



Airstream® • PLUS


EN12469

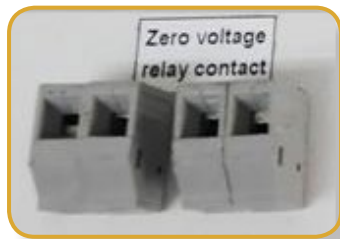

TUV NORD

Airstream® Class II, Biosafety Cabinet,
Model AC2-4E8-TU

, and Compact Biosafety
ORD Certified to EN 12469

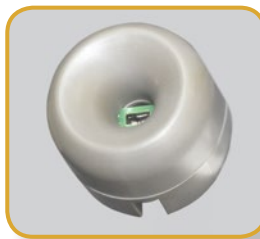


ESCO
WORLD CLASS. WORLDWIDE.



Voltage Free Relay Contact

- Zero volt exhaust and alarm contact



Airflow Sensor

- Monitors real-time airflow for safety
- Alert the user if airflow is insufficient
- High-end Accusense sensor made by Degree C



Sentinel™ Gold Microprocessor Controller

- Displays all safety information on one screen
- Centered and angled down for easy reach & viewing
- Selectable Quickstart mode for fast operation



Motorized Window

- Aerosol tight window seal
- Window automatically stops at safe operating height
- Conveniently move the window by fingertip

Unique Stainless Steel and Glass Hybrid Wall (E-Series)

- Large corner radius for easy cleaning
- Easy to reach service fixture and outlets
- Stainless steel side wall is available (S-Series)
- Hole-free side glass for increased safety



Divided Work Tray

- Easy to lift and clean
- Single-piece recessed tray is available (S-Series)



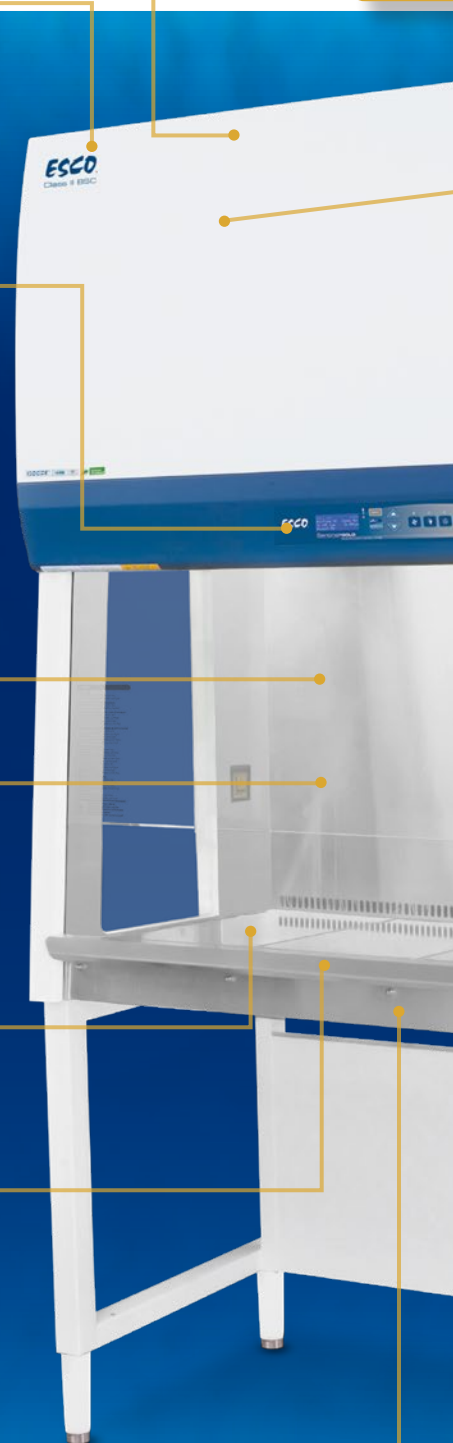
Raised Arm Rest

- Helps prevent grille blocking
- Comfortable working posture



Removable Paper Catch

- Easy to clean
- Optional pre-filter can be fitted



Available in 1.2, 1.5 and 1.8 meter width (4' 5" and 6')

Airstream® PLUS

Class II Biological Safety Cabinets

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EN12469

TÜV NORD
Certified by TÜV NORD, Germany
for compliance to DIN EN 12469

RS 232 Serial Interface Port

- Send operational information to Building Management System (BMS)

Optional RS485 Port

- Send operational information to Esco Voyager® or Building Management System (BMS)

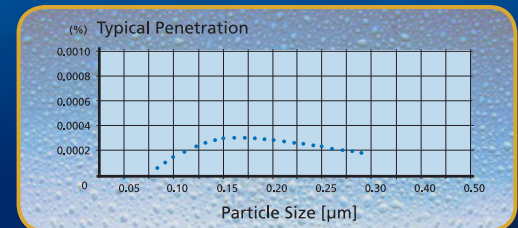
DUAL Energy Efficient DC ECM Motor

- The most energy-efficient Class II Biosafety Cabinet in the world
- 70% Energy savings compared to AC motor
- Stable airflow, despite building voltage fluctuations & filter loading
- Standby mode to further reduce power consumption by 60%



H14 / Optional U15 Filter

- H14 Filter with efficiency of 99.999%
- U 15 Filter with efficiency of 99.9999% (10x filtration efficiency of H14 filter)
- Creates ISO Class 3 work zone instead of industry-standard ISO Class 5
- Easy filter replacement procedure due to customized plenum design



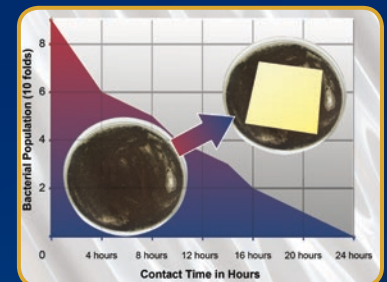
LED Lamp

- Energy efficient
- Last 4x longer than fluorescent lamp



ISOCIDE™ Powder Coat

- Silver-ion impregnated powder coat
- Inhibit microbial growth to improve safety



Optional Hydrogen Peroxide Injection Port

- Easily connect to VHP/HPV Generator
- Combined with sealed front window for easy decontamination



Angled Drain Pan

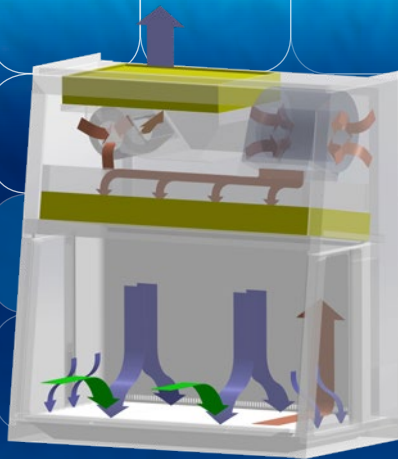
- Easy to clean
- Does not harbor contaminants



Standards Compliance	Biosafety Cabinet	Air Quality	Filtration	Electrical Safety
	DIN EN 12469, Europe SANS 12469, South Africa	ISO 14644.1 Class 3, Worldwide JIS B9920 Class 3, Japan JIS BS5295, Class 3, Japan	EN-1822 (H14), Europe IEST-RP-CC001.3, USA IEST-RP-CC007, USA IEST-RP-CC034.1, USA	IEC 61010-1, Worldwide EN 61010-1, Europe UL 61010-1, USA CAN / CSA-22.2, No.61010-1

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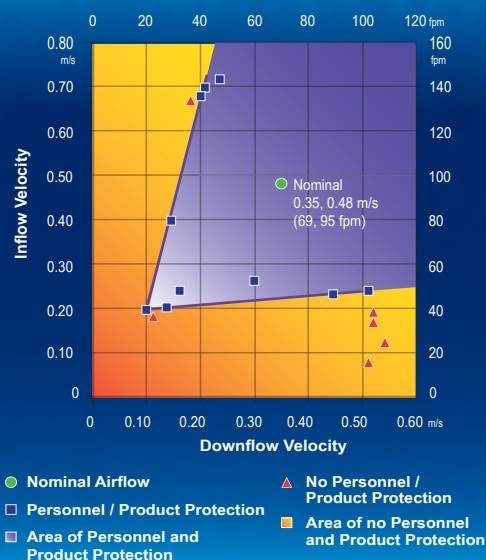


- H14-filtered air
- Unfiltered / potentially contaminated air
- Room air / Inflow air

Cabinet Filtration System

- Ambient air is pulled through front grille to create inflow, without going into the work surface. Inflow is joined by half of the downflow, to create front air curtain that is fine-tuned to create a large performance envelope. The combined air stream travels through the back air column towards the blower.
- Approximately $\frac{1}{3}$ of the air in the common plenum is exhausted through the ULPA filter to the room. The remaining $\frac{2}{3}$ of the air is passed through the downflow ULPA filter and into the work area as a vertical laminar flow air to create ISO Class 3 work surface and prevents cross contamination.
- Near the work surface, the downflow splits. About half goes to the front grille, and half goes to the rear grille. A small portion enters the side capture zones to prevent dead air corners (small blue arrows).
- The design was optimized to give large performance envelope, that provides operator and product protection at wide Inflow and Downflow variation from the Nominal point.

Performance Envelope Test of AC2-TU



LCD simultaneously displays time, airflow & sash status, inflow and downflow velocities, and status remarks.

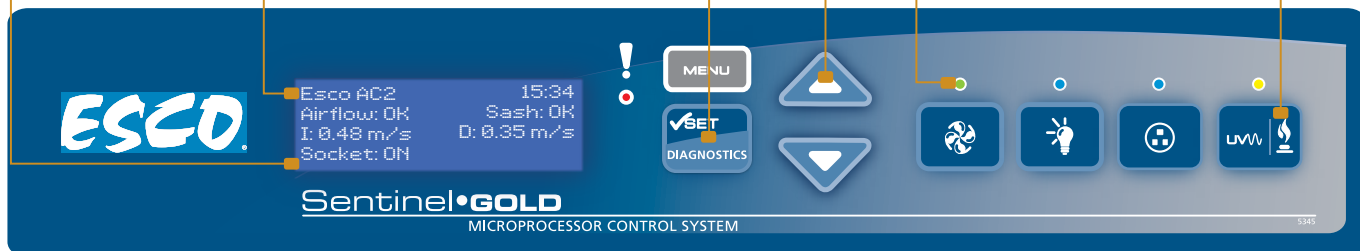
Multi Language: English, German

Diagnostics button, to easily check the cabinet operating parameters and assist servicing.

Large touchpad control buttons provide good tactile feedback.

Color coded LED: green for fan; blue for lights and outlets; and orange for UV lamp.

Programmable UV light timer extends UV lamp life.



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AC2 Cabinets Save Money and Environment



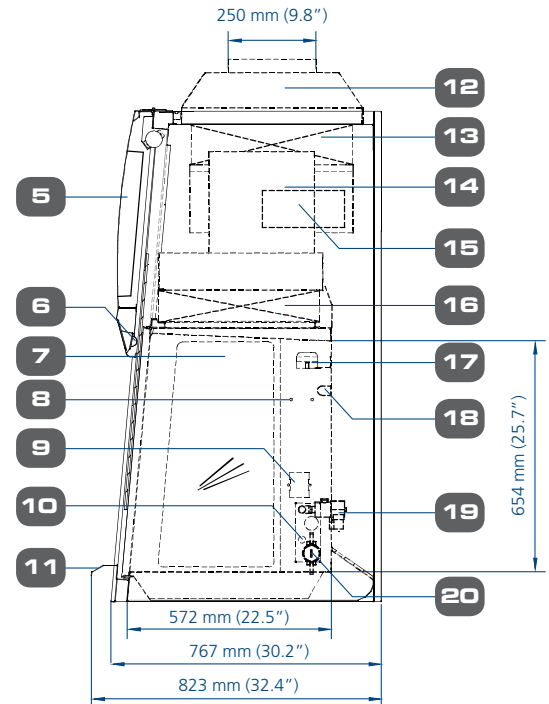
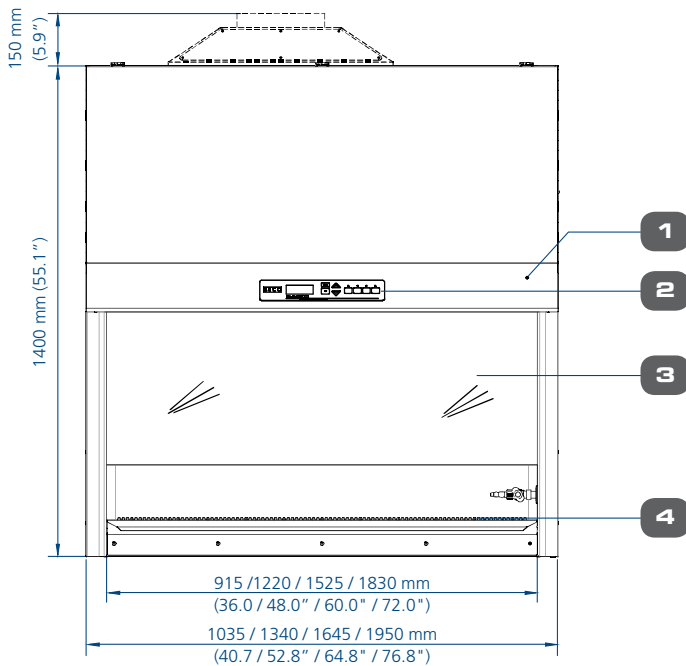
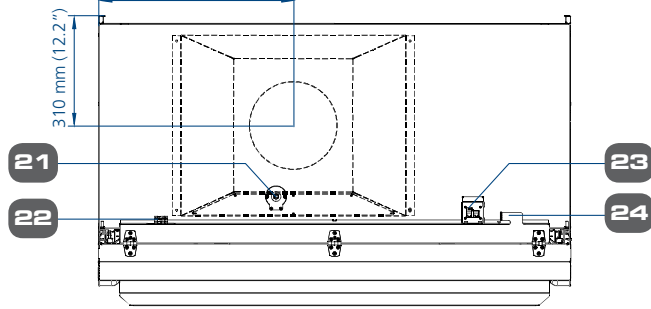
Description	AC2-4S_-TU with DC ECM blower	Typical BSC with AC Blower	Savings	Units
Instantaneous Power	200	800	600	Watt
Hours of Operation in a year	2000			Hours
Energy	400	1600	1200	kWh
Energy cost in USA at \$ 0.10 / kWh	40	160	120	USD
Energy cost in EU at € 0.20 / kWh	80	320	240	Euro
CO ₂ released in USA at 1 lbs / kWh	400	1600	1200	lbs
CO ₂ emission in EU at 0.35 Kg / kWh	140	560	420	Kg

Airstream® PLUS

Class II Biological Safety Cabinets

Model AC2-TU Biological Safety Cabinet Engineering Drawing

3 feet = 463 mm (18.2")
 4 feet = 553 mm (21.8")
 5 feet = 660 mm (26.0")
 6 feet = 680 mm (27.0")



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- | | |
|--|--|
| 1. Key Switch | 13. Exhaust H14 Filter (Optional U15) |
| 2. Esco Sentinel™ Gold Microprocessor Control System | 14. DC ECM Downflow Blower |
| 3. Laminated Glass Motorized Sliding Sash Window | 15. DC ECM Exhaust Blower |
| 4. Stainless Steel Multi-piece Work Tray | 16. Downflow H14 Filter (U15 is Optional) |
| 5. Electrical Panel | 17. Downflow Sensor |
| 6. Energy Efficient LED Lamps | 18. UV Lamp Provision |
| 7. Hole-free, Easy to Clean Side Tempered Glass | 19. Optional Solenoid Valve |
| 8. IV Bar Retrofit Kit Provision | 20. Optional Steris VHP / Bioquell HPV Port |
| 9. Standard Electrical Outlet Retrofit Kit Provision | 21. Exhaust Sensor |
| 10. Service Fixture Retrofit Kit Provision | 22. Voltage Free Relay Contact |
| 11. Stainless Steel Arm Rest | 23. RS 232 Serial Interface Port
(Optional RS 485 Communication Port) |
| 12. Exhaust Collar (Optional) | 24. Power Inlet |

Comprehensive Performance Testing At Esco



Every Airstream® Plus AC2-TU model manufactured by Esco is individually tested, documented by serial number and validated with the following test methods:

- Inflow and downflow velocity
- PAO aerosol challenge for filter integrity
- Airflow pattern visualization
- Electrical safety to IEC61010-1
- Additional KI-Discus containment and microbiological testing are performed on statistical sampling basis.



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TECHNICAL SPECIFICATIONS					
Glass Side: 220-240 VAC, 50/60 Hz		AC2-3E8-TU 2011036	AC2-4E8-TU 2011005	AC2-5E8-TU 2010981	AC2-6E8-TU 2011007
Stainless Steel Side: 220-240 VAC, 50/60 Hz		AC2-3S8-TU 2011037	AC2-4S8-TU 2010749	AC2-5S8-TU 2010980	AC2-6S8-TU 2010943
Nominal Size		3 ft (0.9 meter)	4 ft (1.2 meter)	5 ft (1.5 meter)	6 ft (1.8 meter)
External Dimensions (W x D x H)	Width	1035 (40.7")	1340 mm (52.8")	1645 mm (64.8")	1950 mm (76.8")
	Depth without arm rest	767 mm (30.2")			
	Depth with arm rest	823 mm (32.4")			
	Height	1400 mm (55.1")			
Gross Internal Dimensions (W x D x H)	Width	915 (36.0)	1220 mm (48.0")	1525 mm (60.0")	1830 mm (72.0")
	Depth	580 mm (22.8")			
	Height	654 mm (25.7")			
Usable Work Area		0.42 m ² (4.5 sq.ft.)	0.56 m ² (6.1 sq.ft.)	0.71 m ² (7.6 sq.ft.)	0.86 m ² (9.2 sq.ft.)
Tested Opening		175 mm (7")			
Average Airflow Velocity	Inflow	0.48 m/s (95 fpm)			
	Downflow	0.35 m/s (69 fpm)			
Airflow Volume	Inflow	278 cmh (164 cfm)	369 cmh (217 cfm)	463 cmh (273 cfm)	553 cmh (325 cfm)
	Downflow	661 cmh (389 cfm)	876 cmh (516 cfm)	1099 cmh (647 cfm)	1314 cmh (773 cfm)
	Exhaust	278 cmh (164 cfm)	369 cmh (217 cfm)	463 cmh (273 cfm)	553 cmh (325 cfm)
	Required Exhaust with Optional Thimble Exhaust Collar	320 m ³ /h (189 cfm)	554 cmh (326 cfm)	692 cmh (407 cfm)	830 cmh (488 cfm)
	Static Pressure for Optional Thimble Exhaust Collar	29 Pa / 0.11 in H ₂ O	38 Pa / 0.12 in H ₂ O	44 Pa / 0.14 in H ₂ O	50 Pa / 0.18 in H ₂ O
ULPA Filter Typical Efficiency		>99.999% at 0.1 to 0.3 micron, ULPA as per IEST-RP-CC001.3 USA			
		>99.999% at MPPS, H14 as per EN 1822 EU			
Sound Emission per EN 12469*		49.6 dBA	51.7 dBA	53.4 dBA	54.8 dBA
LED Lamp Intensity	E-Series	1020 Lux (95 foot-candles)			
	S-Series	918 Lux (85 foot-candles)			
Cabinet Construction	Main body	1.2 mm (0.05") 18 gauge electro-galvanized steel with white oven-baked epoxy-polyester ISOCIDE™ antimicrobial powder-coated finish			
	Work Zone	1.5 mm (0.06") 16 gauge stainless steel, type 304, with 4B finish			
	Side Walls (E Series)	UV absorbing tempered glass, 6 mm (0.2"), colorless and transparent			
	Side Walls (S Series)	1.5 mm (0.06") 16 gauge stainless steel, type 304, with 4B finish			
Electrical	Cabinet Full Load Amps (FLA)	10			
	Heat Load (BTU/Hr)	597	682	785	938
Maximum Power Consumption (5A EOs included) (W)		1880			
Nominal Power Consumption (W)		175	200	245	287
Net Weight**		191 Kg (421 lbs)	236 Kg (520 lbs)	293 Kg (645 lbs)	351 Kg (773 lbs)
Shipping Weight**		220 Kg (485)	260 Kg (573 lbs)	331 Kg (729 lbs)	403 Kg (888 lbs)
Shipping Dimensions, Maximum (W x D x H)**		1100 x 880 x 1760 mm (43.3" x 34.6" x 69.3")	1450 x 880 x 1760 mm (57.1" x 34.6" x 69.3")	1720 x 880 x 1760 mm (67.7" x 34.6" x 69.3")	2050 x 880 x 1760 mm (80.7" x 34.6" x 69.3")
Shipping Volume, Maximum**		1.7 m ³ (60.0 ft ³)	2.25 m ³ (79.5 ft ³)	2.66 m ³ (93.9 ft ³)	3.17 m ³ (111.9 ft ³)

*Noise reading in open field condition / **anechoic** chamber. Noise reading in **normal room varies** by room size, layout, and background noise, but may reach roughly 3-4 dBA above these values.

**Cabinet only, excludes optional stand.

Accessories for AC2-TU Biological Safety Cabinets

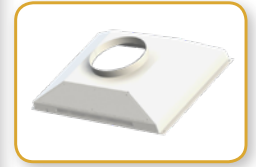
Cabinet	Glass Side Wall	AC2-3E8-TU 2011036	AC2-4E8-TU 2011005	AC2-5E8-TU 2010981	AC2-6E8-TU 2011007
	Stainless Steel Side Wall	AC2-3S8-TU 2011037	AC2-4S8-TU 2010749	AC2-5S8-TU 2010980	AC2-6S8-TU 2010943
Exhaust Ducting	Anti-blowback Valve 10"	ABBV-10P 5170352			
	Tri-safe Exhaust Collar with Alarm	TEM-4 2010606			
	Thimble Exhaust Collar	ECO-AC23-TU 5170683	ECO-AC24-TU 5170623	ECO-AC25-TU 5170624	ECO-AC26-TU 5170625
	Exhaust Damper	B2-DAMPER 5170352			
Hydrogen Peroxide Decontamination Kit	VHP In Port (Ø 1")	VHP-IN PORT 5170552			
	VHP Out Top Box for Cabinet WITH Exhaust Collar Installed (Ø 1")	VHP-ECO/OUT 3FT 5170684	VHP-ECO/OUT 4FT 5170615	VHP-ECO/OUT 5FT 5170616	VHP-ECO/OUT 6FT 5170617
	VHP Out Top Box for Cabinet WITHOUT Exhaust Collar Installed (Ø 1")	VHP OUT TOP BOX 3ft 5170685	VHP OUT TOP BOX 4ft 5170612	VHP OUT TOP BOX 5ft 5170613	VHP OUT TOP BOX 6ft 5170614
Work Zone	UV Lamp	UV-15A-L 5170251	UV-30A-L 5170255		
	IV Bar	IV-910 5170499	IV-1215 5170231	IV-1520 5170500	IV-1825 5170501
	Multiple Piece Tray Option (for AC2-S-TU)	SDT-AC2-3E-TU 5021057	SDT-AC2-4E-TU 5020830	SDT-AC2-5E-TU 5020976	SDT-AC2-6E-TU 5020828
	Single Piece Tray Option (for AC2-E-TU)	SGT-AC2-3S-TU 5021103	SGT-AC2-4S-TU 5020973	SGT-AC2-5S-TU 5020978	SGT-AC2-6S-TU 5020981
	Pre-filter on Paper Catch	PF-41 5090061	PF-42 5090062	PF-43 5090063	PF-44 5090064
Electrical Outlet	Direct Mounted	EO-H_			
Service Fixtures	EU SF-Gas-20 mm and Solenoid Valve	SF-1G20 5170410 and SL-VALVE 5070086			
	EU SF-Vacuum-20 mm	SF-1V20 5170457			
	EU SF-Air-20 mm	SF-1A20 5170502			
	EU SF-Nitrogen-20 mm	SF-1N20 5170503			
	EU SF-Water-20 mm	SF-1W20 5170458			
	EU SF-Universal-22 mm	SF-2U22 5170504			
Support Stands, Ships Flat	Fixed Stand with Leveling Feet, 28" height	SAL-3A0 Gen 2 5130170	SAL-4A0 Gen 2 5130134	SAL-5A0 Gen 2 5130171	SAL-6A0 Gen 2 5130172
	Fixed Stand with Leveling Feet, 34" height	SAL-3B0 Gen 2 5130174	SAL-4B0 Gen 2 5130175	SAL-5B0 Gen 2 5130176	SAL-6B0 Gen 2 5130177
	Fixed Stand with Caster Wheels, 28" height	SPC-3A0 Gen 2 5130155	SPC-4A0 Gen 2 5130152	SPC-5A0 Gen 2 5130162	SPC-6A0 Gen 2 5130154
	Fixed Stand with Caster Wheels, 34" height	SPC-3B0 Gen 2 5130165	SPC-4B0 Gen 2 5130166	SPC-5B0 Gen 2 5130167	SPC-6B0 Gen 2 5130168
	Telescopic Stand with Leveling Feet, 1" adjustment	STL-3A0 5130050	STL-4A0 5130051	STL-5A0 5130052	STL-6A0 5130053
	Telescopic Stand with Caster Wheels, 1" adjustment	STC-3A0 5130055	STC-4A0 5130056	STC-5A0 5130057	STC-6A0 5130058
	Motorized Height Stand with Caster Wheels, 39.5" height	SPM-3A_	SPM-4A_	SPM-5A_	SPM-6A_
Misc	IQ/OQ Protocol	9010179			



ABBV-10P



TEM-4



ECO-AC2-_TU



B2-DAMPER



VHP-IN PORT



VHP-ECO/OUT



VHP OUT TOP BOX



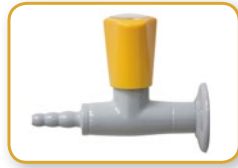
UV-_A-L



IV-_



IQ-OQ



SF-_



SF-2U22



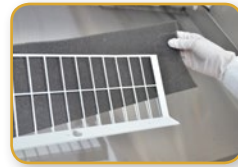
EO-H_



SDT-AC2-_E-TU



SGT-AC2-_S-TU



PF-_



SPC-_A0 Gen2



SAL-_A0 Gen2



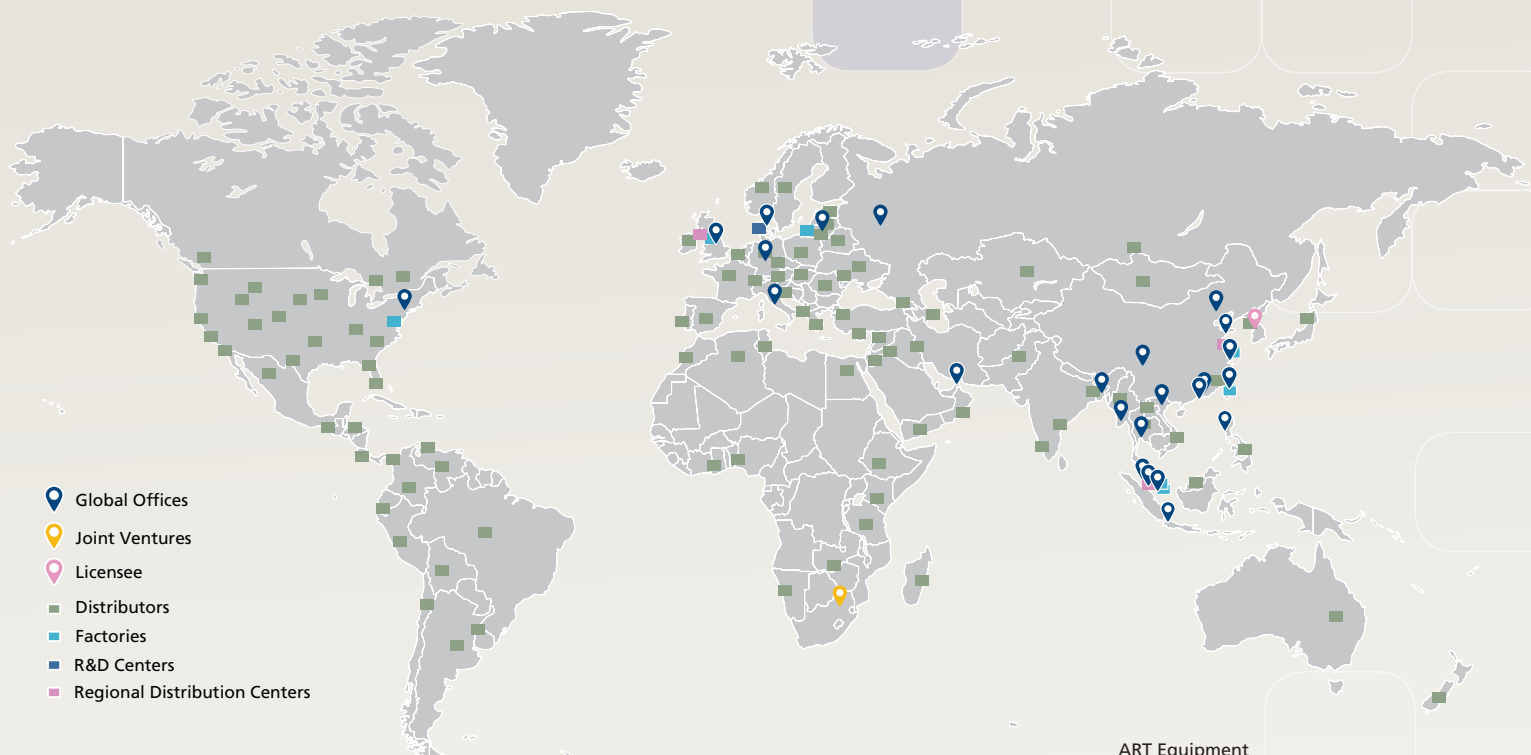
STC-_A0



SPM-_A_

ESCO GLOBAL NETWORK

42 LOCATIONS IN 21 COUNTRIES ALL OVER THE WORLD



ART Equipment
 Biological Safety Cabinets
 CO₂ Incubators
 Compounding Pharmacy Equipment
 Containment / Pharma Products
 Ductless Fume Hoods
 Lab Animal Research Products
 Laboratory Centrifuges
 Laboratory Fume Hoods
 Laboratory Ovens and Incubators
 Laboratory Shakers
 Laminar Flow Clean Benches
 PCR Cabinets
 PCR Thermal Cyclers
 Powder Weighing Balance Enclosures
 Ultra-low Temperature Freezers

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