

RAYPA

Leading
Lab Technologies

 Sterilization

BENCHTOP AUTOCLAVES WITHOUT DRYING

AHS-N SERIES **CLASSIC LINE**

COMPACT, ECONOMIC, ROBUST
PERFORMANCE AND LIMITED
LABORATORY RESOURCES
CONSUMPTION



Front-loading benchtop autoclaves without drying

The **AHS-N** Series horizontal benchtop autoclaves with front-loading access cover the fundamental needs for general labware sterilization in many industries, educational institutions and research facilities with the aim of increasing the productivity of the laboratory. A compact footprint together with the optimization of resources such as water, power and operating time results in an affordable and efficient solution to manage laboratory workload.

INTENDED USE

+ **STERILIZATION OF LABORATORY WASTE BAGS, PLASTICS, CULTURE MEDIA, GLASSWARE, LIQUIDS AND METAL UTENSILS**



MAIN FEATURES

COST-EFFECTIVE SOLUTION

AHS-N Series autoclaves are robust autoclaves with excellent performance for general laboratory sterilization procedures. They can be used either for solids and liquids sterilization procedures and they consume limited valuable laboratory resources such as water, power or operator time.

A COMPACT FOOTPRINT THAT FITS ANYWHERE

AHS-N Series autoclaves with chamber sizes from 22 to 79L pack the performance and quality construction of a full-size vertical autoclave into a compact footprint that fits any workspace.

EASY INSTALLATION AND MAINTENANCE

Every **AHS-N** Series autoclave is a plug and play equipment that does not need dedicated installation connections. They simply need a power source and can work even without a connection to the drainage. They include a manually fed independent water tank that feeds the sterilization chamber.

SAFETY FIRST

AHS-N Series autoclaves are equipped with several features to ensure the safety of the operators. These include an overpressure safety valve, a thermally insulated door, an overtemperature safety thermostat, an open door detection system and an independent safety pneumatic system that locks the main door while positive pressure exists inside the sterilization chamber.



ADVANTAGES



Sterilization chamber and door made of high quality stainless steel grade AISI-316L extremely resistant to corrosion.



Temperature control by a PT-100 Class A temperature probe located within the sterilization chamber.



Equipment built following all applicable European Union quality, regulatory and safety standards.



Faster cooling phase in solids sterilization cycles through a steam release function at the end of the sterilization.



Heating by powerful electric elements made of Incoloy® 825 assembled inside the sterilization chamber and shielded by a protective grid.



Adjustable temperature holding at the end of the sterilization cycle between 40-80°C (Agar mode)*.



Control by a PID microprocessor with 4 predefined and 6 editable programs, adjustable by time, temperature and type of sterilization cycle (Agar mode and/or heart probe control)*.



Optional software for sterilization data management.



Optional integrated or external printer*.



Programmable auto-start.



Plug and play equipment, no plumbing required.

*These features are only offered with AHS-50-N and AHS-75-N models.



STERILIZATION APPLICATIONS

AHS-N Series autoclaves are intended for the sterilization of a wide range of liquids and solids such as culture media, glassware, plastics, metal utensils, waste bags and other laboratory items. They are designed for an easy operation and include many safety features to protect users in their daily routine.

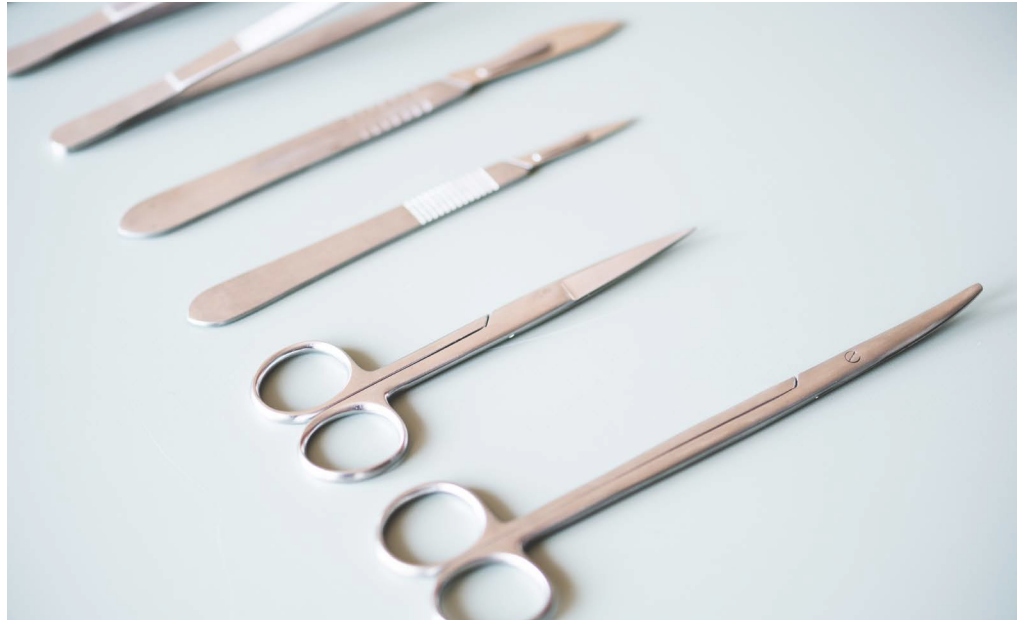


Front-loading benchtop autoclaves without drying

WORKING PRINCIPLE

AHS-N Series autoclaves provide a solution for the multiple sterilization needs of general laboratories including liquids, culture media, biological waste, contaminated media, instruments, glassware and other laboratory items.

The load has to be placed into the vessel's trays or basket and, after manually filling the independent water tank and the sterilization chamber tank with purified water, the equipment starts to heat up and purge until the set combination of sterilization time and sterilization temperature is reached.



STANDARD AHS-N SERIES STERILIZATION CYCLE

HEATING PHASE

- In this initial step, the powerful heating elements assembled at the bottom of the sterilization chamber heat up dramatically, transferring energy to water to produce saturated steam throughout the chamber.

STERILIZATION PHASE

- Upon reaching the set sterilization temperature inside the chamber the sterilization phase begins, accurately sustaining the temperature throughout the duration of this phase.
- This crucial step is controlled by a PT-100 Class A temperature probe located within the chamber.

AHS-50-N & AHS-75-N

- As an option for liquids sterilization processes this phase can be regulated by a flexible PT-100 Class A temperature probe located inside a sample.

COOLING PHASE

- After sterilization phase finishes, natural cooling begins and an acoustic beep will sound when a safety temperature is reached and the door can be opened.

AH-21-N2

- If solids program was chosen, the steam and water located inside the chamber around the heating elements will automatically return to the independent water tank. If liquids

program was chosen, the steam and water located around the heating elements will remain there.

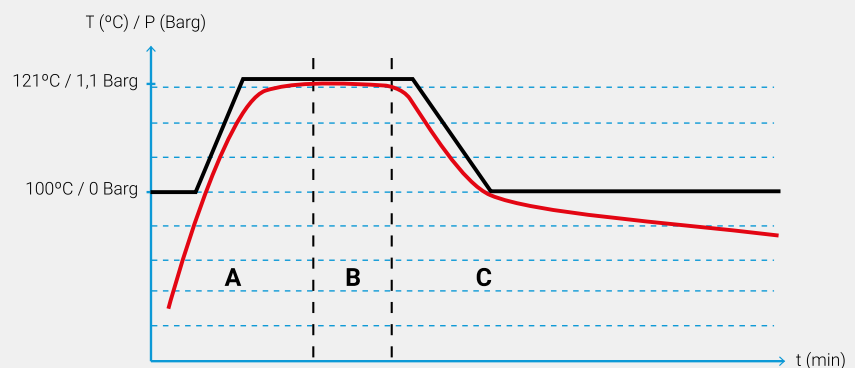
AHS-50-N & AHS-75-N

- In solids programs, discharge can be manually forced through a push-button to reduce the duration of the cooling phase.
- If Agar mode is on, the equipment will hold the preprogrammed temperature indefinitely, selectable between 40 and 80°C.

Sterilization cycle graph

- A** Heating phase
- B** Sterilization phase
- C** Cooling phase

- Temperature
- Pressure





AH-21-N2 CONTROL PANEL

STERILIZATION MODE SELECTOR

- If solids program is chosen, after the sterilization phase is complete the water and steam located inside the sterilization chamber will automatically return to the independent water tank and thus achieve a faster cooling phase.
- If liquids program was chosen, after the sterilization phase is complete the water located around the heating elements will remain there and the cooling down will occur naturally.

MULTIPLE PILOT LIGHTS FOR YOUR SAFETY AND COMFORT

- Sterilization cycle is ongoing.
- Delay start function is ongoing.
- Preprogrammed sterilization time is ongoing.
- Door is open.
- Safety thermostat is activated.

4 MODES TO REGULATE THE STERILIZATION CYCLE

- Indefinitely at a set temperature.
- Indefinitely at a set temperature after an initial delay.
- During a finite period of time at a set temperature.
- During a finite period of time at a set temperature after an initial delay.

DIGITAL MICROPROCESSOR AND COMPACT SCREEN

- The screen shows current chamber temperature, sterilization parameters and error messages.
- Digital microprocessor and several intuitive push-buttons to set up the sterilization cycle parameters.

STERILIZATION WATER MANAGEMENT

- A manual valve is used to feed water to the sterilization chamber water tank from the 6 L independent water tank.



AHS-50-N & AHS-75-N CONTROL PANEL

GREATER PROGRAM SET UP OPTIONS

- These autoclaves have 10 programs, and the first four are predefined and protected. The rest of the programs are editable with the following parameters settings:
 - Sterilization temperature.
 - Sterilization time.
 - Sterilization controlled by main chamber temperature probe or both main chamber temperature probe plus heart temperature probe.
 - Sterilization with temperature holding at the end of the cycle (Agar mode).
- The alphanumeric screen apart from showing the sterilization parameters also shows several visual alerts, including warning or failure messages. The available languages include English, Spanish, French and Catalan. For other languages please contact us.

FASTER COOLING PHASE FOR SOLIDS STERILIZATION CYCLES

- Manual steam release push-button for a faster cooling phase in solids sterilization cycles.

ADVANTAGES FOR LIQUIDS STERILIZATION CYCLES

- Adjustable temperature holding at the end of the sterilization cycle between 40-80°C (Agar mode).
- Optional flexible heart temperature probe to regulate the sterilization process by the real temperature within the load instead of the chamber temperature and avoid liquids boiling over after opening the chamber door.

STERILIZATION WATER MANAGEMENT

- A manual valve is used to feed water to the sterilization chamber water tank from the 10 L independent water tank.

BIGGER SCREEN FULL OF USEFUL INFORMATION

- Digital alphanumeric LCD screen with a size of 2 lines x 16 digits that displays several information, including the following:

1. Program mode.
2. Program N°.
3. Current sterilization temperature.
4. Current sterilization time.



Front-loading benchtop autoclaves without drying

AH-21-N2

THE PERFECT AUTOCLAVE FOR SMALL FACILITIES LOOKING FOR AN ECONOMIC, RELIABLE AND EASY TO USE BENCHTOP AUTOCLAVE WITH A SMALL FOOTPRINT.



INTENDED USE

- Suitable to sterilize glassware, liquids, plastics and small metal utensils.

RECOMMENDED SETTINGS AND USERS

- Entry level users of small facilities such as small laboratories or small clinics looking for an economic benchtop autoclave with front-loading access.

FEATURES

- Sterilization chamber made of AISI-316L stainless steel extremely resistant to corrosion.
- Equipment controlled by digital PID microprocessor, cycles adjustable by sterilization time and sterilization temperature.
- Alphanumeric LCD screen that shows sterilization parameters and several alert and error messages. Furthermore, several languages are available and temperature display is compatible with °C or °F temperature scales.
- Sterilization control by a PT-100 Class A temperature probe located within the chamber.
- Heating by powerful heating elements made of Incoloy® 825 extremely resistant to corrosion.
- Manual switch to choose between solids or liquids sterilization procedures.
- Independent water tank of 6L.

- Manual valve to feed water from the independent tank to the sterilization chamber.
- Screw to drain the sterilization chamber water tank and to clean the drainage filter.
- Manual valve to drain the independent water tank.
- RS-232 port to connect to PC.
- Sterilization chamber inlet for validation probes.
- Push-handle to open the main door.
- 4 rubber feet adjustable by height
- Adjustable sterilization temperature: 100-134°C.
- Adjustable sterilization time: 1-∞ min
- Adjustable delayed start: 1-∞ min.

ADVANTAGES

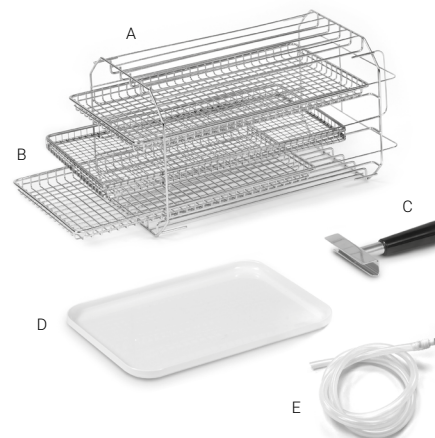
- Economic.
- Compact and small footprint.
- Automatic faster cooling phase for solids sterilization cycles.
- Easy to use control panel with 5 different push-buttons with different intuitive symbols.
- Several pilot lights to assist the user before and after the program is running.
- PC connection to export and register sterilization cycle data.

SAFETY

- Safety valve.
- Safety thermostat with manual rearm.
- Pneumatic door blocking system while positive pressure exists in the sterilization chamber.
- Pilot light while sterilization cycle is ongoing.
- Pilot light while delay function is ongoing.
- Pilot light for open door.
- Pilot light for overtemperature.

COMPONENTS SUPPLIED WITH THE EQUIPMENT

- A. Stainless steel tray support compatible with up to 4 trays*.
 - B. 3x stainless steel wire trays.
 - C. Holding clamp to move the trays.
 - D. Auxiliary plastic tray for collecting condensed water after opening the door.
 - E. Silicone tube of 1m with fast connection to drain the independent water tank.
- Stainless steel protecting grid for the heating elements.



*Special tray support compatible with up to 5 trays available under request.



AHS-50-N & AHS-75-N

THE PERFECT AUTOCLAVE FOR RESEARCH FACILITIES LOOKING FOR AN ECONOMIC, VERSATILE AND RELIABLE BENCHTOP AUTOCLAVE WITH A SMALL FOOTPRINT THAT IS COMPATIBLE WITH MULTIPLE APPLICATIONS.



INTENDED USE

- Suitable to sterilize plastics, small metal utensils, laboratory waste bags, culture media, glassware and liquids.

RECOMMENDED SETTINGS AND USERS

- Professional users of small and medium-sized facilities looking for an economic benchtop autoclave with front-loading access.

FEATURES

- Sterilization chamber made of AISI-316L stainless steel extremely resistant to corrosion.
- Equipment controlled by digital PID microprocessor with 4 predefined and 6 editable programs, adjustable by sterilization time, sterilization temperature, Agar mode or heart probe selection.
- Alphanumeric LCD screen that shows sterilization parameters and several alert and error messages. Furthermore, several languages are available and temperature display is compatible with °C or °F scale.
- Sterilization control by a PT-100 Class A temperature probe located within the chamber. Optional installation of an additional flexible PT-100 Class A temperature probe for liquids sterilization procedures.
- Heating by powerful heating elements made of Incoloy® 825 extremely resistant to corrosion.

- Independent water tank of 10L.
- Manual valve to feed water from the independent tank to the sterilization chamber.
- Screw to drain the sterilization chamber water tank and to clean the drainage filter.
- Manual valve to drain the independent water tank.
- Manual steam release push-button for a faster cooling phase in solids sterilization procedures.
- RS-232 port to connect PC, integrated printer and external printer.
- Adjustable temperature holding at the end of the sterilization cycle (Agar mode).
- Locking wheel to open the main door.
- Includes a sterilization chamber inlet for external validation probes.
- 4 rubber feet.
- Adjustable sterilization temperature: 100-134°C.
- Adjustable sterilization time: 0-250 min.
- Adjustable delayed start: 0-24 h.
- Adjustable Agar mode: 40-80°C.

ADVANTAGES

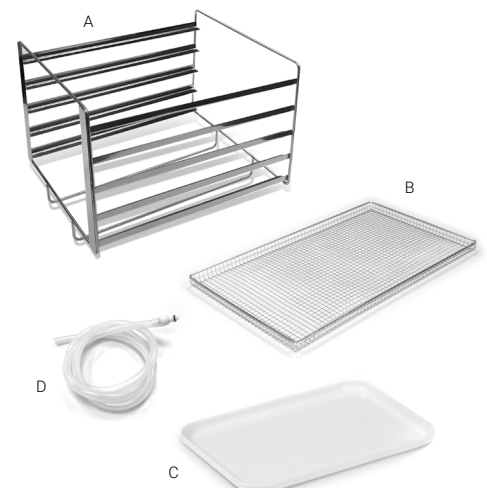
- Economic.
- Compact and small footprint.
- Advanced microprocessor with a memory of up to 10 different sterilization programs.
- Optional flexible heart temperature probe
- Manually activated faster cooling phase function for solids sterilization cycles.
- Agar mode.
- PC and printer connection.

SAFETY

- Safety valve.
- Safety thermostat with manual rearm.
- Pneumatic door blocking system while positive pressure exists in the sterilization chamber.
- Open door sensor.
- Pilot light for overtemperature.
- Multiple error and alert messages displayed on screen.

COMPONENTS SUPPLIED WITH THE EQUIPMENT

- A. Stainless steel tray support compatible with up to 5 trays.
- B. 2x stainless steel wire trays.
- C. Auxiliary plastic tray for collecting condensed water after opening the door.
- D. Silicone tube of 1m with fast connection to drain the independent water tank. Stainless steel protecting for the heating elements.



Front-loading benchtop autoclaves without drying

Accessories

STAINLESS STEEL WIRE TRAYS

Reference		BAH-21	BAH-50 B	BAH-75 B
Dimensions	Exterior L x D mm	190 x 350	315 x 330	315 x 530
	22 L	4*	-	-
For autoclaves with the following chamber volumes	55 L	-	5	-
	79 L	-	-	5

*Special tray support compatible with up to 5 trays available under request.



STAINLESS STEEL WIRE HORIZONTAL BASKET

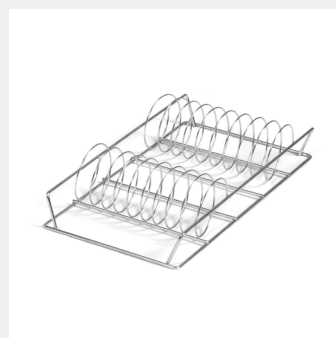
Reference		RB-AH-21	RB-AHS-50	RB-AHS-75
Dimensions	Exterior L x D x H mm	170 x 340 x 180	324 x 360 x 235	324 x 560 x 235
	Interior L x D x H mm	160 x 330 x 170	314 x 350 x 225	314 x 550 x 225
For autoclaves with the following chamber volumes	22 L	1	-	-
	55 L	-	1	-
	79 L	-	-	1



STAINLESS STEEL BAG SUPPORT*

Reference		BAP-21	BAP-75
Dimensions	Exterior L x D x H mm	400 x 180 x 80	300 x 180 x 95
	Slots / support	20	20
For autoclaves with the following chamber volumes	22 L	1	-
	55 L	-	4
	79 L	-	6

*This accessory can be customized in size according to each client needs. For more information please contact us.



STAINLESS STEEL CONTAINERS WITH FILTER ON THE LID

Reference		FC-215	FC-331	FC-338
Dimensions	Exterior L x D x H mm	285 x 185 x 65	300 x 300 x 110	300 x 300 x 85
	Interior L x D x H mm	275 x 175 x 55	290 x 290 x 100	290 x 290 x 75
For autoclaves with the following chamber volumes	22 L	2	-	-
	55 L	6	1	2
	79 L	9	2	4





Accessories

FLEXIBLE “HEART” TEMPERATURE PROBE PT-100 CLASS A

- After installing this accessory, the temperature regulation of the sterilization cycle can either be controlled by the main chamber temperature sensor or both the main chamber temperature sensor and the temperature sensor of the flexible heart temperature probe.
- The temperature control by the flexible heart temperature probe is especially advantageous for processes involving the sterilization of large volumes of liquids, where the sterilization process is regulated by both the temperature achieved in the center of the liquid sample as well as the temperature achieved in the sterilization chamber. Furthermore, should the autoclave be opened at chamber temperatures higher than 80°C there is a risk of liquids boiling over which can be avoided if the temperature of the sample is controlled throughout the sterilization procedure.
- Compatible only with **AHS-50-N** and **AHS-75-N** models.
- Must be installed in our facilities.

Reference: **PT-2-AH**



CABLE GLANDS

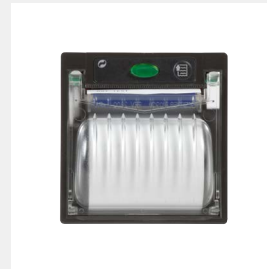


- Installation of up to 8 cable glands within the sterilization chamber walls to enable external temperature probe access in multiple locations for autoclave calibration and validation procedures.
- These ports can either be of 2 or 4 mm of diameter.

References:

PRENSACLAV (8 holes ø 2mm),
PRENSACLAV2 (8 holes ø 4mm).

INTEGRATED THERMAL PRINTER



- Prints program number, cycle number, temperature, date and hour of the run and error messages.
- Selectable printing cadence between 10 and 240 seconds.
- Compatible only with **AHS-50-N** and **AHS-75-N** models.
- Must be installed in our facilities.

Reference: **IT**

Consumable:
Paper: **PAPER-IT**

TABLE TOP DOT MATRIX PRINTER



- Prints program number, cycle number, temperature, date and hour of the run and error messages.
- Used with RS-232 connection.
- Selectable printing cadence between 10 and 240 seconds.
- Compatible only with **AHS-50-N** and **AHS-75-N** models.

Reference: **ITS**

Consumables:
Paper: **PAPER-ITS**, Ribbon: **70945**

INTEGRATED DOT MATRIX PRINTER



- Prints program number, cycle number, temperature, date and hour of the run and error messages.
- Selectable printing cadence between 10 and 240 seconds.
- Compatible only with **AHS-50-N** and **AHS-75-N** models.
- Must be installed in our facilities.

References: **IT/M**

Consumables:
Paper: **PAPER-ITS**, Ribbon: **70934**

Front-loading benchtop autoclaves without drying

Accessories

TRANSPORT TROLLEY



- Auxiliary trolley to assist the loading and unloading of the autoclave.
- Built in chromed iron and plastic.
- The surface of each shelf is textured to prevent the load from shifting.
- Rubber coated wheels to reduce noise.
- Dimensions (LxDxH): 730 x 490 x 700 mm.

Reference: **TR-TR**

SW7000 SOFTWARE

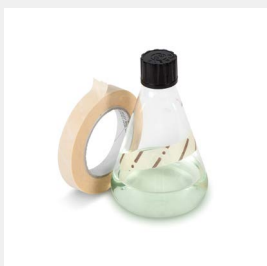


- Communication software between the equipment and the PC that allows the real-time and posterior visualization and registry of each cycle. Cycles can also be exported to Excel or printed.
- Connection to PC via RS-232.
- Supplied with a RS-232 cable, an USB stick that includes the software and installation drivers and a RS-232 to USB adapter.

Reference: **SW7000**



STERILIZATION CONTROL TAPE



- Class 1 indicator for steam sterilization. The change of color indicates that the materials have been processed, without being a guarantee of proper sterilization, additional methods are needed such as biological indicators (EN ISO 11138).
- Tape roll of 50 m x 19 mm.

Reference: **TEST-CT**

20 min 121°C
Color change.

WATER DISTILLER















- Forced air water distiller with stainless steel interior, a capacity of 4 L and a distillation volume output of 1,5L/h.

Reference: **DEM-4**

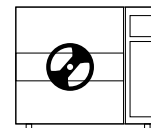
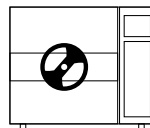
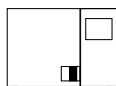


TECHNICAL SUMMARY OF AHS-N SERIES AUTOCLAVES

Available models		AH-21-N2	AHS-50-N AHS-75-N	
 General classification	Recommended setting	Small facilities	General laboratory	
	Equipment placement	Benchtop		
	Load direction	Front-loading		
	Chamber profile	Round		
 Recommended type of load	Liquids and culture media	✓		
	Laboratory waste bags	✓✓		
	Glassware	✓		
	Metal utensils	✓✓		
	Plastics	✓		
 Sterilization technology features	Method to generate steam	Heating elements		
	Type of purge	Gravity displacement		
 Transfer of data	RS-232	✓		
 Batch printers	Integrated printer	-	○	
	External printer	-	○	
 Sterilization chamber and door specifications	Sterilization chamber volume	22 L	55-79 L	
	External building materials	Metallic & AISI-304		
	Sterilization chamber material	AISI-316L		
	Heating elements material	Incoloy® 825		
	Gasket material	Silicone rubber		
	Maximum pressure (above atmospheric pressure)	2,1 Barg		
	Mechanism to open the door	Handle	Wheel	
	Direction in which the door opens	Frontal		
	Thermally insulated door	✓		
	Automatic locking with pressure	✓		
 Water management	Independent water tank capacity	6 L	10 L	
	Screen display	Digital LCD		
 User interface and microprocessor	Screen size	1 line x 3 digits	2 lines x 16 digits	
	Total number of available programs	1	10	
	Automatic microprocessor control	✓		
	Timer start	✓		
	Agar mode (temperature holding after cycle ends 40-80°C)	-	✓	
 Special cycles and process optimization	Solids fast cooling	✓		
	Solids mode	✓	-	
	Agar mode	-	40 - 80°C	
	Temperature of sterilization phase	100 - 134°C		
 Adjustable cycle parameters	Duration of sterilization phase	1 - ∞ min	1 - 250 min	
	Temperature control by heart probe	-	On/Off	
	Flexible heart temperature probe	-	○	
	Pressure gauge	✓		
 Other specifications	Custom electrical features (115-230M V / 230-400T V)	○		
	Third-party qualification (IQ/OQ/PQ)	○		
 Services	Third-party qualification (IQ/OQ/PQ)	○		

✓: Standard ○: Optional

TECHNICAL DATA



Specifications

Reference	AH-21-N2	AHS-50-N	AHS-75-N
Total/usable chamber volume L	22/21	55/50	79/75
Usable chamber dimensions Ø x D mm	210 x 430	360 x 400	360 x 600
Independent water tank volume L	6	10	10
Exterior dimensions L x D x H mm	560 x 660 x 425	805 x 805 x 650	805 x 1005 x 650
Maximum number of trays	4*	5	5
Trays dimensions L x D mm	190 x 350	315 x 330	315 x 530
Power W	2000	2800	3200
Gross weight Kg	55	95	110
Voltage** V	230V (1P+N) 16A	230V (1P+N) 16A	230V (1P+N) 16A
Frequency Hz	50/60	50/60	50/60

*Special tray support compatible with up to 5 trays available under request.

**Other voltages available under request.

Safety features

- Safety valve.
- Safety thermostat with manual rearm for the heating elements.
- Pneumatic door blocking system while positive pressure exists inside the sterilization chamber.
- Open door sensor.
- Thermally insulated door.
- Heating elements cover.
- Several visual and acoustic safety and warning alarms.

Regulations

All our AHS-N Series autoclaves are designed to comply with the strictest international directives and standards, including the following regulations:

- **EN-61010-1** Safety requirements for electrical equipment for measurement, control and laboratory use. **Part 1:** General requirements.
- **EN-61010-2-040 Part 2-040:** Requirements for laboratory autoclaves.
- **EN-61326** Electrical equipment for measurement, control and laboratory use. EMC requirements.
- **AD 2000 Merkblatt** Pressure vessels.
- **2014/35/UE** Low voltage.
- **2014/30/UE** Electromagnetic compatibility.
- **2014/68/UE** Pressure equipment.

General features

Available models	AH-21-N2	AHS-50-N AHS-75-N
Adjustable sterilization temperature	100 - 134°C	
Adjustable sterilization time	1 - ∞ min	1 - 250 min
Max. pressure	2,1 Barg	
Sterilization control system	Fully automatic by chamber temperature probe	Fully automatic by either chamber temperature probe or flexible heart temperature probe
Air purge system	Gravity displacement	
Sterilization chamber material	AISI-316L stainless steel	
Heating elements material	Incoloy® 825	
Gasket material	Silicone rubber	
Connection to PC	RS-232	
Connection to printer	-	RS-232 or integrated
Number of programs	1	10 (4 preset and 6 user free)
Programmable auto-start	1 - ∞ min	Up to 24 h
Screen type	LCD display	
Opening door mode	Front-loading swiveling door	
Monitoring of sterilization parameters	Self-control of obtained values (T° & t) vs programmed values. Cycle is automatically interrupted if obtained values differ from programmed values	
Pressure display	Pressure gauge on control panel	
Water management	Independent manually fed water tank with manual valve to feed water to the sterilization chamber	
Drainage system	Drainage connections for both drainage and overflow of the independent water tank and a screw to manually clean the drainage filter and drain the sterilization chamber	
Feet	Feet with resistant rubber	

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Find out more about our autoclaves on our **Youtube Channel**



Installation guide available under request, please contact us.



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