CRYSTAL TECHNOLOGY & INDUSTRIES, INC.

AEOLUS™ CO2/Non-CO2 Compact Incubator Shakers with Magnetic Drive

(3mm, 25mm or 50mm Orbit Models)

Company Introduction

For over 25 years, Crystal Technology & Industries has been driven to deliver more value to the global scientific community. Our approach utilizes the experience and skills of our over 40 engineers collaborating closely with top tier research institutions worldwide to design and develop products with application specific features and cutting-edge technology that provide the scientist with more innovative solutions.

The AEOLUS IS-ACMA family of Stackable Incubator Shakers feature many advanced options in CO_2 Incubation, Shaking drive technology and ease of use from Crystal Technology & Industries to help scientists. All our products undergo extensive testing to ensure superior quality. That is why every piece of equipment from Crystal Industries comes with our industry leading 2-year Warranty administered by our in-house, factory trained engineers.

Our presence is global with dedicated offices/warehouses in North America, Europe and Asia. Our goal is to consistently provide total customer satisfaction felt locally in our products and services. We look forward to serving the scientific community now and the future.

BRINGING SCIENCE AND TECHNOLOGY TO LIFE!

AEOLUS™ CO2/Non-CO2 Compact Incubator Shakers (3mm, 25mm or 50mm Orbit Models)

The CO2 Compact Incubator Shaker features Temperature, Shaking, CO2 Concentration, and Humidity controls. With 3mm, 25mm and 50mm orbit models available, its stackable design helps maximize floor space, with the capability of stacking up to three units high.

INNOVATIVE DESIGN

- Three axis eccentric balance system provides stable and reliable shaking

- Terminal feedback system ensures precise shaking speed

- Sealed Magnetic Drive is highly efficient, quiet, durable, and produces negligible heat that does not affect the chamber temperature

- Combination of Proportional-Integral-Derivative control and Fuzzy control for temperature ensure temperature accuracy within ±0.1° C

- Program mode allows user to set up to 12 segments of varying temperature and speed

- Highly efficient inverter compressor refrigeration allows for temperatures as low as 18° C below room temperature with low energy consumption (minimum temperature of 4° C)

- Infrared CO2 sensor provides accurate and reliable CO2 detection (IS-ACMA, IS-A5CMA and IS-AHC3SA only)

- Intuitive 7" capacitive touchscreen makes many functions, such as setting alarm parameters, easy to complete

- Slide rail platform makes it easy to load and unload fixtures (except 3mm orbit models)

- Noise reduction design keeps the instrument noise level to 55 dB

- Optional wifi monitoring allows the user to stay in touch with the instrument even outside of the lab

CAPACITIVE TOUCH SCREEN DISPLAY
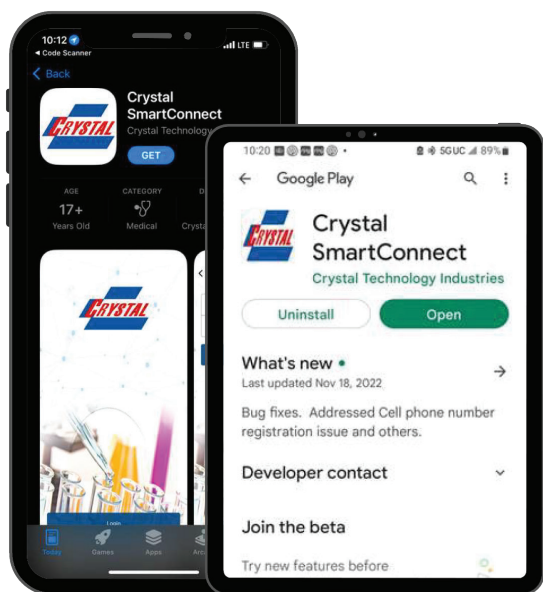
Main Interface

1. Displays the current instrument status.

2. Light button: Press to turn the light on or off.

3. Displays the current function's running status, orbit diameter (for speed), and any alarms.

4. Plus and Minus buttons: Adjusts the corresponding function's value.

5. Displays the set value and allows user to manually input the set value.

6. Run/Stop button: Runs and stops function.

7. Edit button for programmable mode: Sets up to 12 running segments of varying temperatures and speed.

8. Running mode button: Switches between "Easy" and "Program Control" mode.

9. Run/Stop all button: Runs and stops all functions.

10. Main Settings button: Enters settings page (image right), which features specific settings for the user to edit.

11. Function icon buttons: Graphically displays the real-time function data.
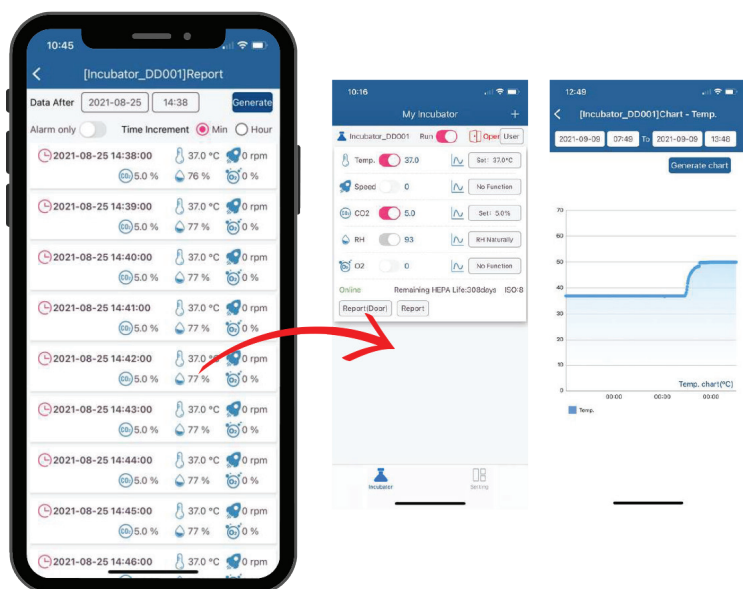

Control Features

• Powerful Data storage: Data is stored for more than two (2) years. Recorded in 1 minute intervals.

• Real-time data view: On the display, operator can view the running data from latest 7 days.

• Data export: Easily export more than 2 years (912 days) of parameter data via USB.

• Optional Remote WiFi / Ethernet monitoring accessory and smart phone app enabled remote monitoring and control.

• Various Alarms: Alarms can be armed to activate when parameter values deviate outside of users set bounds.

• Alarm recording: Alarm information is stored and viewable.

• Easy Calibration: Calibrating functions only require inputting the difference between set and actual values.

Overview

Remote Monitoring APP

Crystal Industries' Remote Monitoring accessory and app gives customers the ability to control their incubator right from their phone or tablet via WiFi Connection. Features of the incubator app include the ability to set and change the incubator's parameters (including temperature and CO_2 concentration). Text notifications are sent when an alarm is activated. This unique app makes it possible to stay conveniently connected with CTI incubator and ongoing projects, whether you are in the lab or not.

Overview

- **High Resolution 7-inch Color Touch Screen:** Modular display presents instrument status and function values in a clear and concise manner.

- **Capacitive Touch Screen:** The capacitive screen is more responsive and durable than a resistance screen as there is no reaction delay when the screen is pressed.

- **Magnetic Drive** offers increased reliability, minimal maintenance, and quiet operation.

- **Pull Out Rail Platform:** Operators can easily pull the platform out to load or unload samples. Only one locking handle in the middle of the platform makes the process fast and convenient. Universal Platform is shipped pre-installed in the unit.

- **Excellent Temperature Control Performance:** When the incubator is at a stable temperature of 37° C, the uniformity is ±0.1° C.

- **Strong Cooling Capacity:** The incubator chamber can be cooled to 15° C below the ambient temperature (Lowest temp is 4° C).

- **Inverter Compressor:** Makes cooling a quiet, durable, and highly efficient process while also saving energy.

- **Three Units Can Be Stacked:** This product can be purchased as a single, double, or triple stack.

- **Bi-Directional Ultraviolet Sterilization:** The chamber is equipped with a set of UV sterilization light components to enhance the germicidal irradiation effect and reach all areas of the chamber.

- **Ultra Quiet Design:** The noise level is less than 55dB when incubator is running and cooling (loudest process), providing a quiet environment for the operator.

- **Slow Acceleration and Deceleration:** Shaking function starts and stops slowly to prevent large shear forces on the bacteria or cells.

- **Efficient, Durable, and Lightweight Insulation:** Polyurethane foam insulation provides advanced thermal insulation. The material is also air-tight, waterproof, lightweight, shockproof, electrically insulated, heat resistant, cold resistant, and solvent resistant.

AEOLUS™ CO2/Non-CO2 Compact Incubator Shakers

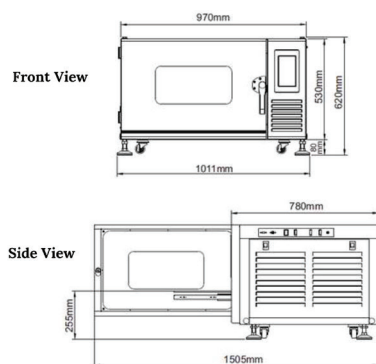## AEOLUS™ CO2/Non-CO2 Compact Incubator Shakers (3mm, 25mm or 50mm Orbit Models)

The CO2 Compact Incubator Shaker features Temperature, Shaking, CO2 Concentration, and Humidity controls. With 3mm, 25mm and 50mm orbit models available, its stackable design helps maximize floor space, with the capability of stacking up to three units high. Featuring an innovative Magnetic Drive for increased reliability and minimal maintenance.
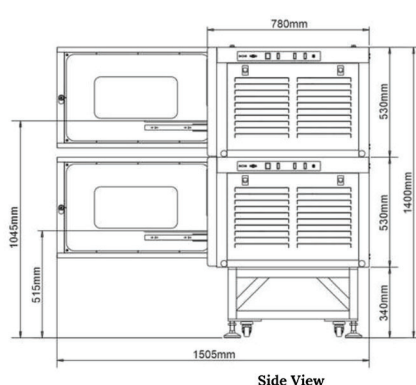

◆ Features

- 7" High-Res Color Touch Screen with intuitive graphic interface
- Innovative chamber design features smooth rounded internal corners for easy cleaning
- Infra-Red(IR) CO2 sensor for Rrecise and reliable CO2 cletection
- Optional WiFi and RS485 control
- UV lights for easy sterihzation
- Audible and visual alarms
- Mirror finish, pharmaceutical grade stainless steel cfiamber
- Stackable design up to 3 units
- Choose your Custom Stack, choice of CO2 and NonCO2, 25 or 50mm Orbit
- 3mm, 25mm and 50mm orbit models available
- 2 Year Warranty
- Units shipped pre-stacked on single pallet, single, double or triple stack (Stand sold separately)
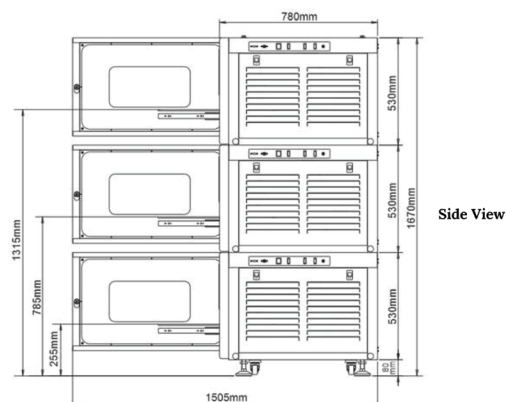
Single Unit Dimensions

Double Stack Dimensions with IS-A93 Stand

Triple Stack Dimensions

PRODUCT SPECIFICATIONS

Model	IS-AMA	IS·A5MA	IS-ACMA	IS-A5CMA
Product Name	AEOLUS™ Compact Magnetic Drive Incubator Shaker		AEOLUS™ Compact Magnetic Drive CO2 Incubator Shaker	
Platform Dimensions (WxD)	560 x 470mm (21.65 x 18.50 in)			
Max Capacity	**Clamp capacity:** 250mL x 72 / 100mL x 30 I 150mL x 30 I 200mL x 30 I 250L x 30 I 500L x 16 I 1000L x l2 I 2000mL x 6 I 5000mL (Thomson) x 4 **Capacity with Sticky Mats:** 50mL x 72 I 100mL x 53 I 150mL x 41 I 200mL x 32 I 250mL x 30 I 500mL x 16 I 1000mL x 12 I 5000mL (Thomson) x 4			
Capacity	190 L			
Max Load	10 kg (22.05 lb)			
Temperature Range	Room Temp, Minus 18° C-60° C (Lowest Temp is 4° C)			
Temperature Accuracy	±0.1°C			
Temperature Uniformity	±0.3°C (@37°C)			
Temp Recover Time After Door is Opened for 30s	≤6min (@37°C)			
Speed	0 (stop), 30~300 RPM			
Speed Accuracy	±1 RPM			
Speed Drive	Magnetic Drive			
Orbit Diameter	Ø25mm (Ø1.02in)	Ø50mm (Ø2 in)	Ø25mm (Ø1.02in)	Ø50mm (Ø2 in)
CO2 Sensor	NA		Infrared	
CO2 Control Range	NA		0~20%	
CO2 Control Accuracy	NA		+0.1%	
CO2 Recover Time After Door is Opened for 30s	NA		≤6min (@5%)	
Relative Humidity Type	Active		Active	
Max Humidity	95%		90%	
Programmable Segments	12 Segments			
Timer	0-999hr 59min			
Illumination	LED Lamps on Left and Right Walls			
Disinfection	UV Lamps on Left and Right Walls			
Door Opening Direction	Lerrward			
Internal Working Dimensions (WxDxH)	654 x 605 x 474 mm (25.75 x 23.82 x 18.66 in)			
External Dimensions (WxDxH)	970 x 780 x 530{+80 with feel) mm (38. 19 x 30.71 x 20.87(+3,15 with feet) in)			
Internal Walking Height	300mm (11.8in)			
Net Weight	170 kg (375 lb)			
Display	7" Color Capacitive Touch Screen			
Parameter Protection	Password Protected			
Data Stored	Time, Temperature, Speed, Instrument Status		Time, Temperature, Speed, CO2 Concentration, Humidity, Instrument Status	
Data Storage Interval	1 Minute			
Screen Data Display	Displays Most Recent 7 Days of Data			
USB Data Export	Most Recent 912 Days of Data			
Automatic Defrost	Yes			
Noise Level	≤55dB (When Compressor is Running)			
Auto-Recovery after Power Interuption	Yes			
Power supply	AC 110V±11V, 60Hz			
Power when Heating	≤450w			
Power when Cooling	≤180w			
Power	≤630W		≤630W	
Mobile Monitoring and Control by WiFi	Optional through IS-A64W Accessory and App			
Warranty	2 Years Parts and Service			
Certification	CE			

Accessories

| Test Tube Rack | Adjustable Test Tube Rack | Mini Universal Spring Platform | Infusion Bottle Clamp | Bioreactor Tube Holder | Flask Clamp | Stand for IS-18CA/IS-18A Incubator Shakers (Single or Double Stack) |

| 96-Well Microplate Holder | Sticky Mat | CO2 Cylinder Pressure Regulator | Water Carboy | Multi-Microplate Holder | Fixture for Separating Funnel | Visor Cover |

Item Number	Item Type	Specifications	Max Capacity
IS-A50	Flask Clamp	Holds 25mL Flask	134
IS-A1		Holds 50mL Flask	134
IS-A2		Holds 100mL Flask	60
IS-A3		Holds 150mL Flask	60
IS-A4		Holds 200mL Flask	60
IS-A5		Holds 250mL Flask	60
IS-A6		Holds 500mL Flask	32
IS-A7		Holds 1000mL Flask	22
IS-A9		Holds 3000mL Flask	12
IS-A10		Holds 5000mL Flask	6
IS-A11	Tube Rack	Holds 40 Tubes x Ø14mm	9
IS-A12		Holds 40 Tubes x Ø16mm	9
IS-A23		Holds 40 Tubes x Ø18mm	9
IS-A24		Holds 27 Tubes x Ø22mm	9
IS-A42		Holds 21 Tubes x Ø30mm	9
IS-A20	Adjustable Tube Rack	Holds 40 Tubes x Ø14mm	9
IS-A21		Holds 40 Tubes x Ø16mm	9
IS-A30		Holds 40 Tubes x Ø18mm	9
IS-A31		Holds 27 Tubes x Ø22mm	9
IS-A32		Holds 21 Tubes x Ø30mm	9
IS-A37		Holds 24 Tubes x Ø30mm	6
IS-A33	Infusion Bottle Clamp	Holds 500 ml Infusion Bottle	40
IS-A34		Holds 1000 ml Infusion Bottle	28
IS-A13	Microplate Holder	96-Well Microplate Holder	30
IS-A175	Multi-Microplate Holder	Holds up to 6 Standard Microplates	30

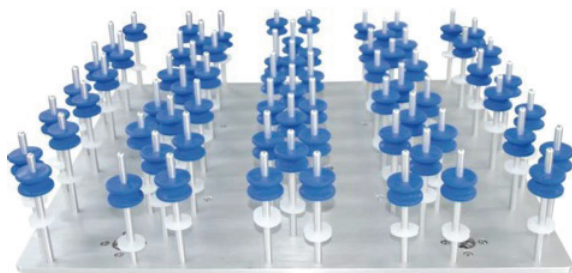| Item Number	Item Type	Specifications	Max Capacity
IS-A35	Fixture holds Separating Funnel	Holds Separating Funnels of ±500ml	4
IS-A47	Sticky Mat	140 x 140mm (5.51 x 5.51in)	24
IS-A122		280 x 280mm (11.02 x 11.02in)	6
IS-A63	Spring Frame	900 x 540 x 80mm	1
IS-A27		350 x 240 x80mm	4
IS-A22		450 x 400 x 80mm	1
IS-A14		428 x 295 x 80mm	2
IS-A90	Water Carboy	For IS-18CA humidity function; Holds 15L; 1 can serve up to 3 incubator shakers	1
IS-A64W	Remote Monitoring and Control	Connects each unit to users' smart phones via a WiFi or wired internet connection and an app available on the Apple Store and Google Play	1
CIA25	CO2 Cylinder Pressure Regulator	Max Inlet Pressure: 3000 psi Max Outlet Pressure: 60 psi	—
IS-A118	Stand	Adds 34mm (13.39in) of height Recommended for use with Single and Double Stacks	—
IS-A166	Bioreactor Tube Holder	Holds 450ml Bioreactor Conical Tubes	6
IS-A178		Holds 600ml Bioreactor Conical Tubes	6
IS-A95	Visor Cover	Blocks ambient light from entering chamber	1

NOTE: 3000mL flask clamps (IS-A9) are available for use with 2.8L Fembach flasks. Flasks must be shorter than the working height of the incubator shaker chamber (300mm).

AEOLUS™ IS-AHC3SA/IS-AH3GA Compact CO2/Non-CO2 Stackable Incubator Shakers for Microplates (3mm Orbit)

The Compact CO2/non-CO2 Microplate Incubator Shakers feature a 3mm orbit, optimized for thorough mixing of microplates and deep-well microplates with variable shaking speeds of 150-1000 rpm for gentle mixing to ensure the well contents remain in place or for more vigorous agitation for effective aeration across the small surface area of each of the wells. Featuring an innovative Magnetic Drive for increased reliability and minimal maintenance.
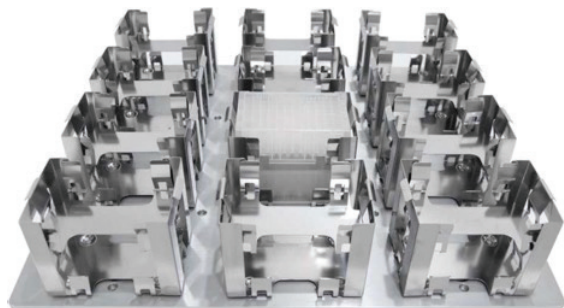

◆ Microplate Platform Options

For Shaking Microplates or Deep-well Plates at speeds of 150-1000rpm

- The IS-A152 Platform pre-installed in each unit with optional IS-A157 Column Clamp Pressure Pads (blue) and IS-A158 Silicon Pads accessories (purchased separately)

  Holds 60 Microplates (3 layers x 20 Microplates) OR Holds 40 Deep-well Plates (2 layers x 20 Deep-well Plates)

For Shaking Deep-well Plates at speeds of 150-1000rpm

- The IS-A119 Aluminum Platform with optional IS-A167 Deep-Well Plate Holders (purchased separately) offers convenient, fast loading and unloading of plates.
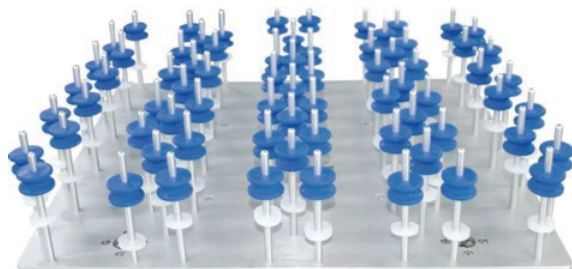
  Holds 12 sets of Double-Layer Deep-Well Holders (24 Deep-Well Plates total)

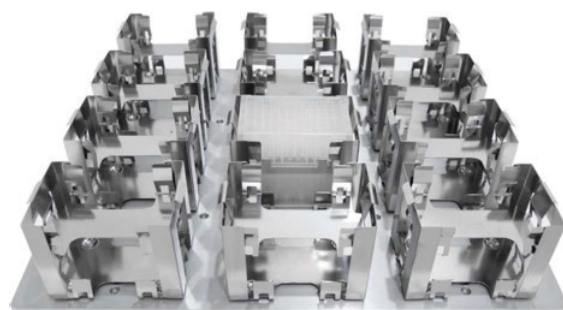| Model	IS-AH3GA	IS-AHC3SA
Product Name	180L Compact Magnetic Drive Incubator Shaker, Microplates	180L Compact Magnetic Drive CO2 Incubator Shaker, Microplates
Platform Dimensions (WxD)	570 x 500mm	
Max Capacity	**Microplate:** 3 x 20 Plates, Deepwell Plate 2 x 20 Plates	
Capacity	180 L	
Max Load	10kg (22.05lb)	
Temperature Range	Room Temp. Minus 18°C~60°C (Lowest Temp is 4°C)	
Temperature Accuracy	±0.1°C	
Temperature Uniformity	±0.1°C (@37°C)	
Temp Recovery Time After Door is Opened for 30s	≤6min (@37°C)	
Speed	0 (stop), 30~300 RPM	
Speed Accuracy	±1 RPM	
Speed Drive Motor	Magnetic Drive	
Orbit Diameter	3mm	
CO2 Sensor	NA	Infrared
CO2 Control Range	NA	0~20%
CO2 Control Accuracy	NA	+0.1%
CO2 Recovery Time After Door is Opened for 30	NA	≤6min (@5%)
Relative Humidity Type	Active	Active
Max Humidity	90%	90%
Programmable Segments	12 Segments	
Timer	0~999h 59min	
Illumination	LED Lamps on Left and Right Walls	
Disinfection	UV Lamps on Left and Right Walls	
Door Opening Orientation	Leftward	
Internal Dimensions (WxDxH)	654 x 605 x 474 mm (25.75 x 23.82 x 18.66 in)	
Outside Dimensions (WxDxH)	970 x 780 x 530mm (+80 with feet) (38.19 x 30.71 x 20.87in (+3,15 with feet)	
Internal Working Height	290mm	
Net Weight	195kg	
Display	7" Color Capacitive Touch Screen	
Parameter Protection	Password Protected	
Data Stored	Time, Temperature, Speed, Instrument Status	Time, Temperature, Speed, CO2 Concentration, Humidity, Instrument Status
Data Storage Interval	1 Minute	
Screen Data Display	Displays Most Recent 7 Days of Data	
USB Data Export	Most Recent 912 Days or Data	
Automatic Defrost	Yes	
Noise Level	≤55dB (When Compressor is Running)	
Auto-Recovery after Power Interuption	Yes	
Power when Healing	≤450W	
Power when Cooling	≤180W	
Power supply	AC 110V±11V, 60Hz	
Power	≤630W	≤630W
Mobile Monitoring and Control by WiFi	Optional through Accessory and App	
Warranty	2 Years Parts and Service	
Certification	CE	

Accessories

IS-A152
Platform with Pre-Installed Deep-Well
Plate Holders

(Set of 73 Pressure Pads
and Silicon Pads included with unit)

IS-A167
Platform with Double-Layer
Deep-Well Plate Holders

(Deep-Well Plate Holders sold separately)

IS-A157
Pressure Pad for
Microplate Holder

IS-A158
Silicone Pad for
Microplate Holder

IS-A95
Visor Cover

IS-A90
Water Carboy

CIA25
CO2 Cylinder Pressure
Regulator

IS-A93
Stand for Compact Incubator
Shakers (Single or Double Stack)

Item Number	Item Type	Specifications	Max Capacity
IS-A152	Deep-Well Plate Holder + Platform	Accommodates 2 layers of deep-well plates; Platform: 500 x 570mm; Column Height: 125mm	1
IS-A167	Double-Layer Deep-Well Plate Holder	Internal Dimensions: 127 x 85 x (25-51)mm; 2 Deep-Well Plates per holder	12
IS-A119	Platform for Deep-Well Plate Holders	Dimensions: 500 x 570mm; Holds 12 sets of Double-Layer Deep-Well Holders or 24 Deep-Well Plates	1
IS-A157	Pressure Pad for Microplate Holder	Thickness: 20mm; Outer Diameter: Ø27mm	73
IS-A158	Silicone Pad for Microplate Holder	Thickness 5mm; Outer Diameter Ø27mm	73
IS-A93	Stand for Compact Incubator Shakers (Single or Double Stack)	Adds 340 mm (13.39in) of height Recommended for use with single and double stacks	1
IS-A90	Water Carboy	For IS-AHC3SA humidity function; Holds 15L; 1 Carboy serves up to 3 incubator shakers	1
IS-A95	Visor Cover	Blocks ambient light from entering chamber	1
CIA25	CO2 Cylinder Pressure Regulator	Max Inlet Pressure: 3000 psi Max Outlet Pressure: 60 psi	1 (up to 2 Units)

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