Controls' published specifications and must be performed only by a qualified electrician. Johnson Controls will NOT be responsible for damage/problems resulting from improper connections to the controls or application of improper control signals. Failure to follow this warning will void the manufacturer's warranty and cause serious damage to property or personal injury.

Changeability of this document

In complying with Johnson Controls' policy for continuous product improvement, the information contained in this document is subject to change without notice. Johnson Controls makes no commitment to update or provide current information automatically to the manual or product owner. Updated manuals, if applicable, can be obtained by contacting the nearest Johnson Controls Service office or accessing the Johnson Controls Virtual Branch website at https://wirtualbranch.johnsoncontrols.com/vb/.

It is the responsibility of rigging, lifting, and operating/service personnel to verify the applicability of these documents to the equipment. If there is any question regarding the applicability of these documents, rigging, lifting, and operating/service personnel should verify whether the equipment has been modified and if current literature is available from the owner of the equipment prior to performing any work on the chiller.

Key points

- Energy class A
- Ecodesign 2021 ready applicable from 2021
- R-410A refrigerant
- High SEER and SCOP
- Two circuits for the entire range to optimize performances at part load, and avoid cold draught during defrost mode
- The ACTIVA range is provided with two compressors from sizes ASR50 to ASR140, and four compressors for the ASR190. These configurations which allow up to four capacity stages, give an immediate return on investment.
- Refrigerant circuit is completely closed in a separate compartment to reduce noise level.
- Great accessibility to internal components for service operations.
- Removable drain pan.
- Double skin as standard with 25 mm glass wool insulation.
- Numerous air inlet/outlet configurations
- AC/EC plug fan for supply and extract air
- 2 filters stage
 - G4
 - F7/F9
- 3 energy recovery systems
 - RECO: Energy recovery on exhaust air
 - TRECO: Thermodynamic energy recovery
 - FRECO: Food refrigeration heat recovery
- 3 additional heating systems:
 - Hot water coil
 - Electric heater
 - Gas burner
- Leak detection according to BREEAM standard
- New display on external panel allowing complete control of the unit
- Phase sequence monitor supplied as standard
- Small footprint, allowing savings on shipping and handling costs.



Figure 2: ACTIVA ASR160 to ASR190



Specifications

General

The new ACTIVA units have been designed and optimized to operate with R-410A refrigerant fluid. They are of single refrigerant circuit type.

They are available in cooling only and reversible versions.

The range consists in 10 sizes (ASR50, ASR65, ASR80, ASR95, ASR105, ASR120, ASR140, ASR160, and ASR190) and covers a nominal cooling capacity range from 49 kW to 219 kW and a nominal heating capacity range from 50 kW to 214 kW.

All the units are made up of two refrigeration circuits equipped with scroll single-compressor or twin scroll compressors mounted in tandem to constantly adapt to partial system loads.

The general operation status of the machine is continuously under the control of an IATC controller.

Cabinet and structure

The cabinet and structure of the unit are of heavy duty galvanized steel. All galvanized steel components are individually painted by a special painting process before the assembly of the unit. This painting system performs a homogeneous protection to the corrosion. The painting is a polyester powder based type, coloured in RAL 9002.

The ACTIVA units are equipped with double skin panels as a standard to prevent insulation fiber entering into the building and harmful build-up of bacteria or contaminants. It also ensure better thermal insulation

Specifications of glass wool:

- Conductivity: 0.035 W/(m.K) at 20°C
- Thermal resistance: 0.714 m².K/W

Control and maintenance operations are facilitated thanks to all of the doors and access panels. Opening and closing are done with a simple triangular key.

Extractable drain pan under indoor coil, to allow for hygienic cleaning.

Compressors

Each unit is equipped with two scroll mono-compressors or four scroll compressors fitted on a rail and assembled together to form tandem compressors.

The compressors are then mounted on rubber pads in order to eliminate noise and vibration transmissions. The compressor motors have a direct start-up. Each motor is cooled by the refrigerant gas and is equipped with an overload protection.

Crankcase heaters on each compressor to eliminate refrigerant migration and allow for safe start up in winter.

A phase sequence monitor is supplied as standard.

Outdoor coils

The outdoor coils are a finned coil constructed with seamless copper tubes mechanically expanded into aluminium fins. The fins of ACTIVA cooling and heating versions coils are made of aluminium with hydrophylic blue coating to facilitate water droplets drain in the event of defrosting.

Outdoor coils are largely dimensioned in order to optimize performance and defrosting cycles. They are designed for low air resistance to reduce axial fan power consumption and noise level. They are equipped with a protective grille to prevent shocks.

Each ACTIVA has axial fan, with 2 speeds.

The fan motor has IP54 grade and is equipped with a thermal overload protection.

A pressostatic type fan speed controller can be delivered as a factory-fitted option. It allows the unit to operate in cooling mode at low ambient temperatures down to -10°C minimum, because it regulates the fan speed in order to maintain the constant condensing temperature.

All fans are fitted with a protective grille on top.

Blast and return fan

The ACTIVA is provided with blast and return fans, PLUGFAN type with an AC (Asynchronous) motor or with an EC (Electronic Switching) motor, and low pressure or high pressure according to the configuration selected by the customer.

Figure 3: Blast and return fan





Economiser with 2 dampers

The factory-mounted economiser with 2 dampers is available with the R1, R2, and R4 configurations.

The control program for the economiser is optimized to use the biggest possible amount of outdoor air, to save consumption of the compressors, and thus energy.

The outdoor air damper is closed during shutdown periods, in the starting, morning warming, and night idling modes, in order to save energy.

Figure 4: Economiser with 2 dampers



Economiser with 3 dampers - RECO system

The factory-mounted economiser with 3 dampers, is equipped with an EC plug fan return fan as a standard and is available with the R1 and R2 configurations.

The economiser increases the partial load operation of the compressors and improves the seasonal efficiency thanks to a proportional-action control function.

The economiser with 3 combined dampers, with proportional modulation of the outdoor-recycledextracted air, allows an extraction up to 100% of the total air flow (in equivalent quantity to the intake of outdoor air). It provides real energy savings by regulating the air renewal.

Table 1: Economiser

Outdoor air	Pc	EER	Ph	СОР
30%	+1%	+2%	+7%	+4%
60%	+2%	+4%	+14%	+8%

Figure 5: Economiser with 3 dampers



TRECO thermodynamic energy recovery between fresh air and exhaust air

This option is available only on the ACTIVA equipped with 3 dampers (not compatible with the FRECO system).

This thermodynamic system for recovering energy between the exhaust air and fresh air is delivered entirely mounted and factory tested. It is composed of an independent refrigeration circuit and a dedicated control.

Table 2: TRECO energy recovery

Outdoor air	Pc	EER	Ph	СОР
20%	+21%	0%	+20%	+3%
60%	+20%	-2%	+21%	+4%

Figure 6: TRECO energy recovery option



FRECO recovery of energy from the food refrigeration system

The ACTIVA provided with a FRECO system uses the heat generated by the condensers of the refrigeration systems of a supermarket as a free source of heat.

Table 3: FRECO energy recovery

T° air mix	Additional Pc
20°C	+60%
0°C	+130%

Figure 7: FRECO recovery system



Figure 8: FRECO recovery system diagram



The refrigerated cabinets of the store extract heat on a water loop (**glycol**)

A water/water chiller (**food cooling unit**) transfers that heat on a secondary water loop (**water**. In standard, that heat is removed by a dry-cooler. The FRECO coil enables to vaporize that heat for thermal comfort application. It moderates the use of the ACTIVA thermodynamic circuit.

Heating

The ACTIVA can be equipped, according to the specifications of the customer, with an additional heating system. This equipment is installed and tested in the factory.

Hot water coil

The hot water coil is available on all of the configurations of the ACTIVA. It covers the entire surface of the main exchanger. This arrangement makes it possible to reach a low speed for the passage of air and to reduce the energy consumption and the noise level. The associated three-way modulating valve constantly provides a precise regulation of the desired temperature.

Electric heating

The electric heating battery is available on all of the configurations of the ACTIVA. Three power levels 36 kW, 48 kW and 96 kW are available to adapt to the entire ACTIVA range.

The regulation makes it possible to control two power stages in order to adapt the electrical consumption to the heating needs.

An air flow rate detector associated with two automatic and manual reset thermostats provides the safety for the electric heating function.

Frame

The mounting frame is made from galvanized steel sheet. It is delivered with a seal to connect the edge of the frame to the unit and eliminate vibrations and thermal bridges.



Gas burner

The gas burner is available only on the S1 and S3 configurations. The gas burner is insensitive to wind and harmful atmospheric conditions.

The regulation makes it possible to control two power stages in order to adapt the gas consumption to the heating needs.

The configuration and regulation that are specific to the gas burner makes it possible to reach optimum energy efficient output while still limiting atmospheric discharges.

Model	Furnace thermal power (kW)		Thermal efficiency (%)	
	Min	Мах		
ASR50	42.4	52.2	93.2	
ASR65	60	73.5	93.7	
ASR80	60	73.5	93.7	
ASR95	81.8	100	93.9	
ASR105	81.8	100	93.9	
ASR120	81.8	100	93.9	
ASR140	81.8	100	93.9	
ASR160	100	200	93.9	
ASR190	100	200	93.9	

Table 4: Gas burner specifications

Control Figure 10: Control panel



All of the required controls are grouped together and wired on the ACTIVA ,factory tested and shipped ready to use.

The controls are located in a sealed compartment that is isolated from the air flow. The cables and inside wires are marked in order to facilitate troubleshooting.

The electrical equipment is compliant with EC standards and EN60204-1.

A single main switch that can be locked can be accessed from the outside of the ACTIVA without opening the caisson. This switch is sized in the factory according to all of the options supplied.

The unit comes standard with a single electrical connection.

A factory-programmed direct digital control (the IATC) handles and optimizes the operation all throughout the year, emphasizing comfort and the saving of energy.

The IATC regulates the heating and the cooling according to the desired ambient temperature, controlling the cyclical operation and the rotation of the compressors, as well as the deicing, overload protection, high and low pressures, compliance with the requirements for minimum ventilation, and the fan mode, continuous or intermittent.

Compensation for the summer-winter ambient temperature and a min/max ambient temperature setting are provided as standard.

Maintenance parameters and operating times for the compressors/unit are also available.

The IATC can be equipped (optionally) with a clock card for day-night programming. This card can be programmed on site in occupied-unoccupied modes with a reduction in the ambient temperature.

The user interface also contains a backlit semi-graphic liquid crystal display screen with 4 lines and 20 columns. This display shows the current values, setpoints, operating times and alarms. It has a 6-key keyboard allowing for on-site programming of the setpoints, proportional strips and the alarm thresholds. The semi-graphic terminal is connected to the controller using the 80-cm telephone cable provided, connecting the rear of the terminal to the J10 plug of the controller.

For other applications, you can increase the distance between the terminal and the controller up to the following distances:

- Up to 50 m with a 6-wire shielded telephone cable
- Up to 200 m with a 6-wire shielded telephone cable and two communication cards (optional)

A system for building management provided by another supplier can communicate via Modbus with a card of the RS-485 type as an option, on the user interface. The parameters of the ACTIVA are then transmitted and can be modified from a remote monitoring and troubleshooting station.

In case several ACTIVA units are installed (in zones or groups whether or not different), it is possible to display the parameters of each unit with only one interface for the entire installation. The principle consists in connecting all of the units in parallel, using a single pLAN bus (proprietary protocol), while connecting the graphics interface to a master controller. This IATC centralizes certain operating modes, such as the "occupied/unoccupied" mode.

Models designation

Figure 11: Model designation

SR95 H ACT EH G4 EC HPF S1 R1D2 FRECO HY TTS EPI EPO LK + AM SD 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 15

Table 5: Model designation

Rep		Description				
			ASR95 : size 95			
	Madal		ASR105 : size 105	ASR160 : size 160		
1	Model	ASROS : SIZE 65	ASR120 : size 120	ASR190 : size 190		
		ASR80 : size 80	ASR140 : size140			
2	Version	Version L : Cold only	H : Reversible			
3	Brand : ACTIVA					
4	Heating	Empty : Without heating EH: Electric heating HWC : Hot water coil	GAS A: Atmospheric gas burne GAS C : Condensation gas burr	r her		
5	Filter	Empty : Without filter	G4+F7 : FilterG4 + Filter F7			
5	i ntei	G4 : Filter G4	G4+F9 : FilterG4 + Filter F9			
6	Blast fan	LPF : Standard AC motor fan HPF :High pressure AC motor fan	EC LPF : Standard EC motor far EC HPF : High pressure EC mot	า cor fan		
7	Blast configuration	S1 : Low blast	S3 : Front blast			
-	Blast configuration	S2 :Left blast	S3 : Top blast			
			R1D3LPF RECO :Low return + 3	Dampers		
		R1 :Low return	Standard EC motor fan R2D3LPF RECO : Left return +3 Dampers Standard EC moto			
		R2 : Left return				
8	Return configuration	R4 : Top return	fan			
		R1D2 : Low return +2 Dampers	R1D3HPF RECO : Low return +	3 Dampers High pressure EC		
		R2D2 : Left return +2 Dampers	motor fan			
		R4D2 :Top return +2 Dampers	R2D3HPF RECO : Left return + motor fan	3 Dampers High pressure EC		
		Empty : Without recovery				
9	Energy recovery	FRECO : Recovery of energy from the food refrigeration system	TRECO : Left return + 3 Dampe	rs + Thermodynamic recovery		
		Vide : Without sensor				
10	Sensor	HY : Enthalpy sensor	VOC : Air quality sensor			
11	Control	Empty : standard regulation	TTS : All Seasons Regulation			
12	Indoor exchanger treatment	Vide : Without treatment	EPI : Exchanger - epoxy treatm	ent		

Table 5: Model designation

Rep		Description	
13	Outdoor exchanger Empty : Without treatment		EPO :Exchanger - epoxy treatment
14	Display	Empty : Without display	RK : Offset graphics display
14	Display	LK : Local graphics display	LRK : Local and offset graphics displays
		AM : Rubber absorbing pads	
		CS : Progressive starter	RT : Offset ambiance sensor
		SD : Smoke detector	MF : Anti-drip filter
15	Ontion	EM:Energy counter	FAD :Fresh air ducted
1.5	option	CF : Clogged filter pressure	MODBUS: Modbus
		switch	LN : Low sound level
		CF2 : Double-stage clogged filter pressure switch	CC : Transport container

Refrigerant flow diagram

Callout	Description	Callout	Description
C1.1 / C1.2 C2.1 / C2.2	Compressor	RAH	Air return hygrometry
RV1 / RV2	Cycle reversal valve	RAQ	Air return quality
OFA / OFB OFC / OFD	Outside fans	OAH	Outside air hygrometry
FD1 / FD2	Dehydrating filter	OAT	Outside air temperature
SG1 / SG2	Liquid light	MAT	Temperature of air mix before coil
EEV1 / EEV2	Thermostatic pressure reducing valve	SAT	Blast air temperature
IC	Internal coil (evaporator)	ERV	FRECO coil modulating valve
CDT1 / CDT2	Backflow temperature	ERC	FRECO coil anti-freeze alarm
HP1 / HP2	High pressure switch	HWV	Valve modulating hot water coil
OCT1 / OCT2	Condenser temperature	HWC	Hot water coil anti-freeze alarm
HPD6 / HPD7	De-frosting pressure switch	FA	Heating thermostat automatic reset
CST1 / CST2	Intake temperature sensor	FM	Heating thermostat manual reset
EP1 / EP2	Low pressure sensor	CR	TRECO compressor
IFAN1 / IFAN2	Blast fans	RVR	TRECO cycle reversal valve
RFAN1 / RFAN2	Extraction fans	FDR	TRECO dehydrating valve
RAD	Air return damper	TEVR	TRECO pressure reducing valve
OAD	Fresh air damper	FPER	TRECO pressure transducer (low pressure)
EAD	Extracted air damper	HPR	TRECO automatic reset high pressure switch
RAT	Air return temperature	FPCR	TRECO pressure transducer (high pressure)

Table 6: Refrigerant circuit legend

Figure 12: ASR50-ASR65-ASR80-ASR95-ASR-105-ASR-120-ASR140



Figure 13: ASR50-ASR65-ASR80-ASR95-ASR-105-ASR-120-ASR140



Figure 14: ASR50-ASR65-ASR80-ASR95-ASR-105-ASR-120-ASR140



Callout	Description	Callout	Description
C1.1 / C1.2 C2.1 / C2.2	Compressor	RAH	Air return hygrometry
RV1 / RV2	Cycle reversal valve	RAQ	Air return quality
OFA / OFB OFC / OFD	Outside fans	OAH	Outside air hygrometry
FD1 / FD2	Dehydrating filter	OAT	Outside air temperature
SG1 / SG2	Liquid light	MAT	Temperature of air mix before coil
EEV1 / EEV2	Thermostatic pressure reducing valve	SAT	Blast air temperature
IC	Internal coil (evaporator)	ERV	FRECO coil modulating valve
CDT1 / CDT2	Backflow temperature	ERC	FRECO coil anti-freeze alarm
HP1 / HP2	High pressure switch	HWV	Valve modulating hot water coil
OCT1 / OCT2	Condenser temperature	HWC	Hot water coil anti-freeze alarm
HPD6 / HPD7	De-frosting pressure switch	FA	Heating thermostat automatic reset
CST1 / CST2	Intake temperature sensor	FM	Heating thermostat manual reset
EP1 / EP2	Low pressure sensor	CR	TRECO compressor
IFAN1 / IFAN2	Blast fans	RVR	TRECO cycle reversal valve
RFAN1 / RFAN2	Extraction fans	FDR	TRECO dehydrating valve
RAD	Air return damper	TEVR	TRECO pressure reducing valve
OAD	Fresh air damper	FPER	TRECO pressure transducer (low pressure)
EAD	Extracted air damper	HPR	TRECO automatic reset high pressure switch
RAT	Air return temperature	FPCR	TRECO pressure transducer (high pressure)

Table 7: Refrigerant circuit legend

Figure 15: ASR160-ASR190



Figure 16: ASR160-ASR190



Figure 17: ASR160-ASR190



Aeraulic configuration

Figure 18: Air return



Compatible with economiser with 2 or 3 dampers



Compatible with economiser with 2 or 3 dampers





Compatible with economiser with 2 dampers





Figure 19: Air blast



Energy performance

Figure 20: Energy class

More efficient	SYSAER	SR50.L.EC	SR65.L.EC	SR80.L.EC	SR95.L.EC	SR105.L.E
A	EER	3.13	3	3.40	3.10	3.31
B	Class	A	A	A	A	А
						-
	SYSAER	SR120.L.EC	SR140.L.EC	SR160.L.EC	SR190.L.EC	
	EER	3.23	3.02	3.22	3.25	
E	Class	A	A	A	A	
F						
G						

Less efficient

Space cooling energy efficiency class according to EN 14511 2018.

More efficient
A
В
E
F
G
Less efficient

STOALK	SR50.H.EC	SR65.H.EC	SR80.H.EC	SR95.H.EC	SR105.H.EC
EER	3.04	3.13	3.30	3.01	3.21
Class	А	A	A	A	A
evered					
SYSAER	SR120.H.EC	SR140.H.EC	SR160.H.EC	SR190.H.EC	
SYSAER EER	SR120.H.EC 3.14	SR140.H.EC 3.02	SR160.H.EC 3.13	SR190.H.EC 3.15	
SYSAER EER Class	SR120.H.EC 3.14 A	SR140.H.EC 3.02	SR160.H.EC 3.13 A	SR190.H.EC 3.15	

Space cooling energy efficiency class according to EN 14511 2018.

More ef	ficient
А	
В	
D	
E	
F	
G	
Less effi	cient

SYSAER	SR50.H.EC	SR65.H.EC	SR80.H.EC	SR95.H.EC	SR105.H.EC
COP	3.42	3.41	3.52	3.41	3.52
Class	А	А	А	А	А
					r
SYSAER	SR120.H.EC	SR140.H.EC	SR160.H.EC	SR190.H.EC	
COP	3.43	3.47	3.42	3.45	•
Class	А	А	А	А	

Space heating energy efficiency class according to EN 14825 2017.

Operating limits





Figure 22: ACTIVA.H in heating mode



Correction factors

Table 8: Fouling factors - Evaporator

Fouling factor (m2.°C/kW)	Capacity	Power input
0.044	1.000	1.000
0.088	0.987	0.995
0.176	0.964	0.985
0.352	0.915	0.962

Table 9: Altitude factors

Altitude (m)	Capacity	Power input
0	1.000	1.000
600	0.987	1.010
1200	0.973	1.020
1800	0.958	1.030
2400	0.943	1.040

Table 10: Correction factors - Ethylene glycol

% glycol	Freezing point (°C)	Capacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-3	0.991	0.996	1.013	1.070
20	-8	0.982	0.992	1.040	1.129
30	-14	0.972	0.986	1.074	1.181

Ethylene glycol is toxic to the environment. Moreover, it is not suitable for heating with domestic hot water production by simple exchange.

Table 11: Correction factors - Propylene glycol

% glycol	Freezing point (°C)	Capacity	Power input	Water flow	Pressure drop
0	0	1.00	1.00	1.00	1.00
10	-3	0.987	0.992	1.010	1.068
20	-7	0.975	0.985	1.028	1.147
30	-13	0.962	0.978	1.050	1.248

Technical data

Physical data

Table 12: ACTIVA.L

Model			ASR50.L.	ASR65.L.	ASR80.L.	ASR95.L.	ASR105.L	ASR120.L	ASR140.L	ASR160.L	ASR190.L
			EC	EC	EC	EC	.EC	.EC	.EC	.EC	.EC
Performa	nce										
Nominal refrigerat (1)	ion power	kW	49.57	62.81	78.99	95.13	111.08	119.87	142.09	164.98	197.06
Absorbed power (1)	nominal	kW	15.81	19.46	23.23	30.66	33.56	37.10	47.09	51.19	60.61
EER total ((1)		3.13	3.23	3.40	3.10	3.31	3.23	3.02	3.22	3.25
Energy ef	ficiency cla	ss (1)	A	A	A	A	A	A	A	A	A
Pdesign C	(2)	kW	49.57	62.81	78.99	95.13	111.08	119.87	142.09	164.98	197.06
SEER (2)			3.57	3.58	3.74	3.54	3.66	3.57	3.52	3.91	3.94
'l7 sc (2)			140	140	147	138	143	140	138	154	154
ELECTRIC	AL POWER	SUPPLY									
Supply voltage			400V / 3~	+N / 50Hz							
Maximum operating	intensity	А	46.30	57.60	74.60	83.80	89.80	103.00	123.00	157.80	161.80
Start inter (without s starter)	nsity soft	A	156.10	175.00	184.60	225.80	276.80	290.00	347.00	266.80	303.80
Start intensity (with soft starter)		А	69.96	85.68	113.60	125.40	139.20	152.40	185.40	198.10	203.40
REFRIGER	ANT		·								
Туре			R410A								
Load			SEE ID PL	ATE							
Number of refrigeration circuits		tion	2	2	2	2	2	2	2	2	2
COMPRES	SORS		·								
Туре			Scroll								
Number			2	2	2	2	2	2	2	4	4
Type of m	ounting		Single							Tandem	
Power rec stages	luction	%	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/25/50 75/100	0/25/50 75/100
Heating re	esistances	W	2 x 70	2 x 70	2 x 70	2 x 70	2 x 70	2 x 70	2 x 120	4 x 70	4 x 70
INNER CO	IL										
Туре			Copper tu	ibes & alur	ninum fins	5					
Number c	of rows		3	3	4	3	4	4	4	4	6
Front surf	ace	m²	1.50	1.80	2.25	2.25	3.24	3.24	3.24	3.24	3.24
INNER FA	N		1								
Туре	-)		Reaction	centrifuge	1-	1-	-	1-	1-	1-	-
Number (3)		1	1	2	2	2	2	2	2	2
	Minimum	m3/h	7 760	9 200	11 440	14 000	15 600	17 200	20 400	24 000	25 400
Air flow	Nominal	m3/h	9 700	11 500	14 300	17 500	19 500	21 500	25 500	28 000	30 000
rate (3)	Maximu m	m3/h	11 640	13 800	17 160	21 000	23 400	25 800	30 600	33 600	36 000
Motor pov	wer	kW	3.5	5.7	5.8	7	7	11.4	11.4	13.5	13.5
OUTER CC	DIL										
Туре			Copper tu	ibes & alur	ninum fins	; -	1-	1-	1-	1-	-
Number c	of rows	1 -	2	2	3	2	3	3	3	2	3
front surf	ace	m²	0.76	1.01	1.01	1.50	1.50	1.50	1.50	2.70	2.70

Table 12: ACTIVA.L

Model		ASR50.L. EC	ASR65.L. EC	ASR80.L. EC	ASR95.L. EC	ASR105.L .EC	ASR120.L .EC	ASR140.L .EC	ASR160.L .EC	ASR190.L .EC			
OUTER FA	N			•									
Туре			Axial										
Number			2	2	2	2	2	2	2	4	4		
Diameter		mm	630	710	710	800	800	800	800	800	800		
Air flow rate	Nominal	m3/h	9 800	13 000	13 000	20 000	20 000	20 000	20 000	15 500	15 500		
Motor power kW		kW	0.62	0.94	0.94	1.65	1.65	1.65	1.65	0.84	0.84		
FILTRATIC	N							•					
Number c	of filters		9										
Efficiency	/ Ranking		G4 - Am < 90% / F7 - 80% < Em < 90% / F9 - Em < 95%										
Туре			Universal cells										
DIMENSIC	ONS & WEI	GHT											
Longth	Total	mm	3 250	3 250	3 250	3 740	3 740	3 740	3 740	5 505	5 505		
Length	Floor	mm	2 895	2 895	2 895	3 295	3 295	3 295	3 295	5 050	5 050		
Width		mm	2 030	2 030	2 030	2 285	2 285	2 285	2 285	2 285	2 285		
Height mm 1 800 1 800 1 800 2 110 2 110 2 110 2 110 2 110					2 110	2 110							
Weight (w option)	vithout	kg	1 085	1 155	1 225	1 470	1 685	1 805	1 855	2 350	2 555		

i Note:

- 1. According to EN14511 2018
- 2. According to EN14825 2017
- 3. EC standard fan

Table 13: ACTIVA.H

Model		ASR55.H. EC	ASR65.H. EC	ASR80.H. EC	ASR95.H. EC	ASR105. H.EC	ASR120. H.EC	ASR140. H.EC	ASR160. H.EC	ASR190. H.EC
PERFORMANCE										1
Nominal										
refrigeration power (1)	kW	48.12	60.95	76.67	92.34	107.81	116.34	137.88	160.10	191.21
Absorbed nominal power (1)	kW	15.81	19.46	23.23	30.66	33.56	37.10	45.69	51.19	60.61
EER total (1)		3.04	3.13	3.30	3.01	3.21	3.14	3.02	3.13	3.15
Energy efficiency class (1)		A	A	A	A	A	A	A	A	A
PdesignC (2) kW		48.12	60.95	76.67	92.34	107.81	116.34	137.88	160.10	191.21
SEER (2)		3.53	3.52	3.63	3.52	3.55	3.52	3.52	3.80	3.82
'l7 sc (2)		138.15	137.98	142.23	137.81	139.17	137.83	137.67	148.92	149.82
Nominal heating power (2)	kW	50.65	59.65	76.63	90.66	106.95	117.10	148.70	157.90	187.31
Absorbed nominal power (2)	kW	14.81	17.49	21.77	26.59	30.38	34.14	42.85	46.17	54.29
COP (2)		3.42	3.41	3.52	3.41	3.52	3.43	3.47	3.42	3.45
Energy efficiency cla (2)	ss (COP)	A	A	A	A	A	A	A	A	A
PdesignH (2)	kW	48.00	58.00	67.00	85.00	100.00	112.00	145.00	155.00	180.00
SCOP (2)		3.20	3.22	3.22	3.23	3.22	3.21	3.20	3.19	3.23
'l7 s (2)		125.00	126.00	126.00	126.00	126.00	125.00	125.00	125.00	126.00
ELECTRICAL POWER	SUPPLY									
Supply voltage		400V / 3~	+N / 50Hz							

Table 13: ACTIVA.H

Model			ASR55.H. EC	ASR65.H. EC	ASR80.H. EC	ASR95.H. EC	ASR105. H.EC	ASR120. H.EC	ASR140. H.EC	ASR160. H.EC	ASR190. H.EC		
Maximum		Δ	46.30	57.60	74.60	83.80	80.80	103.00	123.00	157.80	161.80		
operating	intensity	^	40.50	57.00	74.00	05.00	09.00	105.00	125.00	137.00	101.00		
Start inten	isity												
(without s	oft	A	156.10	175.00	184.60	225.80	276.80	290.00	347.00	266.80	303.80		
starter)													
Start inter	isity (with	А	69.96	85.68	113.60	125.40	139.20	152.40	185.40	198.10	203.40		
REFRIGER/			R410A										
Туре			SEE ID PLATE										
Load		tion	SEE ID PLA										
circuits	rreingera	lion	2	2	2	2	2	2	2	2	2		
COMPRES	SORS												
Туре			Scroll		-	-		-					
Number			2	2	2	2	2	2	2	4	4		
Type de m	ontago		- Single	-	-	-	-	-	-	Tandom			
Type de m			Single								0/25/50		
Power red stages	uction	%	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/50/100	0/25/50 75/100	0/25/50 75/100		
Resistance	e de carter	W	2 x 70	2 x 70	2 x 120	4 x 70	4 x 70						
INNER CO	IL												
Туре			Copper tu	bes & alun	ninum fins								
Number o	f rows		3	3	4	3	4	4	4	4	6		
Front surfa	ace	m²	1.50	1.80	2.25	2.25	3.24	3.24	3.24	3.24	3.24		
INNER FAI	N												
Туре			Reaction o	entrifuge									
Number (3	3)		1	1	2	2	2	2	2	2	2		
	Minimum	m3/h	7 760	9 200	11 440	14 000	15 600	17 200	20 400	24 000	25 400		
Air flow	Nominal	m3/h	9 700	11 500	14 300	17 500	19 500	21 500	25 500	28 000	30 000		
rate (3)	Maximu m	m3/h	11 640	13 800	17 160	21 000	23 400	25 800	30 600	33 600	36 000		
Motor pov	ver	kW	3.5	5.7	5.8	7	7	11.4	11.4	13.5	13.5		
OUTER CO	IL												
Туре			Copper tu	bes & alun	ninum fins								
Number o	f rows		2	2	3	2	3	3	3	2	3		
front surfa	ace	m²	0.76	1.01	1.01	1.50	1.50	1.50	1.50	2.70	2.70		
OUTER FA	N												
Туре			Axial										
Number			2	2	2	2	2	2	2	4	4		
Diameter		mm	630	710	710	800	800	800	800	800	800		
Air flow rate	Nominal	m3/h	9 800	13 000	13 000	20 000	20 000	20 000	20 000	15 500	15 500		
Motor pov	ver	kW	0.62	0.94	0.94	1.65	1.65	1.65	1.65	0.84	0.84		
FILTRATION													
Number of filters			9										
Efficiency	/ Ranking		G4 - Am <	90% / F7 -	80% < Em	< 90% / F9	- Em < 95%	6					
Туре			Universal	cells									
Dimensior	ns & Weigh	nt											
Length	Total	mm	3 250	3 250	3 250	3 740	3 740	3 740	3 740	5 505	5 505		
Length	Floor	mm	2 895	2 895	2 895	3 295	3 295	3 295	3 295	5 050	5 050		

Table 13: ACTIVA.H

Model		ASR55.H. EC	ASR65.H. EC	ASR80.H. EC	ASR95.H. EC	ASR105. H.EC	ASR120. H.EC	ASR140. H.EC	ASR160. H.EC	ASR190. H.EC
Width	mm	2 030	2 030	2 030	2 285	2 285	2 285	2 285	2 285	2 285
Height	mm	1 800	1 800	1 800	2 110	2 110	2 110	2 110	2 110	2 110
Weight (without option)	kg	1 085	1 155	1 225	1 470	1 685	1 805	1 855	2 350	2 555

Weight

Table 14: Weight

Model			ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
basic		kg	1 085	1 155	1 225	1 470	1 685	1 805	1 855	2 350	2 555
	G4	Kg	30	30	30	45	45	45	45	45	45
Filter	G4+F7	kg	40	40	40	65	65	65	65	65	65
	G4+F9	kg	40	40	40	65	65	65	65	65	65
2 dampers		Kg	95	95	95	115	115	115	115	165	165
3 damper	s RECO	Kg	375	385	415	430	430	450	450	515	515
TRECO		Kg	125	125	125	165	165	165	165	215	215
FRECO		kg	25	25	25	30	30	30	30	30	30
Electric he	ating	Kg	25	25	25	30	30	30	30	50	50
Warm wat	er coil	Kg	25	25	25	30	30	30	30	30	30
Ероху		Kg	40	40	40	50	50	50	50	95	95
Gas burne	er	Kg	65	80	80	105	105	105	105	460	460

Electrical data

The maximum intensity absorbed by the ACTIVA as well as the total start-up intensity are calculated by adding the basic values provided for the ACTIVA with the additional options.

Table 15: ACTIVA basic unit

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
Supply voltage		400V / 3~ -	+N / 50Hz							
Maximum intensity	A	40.9	48.6	65.4	73.0	79.0	85.0	105.0	137.2	141.2
Total start intensity (without soft starter)	A	150.7	166.0	175.4	215.0	266.0	272.0	329.0	246.2	283.2
Total start intensity (with soft starter)	A	64.6	76.7	104.4	114.6	128.4	134.4	167.4	177.5	182.8

Table 16: IFAN - blast fan

Maximum	inten	sity	ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
AC Motor	LPF	A	8.1	8.1	10.7	14.5	14.5	12.4	21.8	21.8	29.0
AC Motor H	HPF	A	8.1	10.7	14.3	14.5	21.0	21.0	21.8	29.0	29.0
EC Motor	LPF	A	5.4	9.0	10.8	10.8	18.0	18.0	20.6	20.6	20.6
	HPF	A	9.0	9.0	10.8	18.0	18.0	18.0	18.0	34.0	34.0

Table 17: IFAN - return blast

Maximun	n intensity	/	ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
EC Motor	LPF	A	5.4	5.4	9.2	9.2	10.8	10.8	10.8	18	20.6
	HPF	А	5.4	9.0	9.2	10.8	10.8	18.0	18.0	20.6	20.6

Table 18: Electric heating coil

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
Power	kW	36	36	36	48	48	48	48	96	96
Maximum intensity	A	57.2	57.2	57.2	76.2	76.2	76.2	76.2	152.4	152.4

Table 19: TRECO - thermodynamic recovery

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
Maximum intensity	А	13.0	13.0	13.0	21.6	21.6	21.6	21.6	32.0	32.0

Dimensions

Figure 23: ACTIVA ASR50-65-80 Base module











Figure 24: ACTIVA ASR50-65-80 base module with 3 dampers



Figure 25: ACTIVA ASR50-65-80 base module R1 with 3 dampers



Figure 26: ACTIVA ASR50-65-80 base module R2 with 3 dampers





Figure 27: ACTIVA ASR50-65-80 base module with 2 dampers and gas burner

Figure 28: ACTIVA ASR50-65-80 base module R1 with 3 dampers and gas burner





Figure 29: ACTIVA ASR50-65-80 base module R2 with 3 dampers and gas burner

Figure 30: ACTIVA ASR95-ASR105-ASR120-ASR140 base module













Figure 31: ACTIVA ASR95-ASR105-ASR120-ASR140 base module with 2 dampers







Figure 32: ACTIVA ASR95-ASR105-ASR120-ASR140 base module R1 with 3 dampers



Figure 33: ACTIVA ASR95-ASR105-ASR120-ASR140 base module R2 with 3 dampers



Figure 34: ACTIVA ASR95-ASR105-ASR120-ASR140 base module with 2 dampers and gas burner



Figure 35: ACTIVA ASR95-ASR105-ASR120-ASR140 base module R1 with 3 dampers and gas burner



Figure 36: ACTIVA ASR95-ASR105-ASR120-ASR140 base module R2 with 3 dampers and gas burner



Figure 37: ACTIVA ASR160-ASR190 base module











Figure 38: ACTIVA ASR160-ASR190 base module with 2 dampers



Figure 39: ACTIVA ASR160-ASR190 base module R1 with 3 dampers



Figure 40: ACTIVA ASR160-ASR190 base module R2 with 3 dampers



Figure 41: ACTIVA ASR160-ASR190 base module with 2 dampers and gas burner



Figure 42: ACTIVA ASR160-ASR190 base module R1 with 3 dampers and gas burner



Figure 43: ACTIVA ASR160-ASR190 base module with 3 dampers and gas burner



Duct outlet dimensions





Table 20: S1 Dimensions

Мо	del	ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160 without gas burner	ASR160 with gas burner	ASR190 without gas burner	ASR190 with gas burner
A	mm	252	252	252	310	310	310	310	655	179	655	179
В	mm	604	604	604	705	705	705	705	600	1123	600	1123
С	mm	134	134	134	164	164	164	164	185	228	185	228
D	mm	1320	1320	1320	1400	1400	1400	1400	1520	1193	1520	1193

Figure 45: S2 dimensions



Table 21: S2 dimensions

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
A	mm	80	80	80	100	100	100	100	80	80
В	mm	905	905	905	1 087	1 087	1 087	1 087	1 250	1 250
С	mm	78	78	78	78	78	78	78	80	80
D	mm	1 610	1 610	1 610	1 910	1 910	1 910	1 910	1 910	1 910

Figure 46: S3 dimensions without gas burner



Table 22: S3 dimensions without gas burner

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
A	mm	363	363	363	320	320	320	320	80	80
В	mm	903	903	903	1 086	1 086	1 086	1 086	1 825	1 825
C	mm	77	77	77	77	77	77	77	1 026	1 026
D	mm	1 607	1 607	1 607	1 911	1 911	1 911	1 911	960	960

Figure 47: S3 dimensions with gas burner



Table 23: S3 dimensions with gas burner

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
A	mm	180	180	180	172	172	172	172	80	80
В	mm	1 088	1 088	1 088	1 287	1 287	1 287	1 287	1 530	1 530
С	mm	77	77	77	77	77	77	77	77	77
D	mm	924	924	924	1 069	1 069	1 069	1 069	1 023	1 023

Figure 48: S4 dimensions



Table 24: S4 dimensions

Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160	ASR190
A	mm	252	252	252	272	272	272	272	370	370
В	mm	582	582	582	786	786	786	786	881	881
С	mm	446	446	446	595	595	595	595	380	380
D	mm	1 401	1 401	1 401	1 481	1 481	1 481	1 481	1 750	1 750

Figure 49: R1 base module/2 damper dimensions



Table 25: R1 base module/2 damper dimensions

Model									ASR160		ASR190	
Moc	lel	ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	without gas	with gas	without gas	with gas
									burner	burner	burner	burner
A	mm	1594	1594	1594	1924	1924	1924	1924	2143	2645	2143	2645
В	mm	500	500	500	500	500	500	500	800	800	800	800
С	mm	183	183	183	173	173	173	173	185	185	185	185
D	mm	1320	1320	1320	1669	1669	1669	1669	1667	1667	1667	1667





Table 26: R1 base 3 dampers

									ASR160		ASR190	
Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	without gas burner	with gas burner	without gas burner	with gas burner
A	mm	2 070	2 070	2 070	2 420	2 420	2 420	2 420	2 640	3 142	2 640	3 142
В	mm	545	545	545	500	500	500	500	632	632	632	632
С	mm	318	318	318	271	271	271	271	274	274	274	274
D	mm	1 363	1 363	1 363	1 651	1 651	1 651	1 651	1 577	1 577	1 577	1 577

Figure 51: R2 base module/2 dampers dimensions





Table 27: R2 base module/2 dampers dimensions

									ASR160		ASR190	
Model		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	without gas burner	with gas burner	without gas burner	with gas burner
A	mm	1 604	1 604	1 604	1 915	1 915	1 915	1 915	2 124	2 636	2 124	2 636
В	mm	600	600	600	599	599	599	599	900	900	900	900
С	mm	382	382	382	341	341	341	341	342	342	342	342
D	mm	1 339	1 339	1 339	1 680	1 680	1 680	1 680	1 680	1 680	1 680	1 680

Figure 52: R2 3 dampers dimensions



Table 28: R2 3 dampers dimensions

		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160		ASR190	
Model									without gas burner	with gas burner	without gas burner	with gas burner
A	mm	2 050	2 050	2 050	2 370	2 370	2 370	2 370	2 604	3 110	2 604	3 110
В	mm	581	581	581	599	599	599	599	720	720	720	720
С	mm	230	230	230	240	240	240	240	228	228	228	228
D	mm	1 401	1 401	1 401	1 680	1 680	1 680	1 680	1 706	1 706	1 706	1 706

Figure 53: R4 base module/ 2 dampers dimensions



		ASR50	ASR65	ASR80	ASR95	ASR105	ASR120	ASR140	ASR160		ASR190	
Model									without gas burner	with gas burner	without gas burner	with gas burner
A	mm	1 553	1 553	1 553	1 864	1 865	1 865	865	2 170	2 651	2 170	2 651
В	mm	581	581	581	581	581	581	581	881	881	881	881
С	mm	405	405	405	316	316	316	316	242	242	242	242
D	mm	1 400	1 400	1 400	1 750	1 750	1 750	1 750	1 750	1 750	1 750	1 750

Table 29: R4 base module/ 2 dampers dimensions

Clearances

The following figure shows in mm the space needed for clearances.

Figure 54: Clearances



^{© 2020} Johnson Controls. 5000 Renaissance Drive, New Freedom, York, PA 17349, USA. Subject to change without notice. All rights reserved.