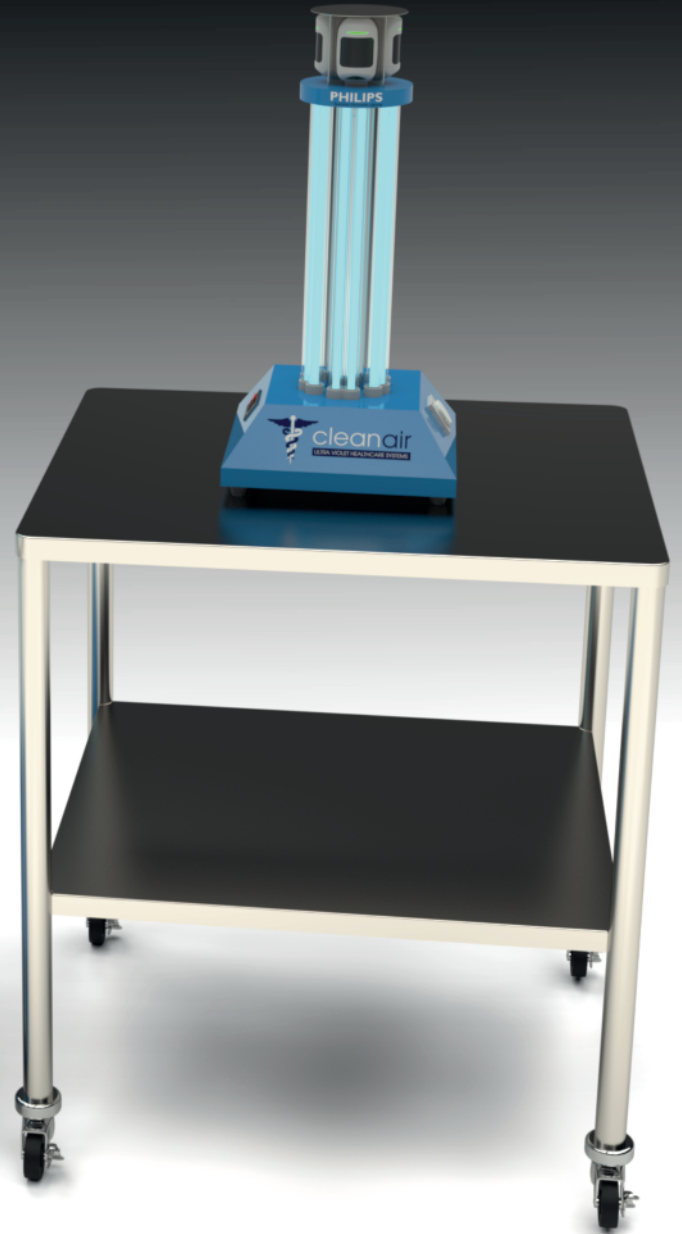
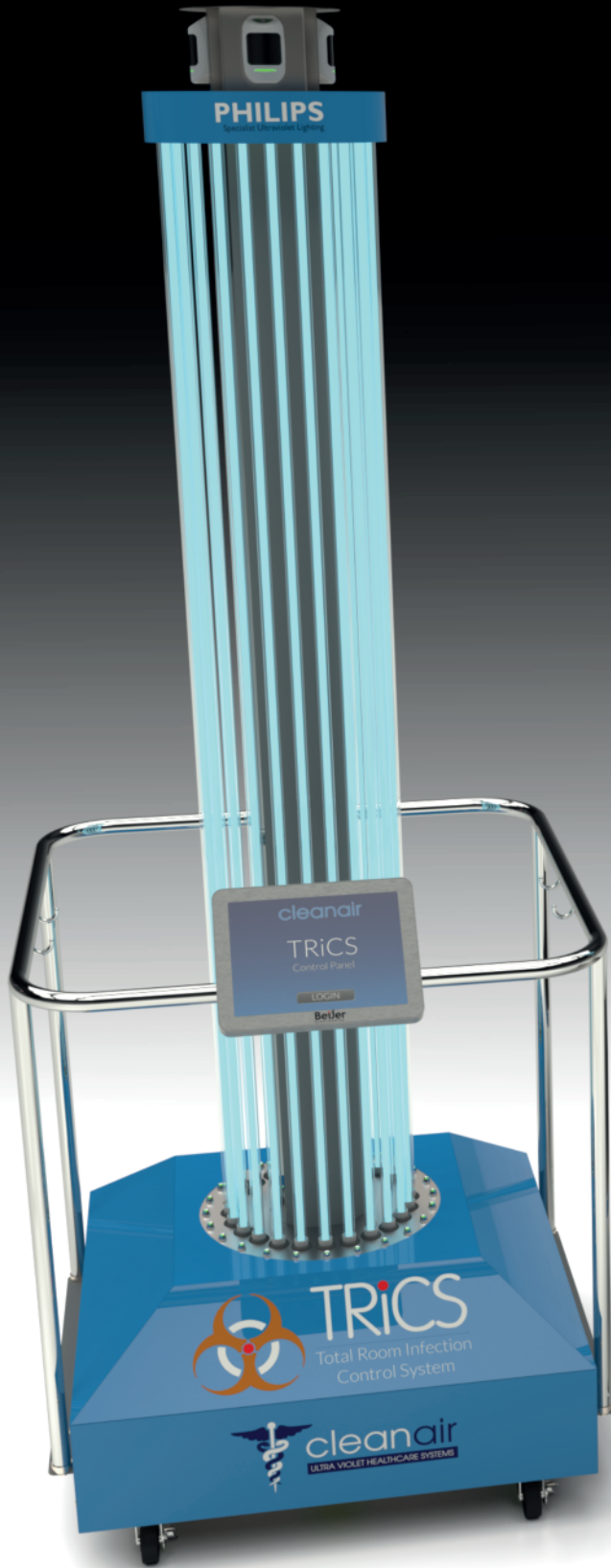




# TRiCS

Total Room Infection  
Control System



**PHILIPS**  
Specialist Ultraviolet Lighting

 **cleanair**  
ULTRA VIOLET HEALTHCARE SYSTEMS

## 360-Degree Safety

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4 motion sensors protect users from accidentally walking into an area of use. Immediate shutdown occurs once the sensors detect movement.

## 360-Degree Power

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24 high-power PHILIPS UV-C tubes provide devastating killing power against all pathogens.

## Essential Management Tool

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Data stored by the Touchscreen provide management with important information and help ensure no High-Burden settings are forgotten about.

## One-Time Decontamination

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The system simply needs placing as close to the centre of a room as possible to supply lethal doses to all areas without the need to be moved around.

## Portable

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The system has been designed to be easily moved between areas of use.

## Long Tube Lifespan

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PHILIPS UV-C tubes provide 9,000 hours of continuous and effective sanitising power

## User Friendly

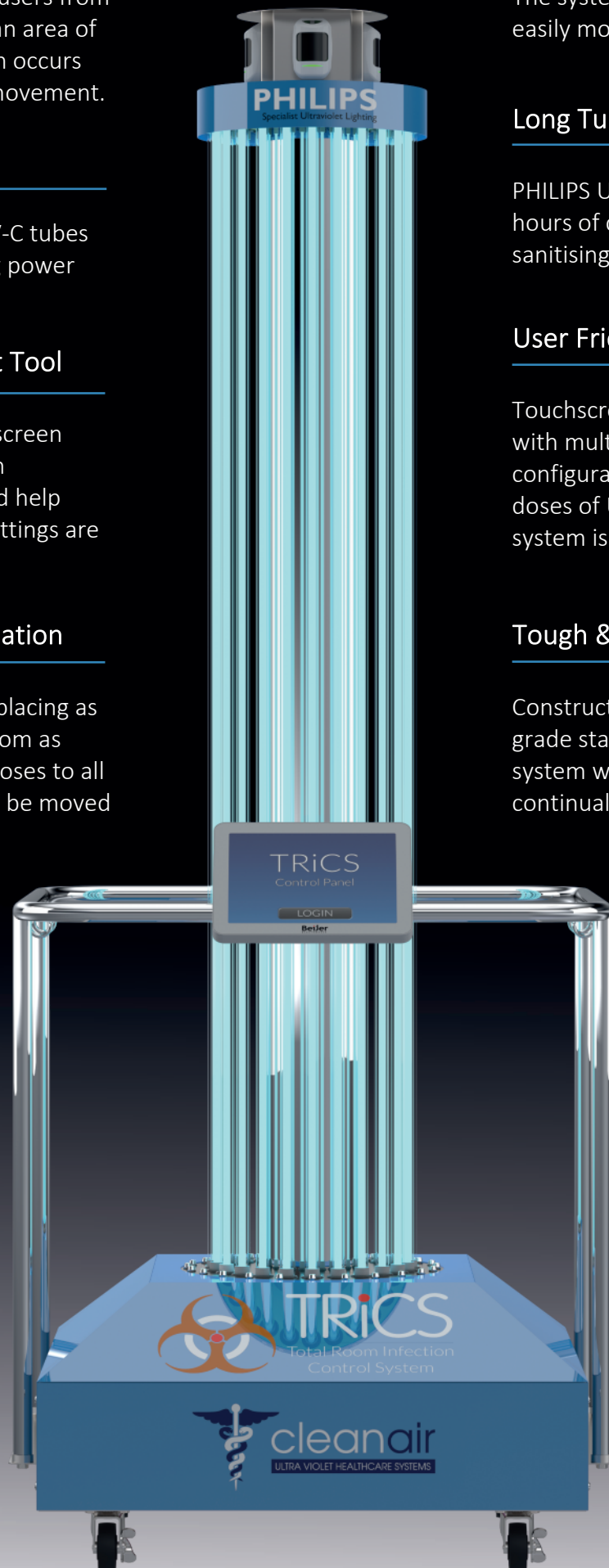
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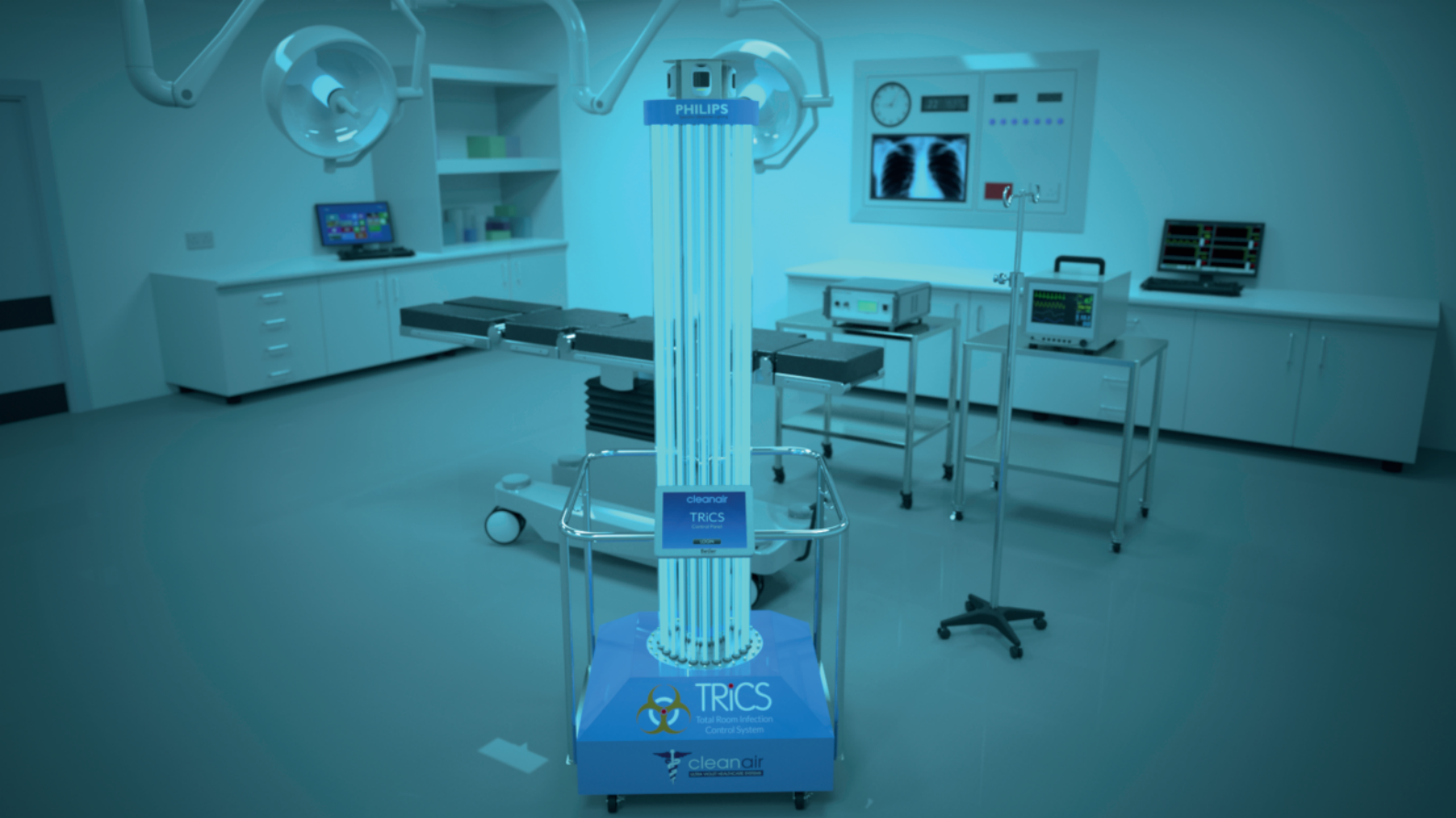
Touchscreen control provides users with multi-programmable configurations guaranteeing lethal doses of UV-C whatever setting the system is operated in.

## Tough & Durable Design

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Constructed from 304 medical-grade stainless steel, the TRICS system will supply many years of continual use.





## TRiCS Total Room Infection Control System

Owing to the well documented efficacy of UVGI, there is an increasing need to add the use of UV-C energy to traditional methods of decontaminating and sanitising high-burden areas of healthcare facilities.

Critical areas of healthcare facilities are generally cleaned using different types of chemicals and are prone to potentially fatal human error.

When dealing with pathogens such as; MRSA, CRE, VRE, TB, C-Diff and influenza it is essential that every available preventative measure has been utilised to prevent harm to patients, staff and visitors. Incorporating the TRiCS Total Room Infection Control System shows a dedication and commitment to the implementation of innovative and effective state-of-the-art equipment.

Patient outcomes, including post-operative processes free of an elevated risk of HAI, should be of utmost importance to all healthcare management staff. The effectiveness of UV-C at controlling and eradicating the risks associated with harmful pathogens are a welcome aid for infection control teams.

In addition to the above there are also financial incentives available by using the TRiCS in the form of greatly reduced incidences of nosocomial infection costs.

Philips Specialist  
Lighting Technology

1

Effective Against ALL  
Pathogens

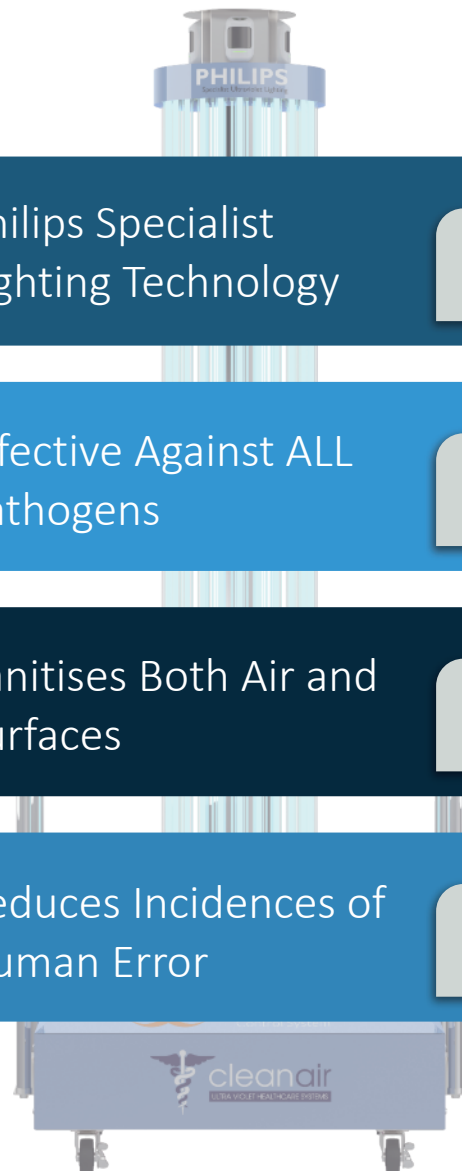
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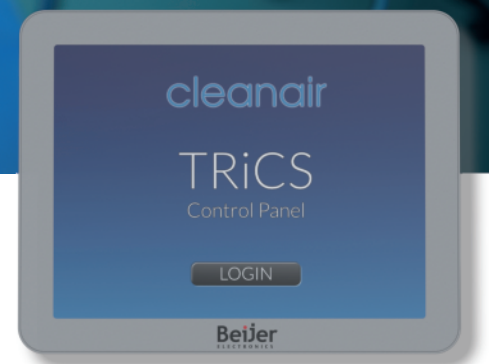
Sanitises Both Air and  
Surfaces

3

Reduces Incidences of  
Human Error

4





## Touchscreen Functionality

The larger TRICS Total Room Infection Control System incorporates the Swedish designed Beijer Electronics Touchscreen.

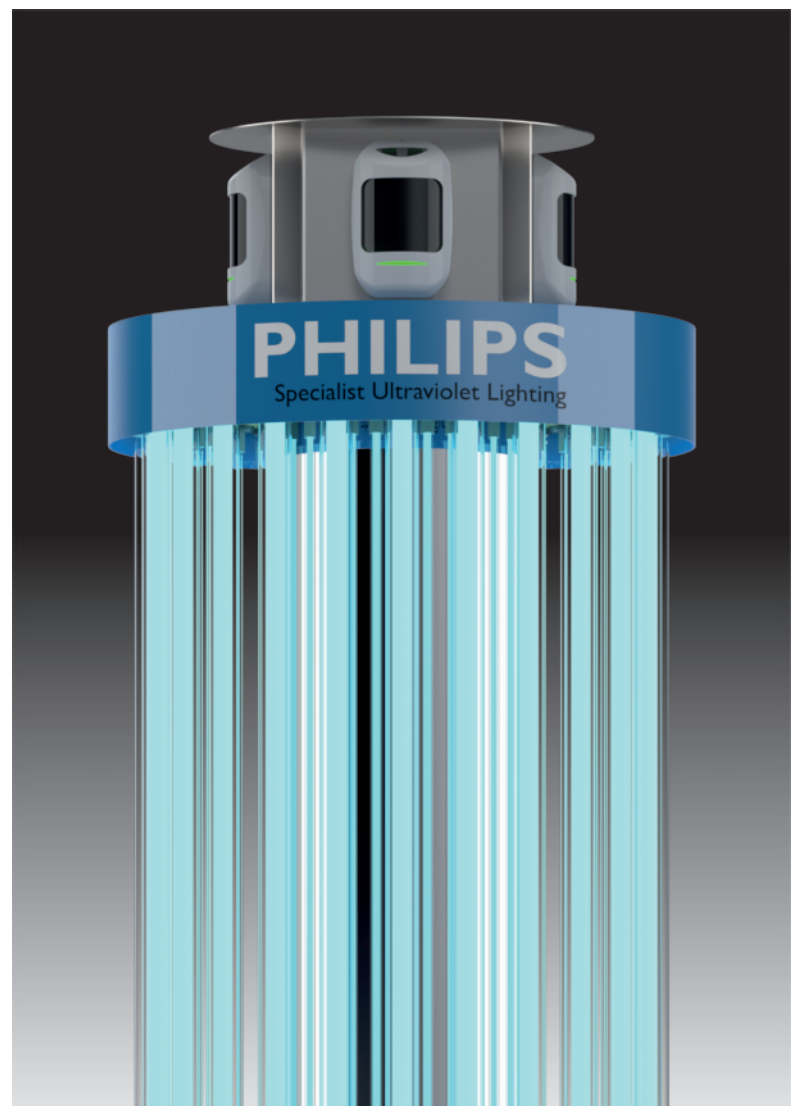
Users can input room designations (Operating Theatre-1) then input the dimensions of the floor space. Once these have been input the unit calculates the operating time which ensures all parts of the room receive the required lethal dose of UV-C energy.

Should the operation of the unit be interrupted by someone entering the room causing an automatic shutdown, the Beijer Touchscreen will alert users that the system did not operate for the desired amount of time.

A simple restart is then performed which supplies the required total operating period.

At any time, infection control management can download the data from the Touchscreen in Excel spreadsheet format. This is essential for infection control teams to make sure each high-burden setting has been treated by the TRICS system and how often the unit has been used in separate areas.

With easy-to-use functionality, and the ability to store room designations once input, the Beijer Touchscreen provides infection control staff with an added advantage in the battle against Hospital Acquired Infections.

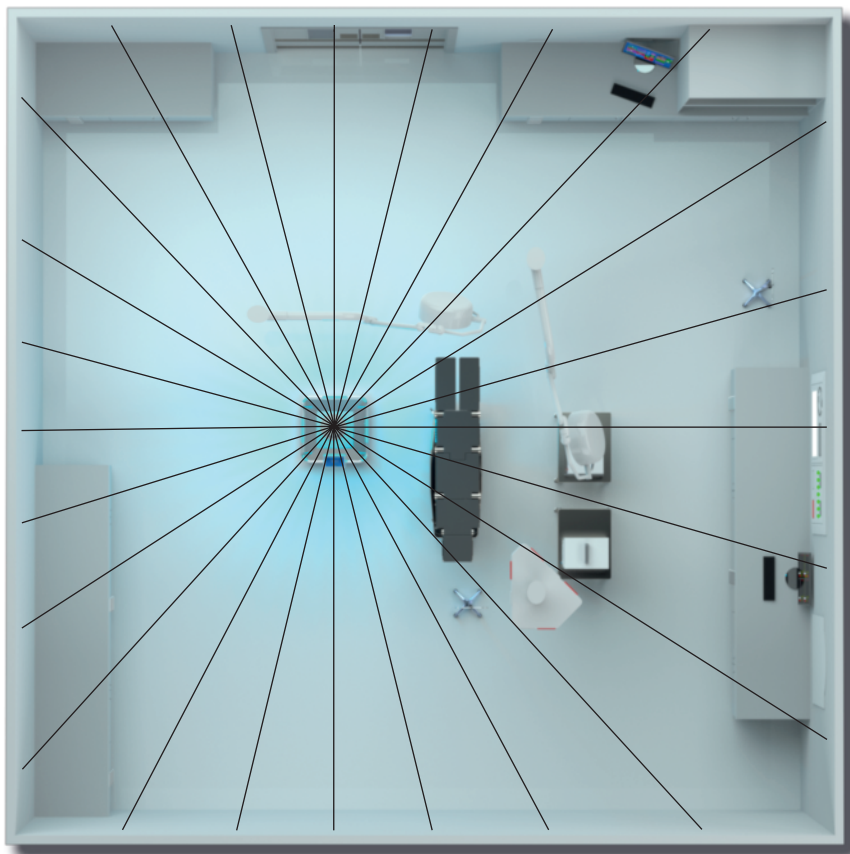


# Effective

Placed centrally inside a room, the TRICS unit emits powerful UV-C energy and provides 360-degree protection.

The system fits seamlessly into current cleaning and disinfection processes allowing infection control staff additional time to attend to other essential sanitisation functions elsewhere.

Careful attention needs to be given to areas in 'shade' that do not receive UV-C energy. These areas will not benefit from the sanitising rays and require manual sanitisation; our Handheld Sanitising system pictured below is suitable for these areas



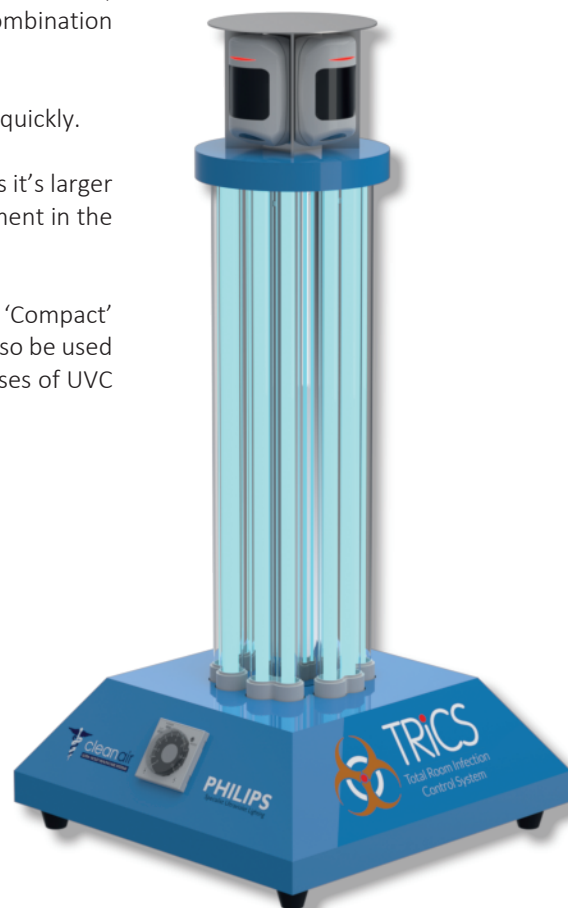
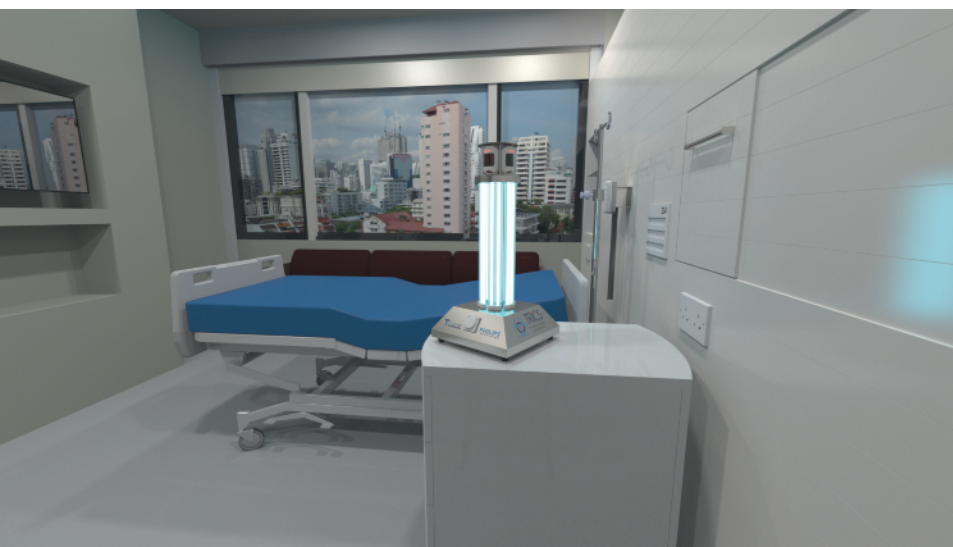
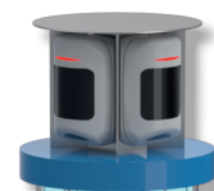
## Smaller Settings - TRICS 'Compact'

Designed specifically for smaller settings, such as patient rooms, consultation rooms, chemotherapy rooms etc., the TRICS 'Compact' is an excellent disinfection tool in combination with regular cleaning.

Weighing only 6kg the unit is easily used as a portable system and can be set up very quickly.

The TRICS 'Compact' has the same 360-degree safety feature of the motion sensors as its larger brother and an automatic shutdown is instantly effected once the unit senses movement in the room.

Whilst not as powerful as the TRICS Total Room Infection Control System, the TRICS 'Compact' can be placed accurately in any setting to achieve desired sanitisation. The unit can also be used in conjunction with the larger TRICS unit to ensure areas in shadow receive lethal doses of UVC energy.



# UV-C Doses Required For 99.999% Pathogen Decontamination

The tables in this page detail the microwatt/cm<sup>2</sup> dosage levels required to perform a 99.99% sterilisation of a collection of pathogens, contaminants and contagions.

BACTERIA	UV DOSE μW/cm <sup>2</sup>
Agrobacterium Lumefaciens	8,500
Bacillus Anthracis (Anthrax Veg.)	8,700
Bacillus Anthrax Spores	46,200
Bacillus Megatherium Sp. (Veg)	2,500
Bacillus Megatherium Sp (Spores)	5,200
Bacillus Paratyphosus	6,100
Bacillus Subtilis	11,000
Bacillus Subtilis Spores	22,000
Clostridium Tetani	23,100
Clostridium Botulinum	11,200
Corynebacterium Diphtheriae	6,500
Dysentery Bacilli	4,200
Eberthella Typhosa	4,100
Escherichia Coli	6,600
Legionella Bozemanii	3,500
Legionella Dumoffill	5,500
Legionella Gormanil	4,900
Legionella Micdadei	3,100
Legionella Longbeachae	2,900
Legionella Pneumophila (Legionnaire's Disease)	12,300
Leptospira Canicola-Infectious Jaundice	6,000
Leptospira Interrogans	6,000
Micrococcus Candidus	12,300
Micrococcus Sphaeroides	15,400
Mycobacterium Tuberculosis	10,000
Neisseria Catarrhalis	8,500
Phytomonas Tumefaciens	8,500
Proteus Vulgaris	6,600
Pseudomonas Aeruginosa (Environ. Strain)	10,500
Pseudomonas Aeruginosa (Lab. Strain)	3,900
Pseudomonas Fluorescens	6,600
Rhodospirillum Rubrum	6,200
Salmonella Enteritidis	7,600
Salmonella Paratyphil (Enteric Fever)	6,100
Salmonella Species	15,200
Salmonella Typhimurium	15,200
Salmonella Typhi (Typhoid Fever)	7,000
Salmonella	10,500
Sarcina Lutea	26,400
Serratina Marcescens	6,160
Shigella Dysenteriae (Dysentery)	4,200
Shigella Flexneri (Dysentery)	3,400
Shigella Paradysenteriae	3,400
Shigella Sonnei	7,000
Spirillum Rubrum	6,160
Staphylococcus Albus	5,720
Staphylococcus Aureus (MRSA)	6,600
Staphylococcus Epidermidis	5,800
Streptococcus Faecaila	10,000
Streptococcus Hemolyticus	5,500
Streptococcus Lactis	8,800
Streptococcus Pyrogenes	4,200
Streptococcus Salivarius	4,200
Streptococcus Viridans	3,800
Vibrio Comma (Cholera)	6,500
Vibrio Cholerae	6,500

MOLDS	UV DOSE μW/cm <sup>2</sup>
Aspergillus Amstelodami	77,000
Aspergillus Flavus	99,000
Aspergillus Glaucus	88,000
Aspergillus Niger (Breed Mold)	330,000
Mucor Mucedo	77,000
Mucor Racemosus (A & B)	35,200
Oospora Lactis	11,000
Penicillium Chrysogenum	56,000
Penicillium Digitatum	88,000
Penicillium Expansum	22,000
Penicillium Roqueforti	26,400
Rhizopus Nigricans (Cheese Mold)	220,000

PROTOZOA	UV DOSE μW/cm <sup>2</sup>
Chlorella Vulgaris (Algae)	22,000
Blue Green Algae	420,000
E. Hyscolytica	84,000
Giardia Lambliia (Cysts)	100,000
Nematode Eggs	40,000
Paramecium	200,000

VIRUS	UV DOSE μW/cm <sup>2</sup>
Adeno Virus Type III	4,500
Bacteriophage	6,600
Coxsackie	6,300
Infectious Hepatitis	8,000
Influenza	6,600
Rotavirus	24,000
Tobacco Mosaic	440,000

YEASTS	UV DOSE μW/cm <sup>2</sup>
Baker's Yeast	8,800
Brewer's Yeast	6,600
Common Yeast Cake	13,200
Saccharomyces Cerevisiae	13,200
Saccharomyces Ellipsoideus	13,200
Saccharomyces Sp.	17,600

# Kill Rate Calculation For a Selection of Pathogens

The output of a UV-C lamp is expressed in microwatts/cm<sup>2</sup> (μW/cm<sup>2</sup>) measured at a distance of one (1) meter from the tube. To calculate the output energy at distances different to 1-meter, the “Intensity Factor” is used. The Intensity Factor Calculation Table on the right depicts how the distance from the tube to the target determines the intensity Factor.

The dose applied by a UV-C lamp installation is a function of the lamp output, the “Intensity Factor” and time. The equation may be stated as:

$$\text{DOSE} = \text{Lamp Output at 1-Meter } (\mu\text{W}/\text{cm}^2) \times \text{Intensity Factor} \times \text{Time (sec)}$$

The dose required to kill a given pathogen is given in units of microwatt-seconds/cm<sup>2</sup>. Table 1 (below) details the dose required for sterilisation (99.99% kill) for a variety of common pathogens by the TRICS Total Room Infection Control System.

The time required to kill 99.99% of a given pathogen is expressed by the formula:

$$\text{TIME} = \text{Required Dose} / (\text{System Output at 1-Meter} \times \text{Intensity Factor})$$

Thus, the TIME required to kill Clostridium Difficile (C-Diff) by the TRICS unit at a distance of 2-meters would be calculated as follows:

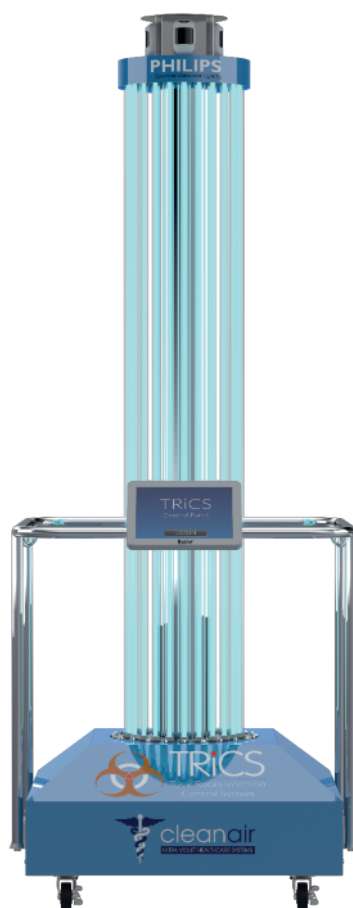
$$\text{TIME} = 24,000 / (24,650 \times 0.681) = 1.43 \text{ Seconds}$$

Consequently, the TIME required to kill Staphylococcus Aureus (MRSA) by the TRICS unit at a distance of 3-meters would be calculated as follows:

$$\text{TIME} = 6,000 / (24,650 \times .115) = 1.57 \text{ Seconds.}$$

TABLE 1

MODEL	UV DOSE REQUIRED	TRICS Unit
	μW/cm <sup>2</sup>	99.999% Kill Time (Seconds) @ 1-Meter Distance
<b>BACTERIA</b>		
Staphylococcus Aureus (MRSA)	6600	0.27
Legionella Pneumophilia	12300	0.50
Escherichia Coli	6600	0.27
Salmonella Enteritidis	7600	0.31
Mycobacterium Tuberculosis	10000	0.08
Clostridium Difficile (C-Diff)	24000	0.97
Pseudomonas Aeruginosa	5500	0.22
<b>VIRUSES</b>		
Influenza	6600	0.27
Infectious Hepatitis	8000	0.32
Bacteriophage	6600	0.27
Rotavirus / Norovirus	24000	0.97
<b>MOLD</b>		
Aspergillus Flavus	99000	4.02

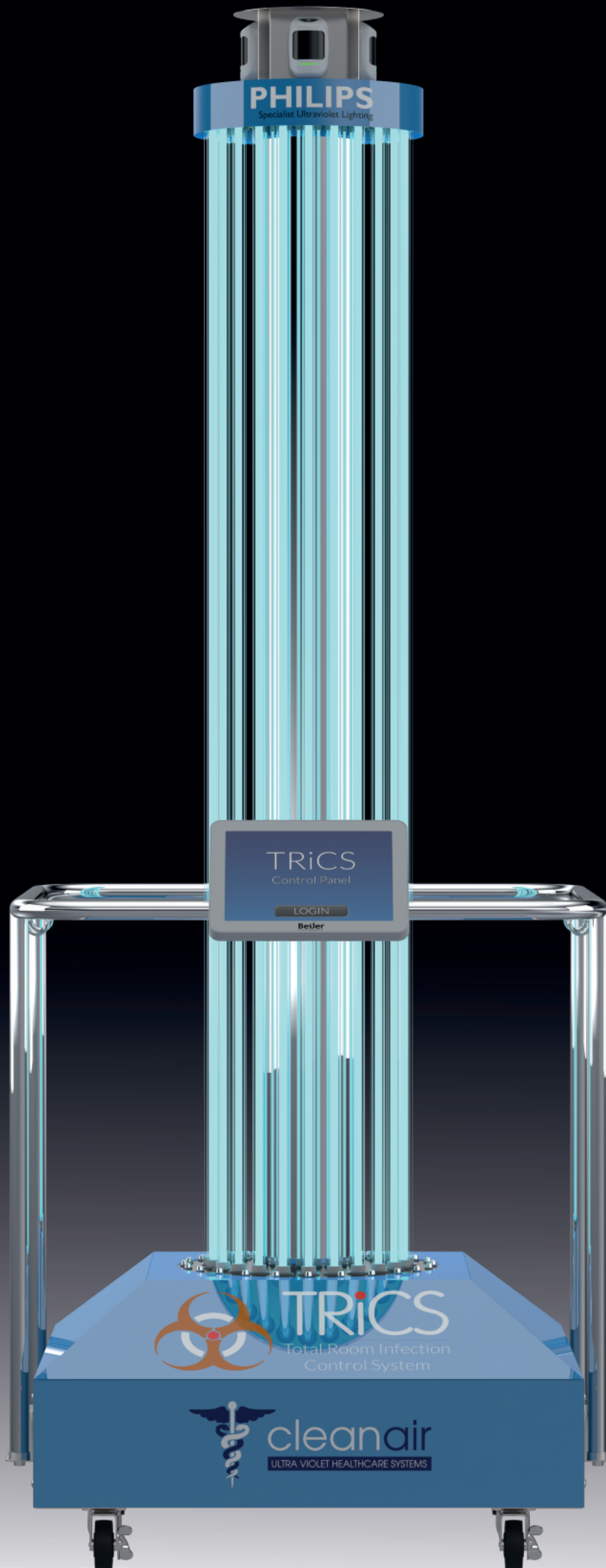


## INTENSITY FACTOR TABLE

Distance (CM)	Intensity Factor
5.1	32.3
7.6	22.8
10.2	18.6
15.2	12.9
20.3	9.85
25.4	7.94
30.5	6.48
35.6	5.35
45.7	3.6
61	2.33
88.9	1.22
100	1
121.9	0.681
152.4	0.452
203.2	0.256
254	0.169
304.8	0.115
350	0.064
400	0.036
450	0.02
500	0.011
550	0.006
600	0.003

The TRICS Total Room Infection Control System is our most powerful unit, supplying a μW/cm<sup>2</sup> output of 24,650 at the distance of 1-meter.

**NOTE:** All calculations, dosage requirements, intensity factor figures and kill rates are arrived-at by using the data from PHILIPS UV Specialist Lighting and Carrier Ultra Violet Germicidal Lamp publications.



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