



# Specifications for Cello OMNI 4-in-1 Fixture



## CELLO OMNI 4-IN-1 FIXTURE SPECIFICATIONS

### ANYTIME, ANYWHERE, BY ALL MEANS

Cello UV Air 4-in-1 Fixture integrates UVC Surface Disinfection, UVC Air Disinfection, HEPA Filtering and Needlepoint Bipolar Ionizers (NPBI) into one single product. In addition, fully integrated controls allow for remote scheduling, remote control and a comprehensive log of all fixture schedules, usage, and activities via Cello Cloud.

Cello Lighting, Inc.  
Palo Alto, CA 94303



# Specifications for Cello OMNI 4-in-1 Fixture

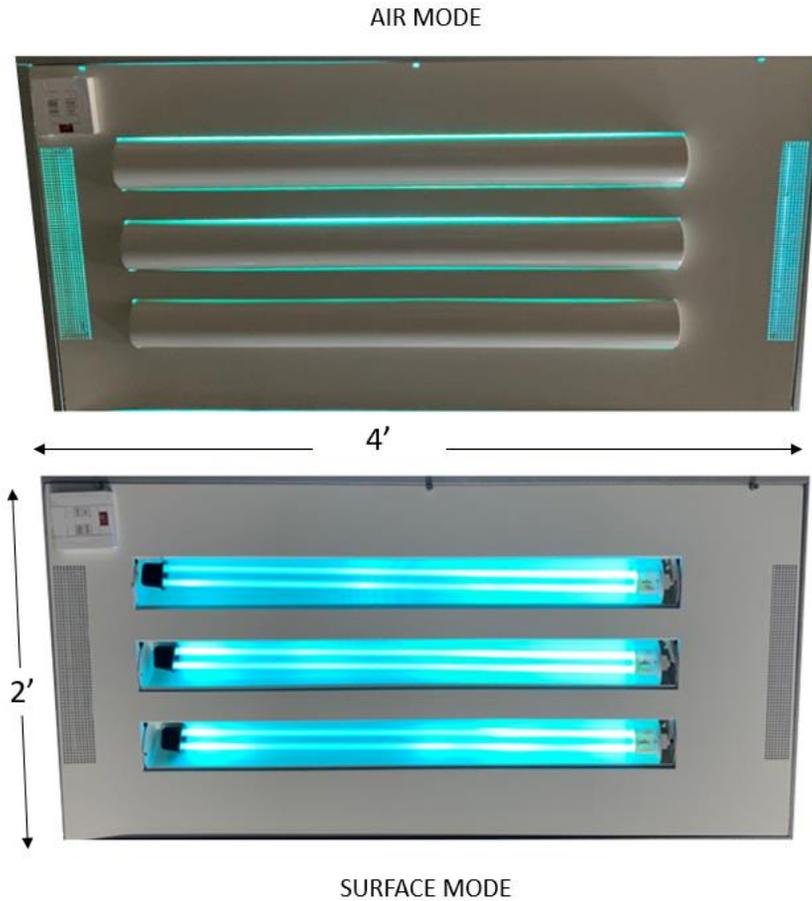
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# Specifications for Cello OMNI 4-in-1 Fixture

## I. Product Overview ([Video](#))



Remote Control



Wi-Fi Gateway Controller

CH	ON	OFF
1	SURFACE	AIR MODE
2	UV ON	UV OFF
3	NPBI ON	NPBI OFF
4	FAN ON	FAN OFF



# Specifications for Cello OMNI 4-in-1 Fixture

## II. Disinfection Guidelines

### Surface Mode UVC Disinfection

Area	500 sq. ft.	1000 sq. ft.	1500 sq. ft.
Time*	10 min	25 min	50 min

\*Required time to operate for 99.9% disinfection rate.

### Air UVC Disinfection

CFM	Disinfection	Ambient Noise	9000 cu. ft
900	99.95%	65 dB	10 minutes
450	99.99%	50 dB	20 minutes

\* Time to exchange 100% of air.

### HEPA Filter Disinfection

CFM	Disinfection	Ambient Noise	9000 cu. ft
900	99.954%	65 dB	10 minutes
450	99.954%	50 dB	20 minutes

### NPBI Disinfection (Optional)

CFM	Disinfection	Ambient Noise	9000 cu. ft
900	96.7%*	65 dB	10 minutes
450	96.7%	50 dB	20 minutes

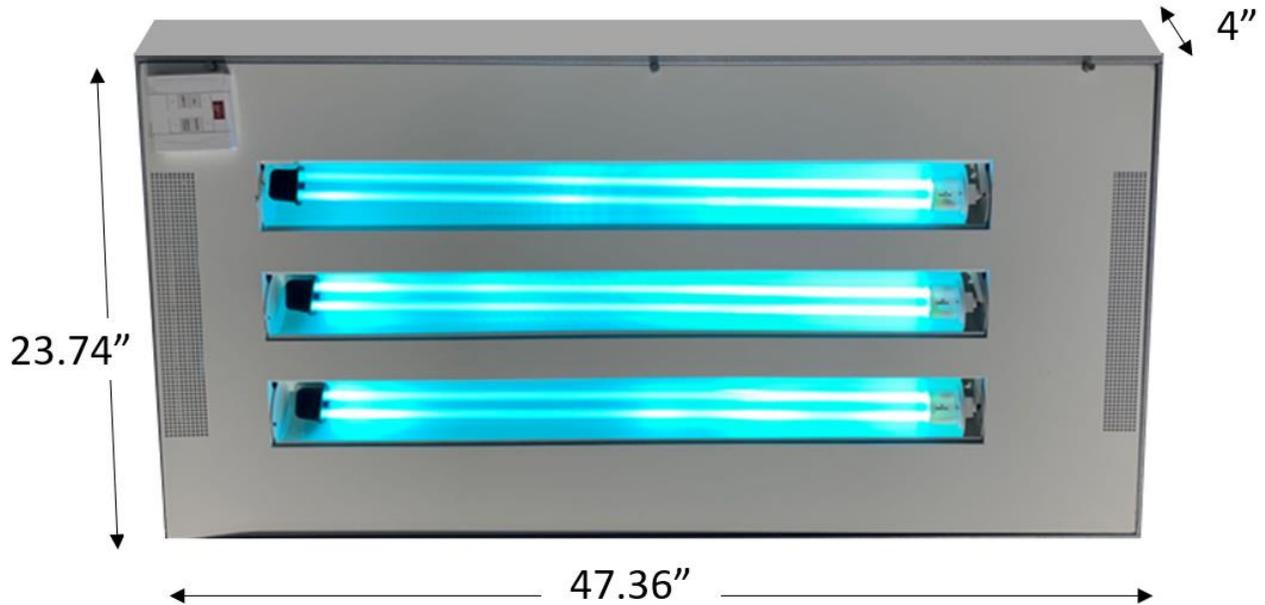
\*Independent testing in April 2020 showed that NPBI deactivated **99.4%** of SARS COVID-2 (the virus that causes COVID-19) in **30 minutes**. Importantly, NPBI technology safely deactivates pathogens in the air and **on surfaces** in real time, while spaces are occupied.

\*\* NPBI is an OPTIONAL feature. If users do not like NPBI, they can use the remote control to turn off CH3: IONIZERS to turn off the NPBI feature.



## Specifications for Cello OMNI 4-in-1 Fixture

### III. Technical Specifications

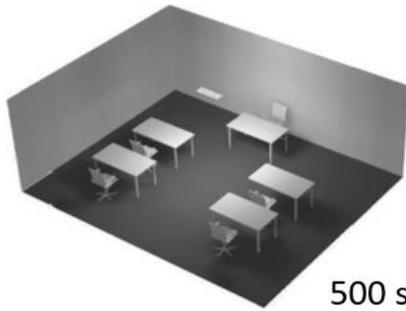
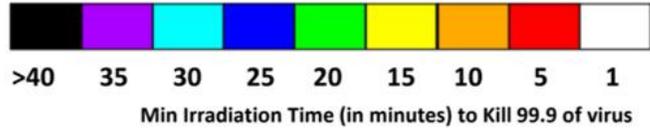


Parameter	Value
Input Voltage	120VAC 50/60Hz
Input Amps	5 amps (motor & lamps)
Power & Lamp Indicator Lights	Available on Wi-Fi Controller
Dimensions	47.36" x 23.74" x 4"
Net Weight	30 lb.
Wavelength	253.7 nm
3 UVC Lamps per unit	450W (3 of 150W) U-type UVC lamps
Ozone level	< 0.05 ppm (compliant with UL 867 no-ozone standard)
Square footage coverage (@ 9ft tall)	Up to 1000 sq. ft.
Control Access	From remote control or Smartphone App
Easily accessible filter door	Located at the bottom of the unit
Cabinet Material	Stainless Steel
Mounting	Individual Wall Hung unit or ceiling mounted unit
Power factor of motored fan	95%
Ambient Noise level	40 dB – 65 dB
UVC Intensity	1 mW/cm <sup>2</sup>
System Air Flow	200 CFM – 900 CFM
Air Exchange Rate @ 9000 cu. Ft.	6 Air Exchanges per hour (@900 CFM)
Ion concentration @ 4" from NPBI	60 million ions
Warranty	3 years unit / 1 year Lamp (8000 hours)

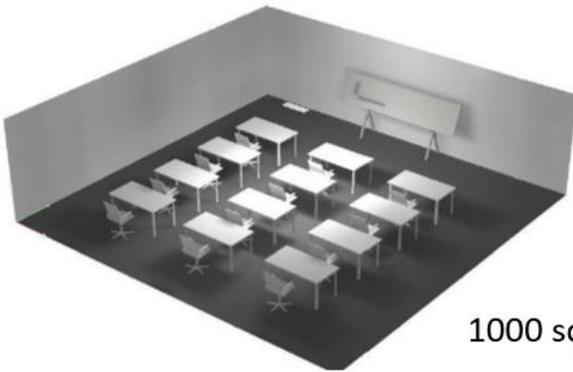
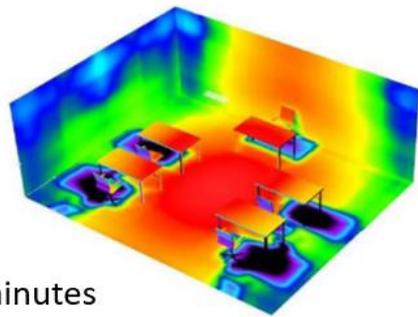


# Specifications for Cello OMNI 4-in-1 Fixture

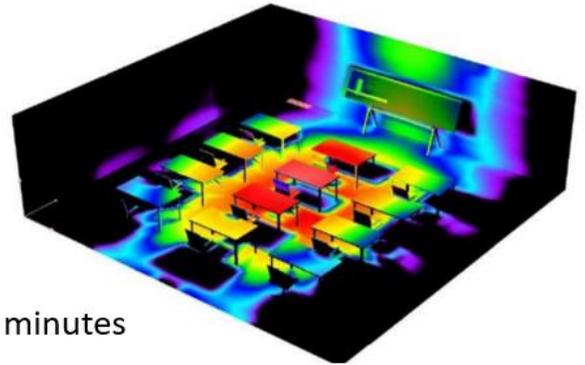
## IV. Case Study of UVC Surface Disinfection (Height = 9 ft.)



500 sq. ft. : 10 minutes



1000 sq. ft. : 25 minutes



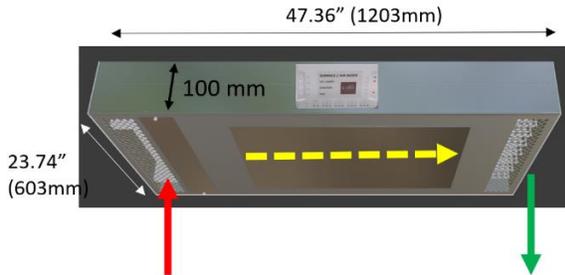
Area	500 sq. ft.	1000 sq. ft.
Time*	10 min	25 min

\*Required time to operate for 99.9% disinfection rate.



# Specifications for Cello OMNI 4-in-1 Fixture

## V. Case study of UVC Air Disinfection (1000 sq. ft. x 9 ft.)



UVC power = 300W

Specified UVC intensity = 1 mW/cm<sup>2</sup> @ 1 meter

Farthest distance of air inside Fixture from UVC lamp = 0.2 meter;

$0.6\text{mW} \times 1^2 = \text{Fixture UVC Intensity} \times (0.15)^2$  (reverse square law)

Fixture UVC Intensity =  $1 (1/0.15)^2 = 44.4 \text{ mW/cm}^2$  @ 0.2 meter

Air Unit Volume = 1.2 M x 0.6 M x 0.1M = 0.072 cu. meter = 2.58 cu. ft.

Cross Section Area = 0.1M x 0.6M = 0.06 sq. meter = 0.65 sq. ft.

Assume air exchange rate is **900 cfm** = 900 cu. ft./minute

Air Flow Speed = (900 cu. ft. /minute)/ 0.65 sq. ft. = 1384 ft./minute

=23.06 ft/second = 6987 mm/second

Air stays in this Unit for: 1200 mm/ 6987(mm/s) = **0.28 seconds**

Dosage = 44.4 mW/cm<sup>2</sup> x 0.28 seconds = **12.43 mJ/ cm<sup>2</sup>**

Disinfection Rate = **99.95%** (refer to [Appendix A](#))

### Conclusion:

It takes 9000 cu. ft./900 cfm = **10 minutes** to exchange 9000 cu. ft. of air with 99.95% disinfection rate; that is:

**6 air exchanges** per hour to disinfect **99.95%** of the air.



# Specifications for Cello OMNI 4-in-1 Fixture

## VI. HEPA Filtering Test Report



### TEST REPORT



No: 190345723M0

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Client	Cello Lighting, Inc. 2570 N. First Street, Second Floor, San Jose, CA 95131				
Sample	H13 Filer (210mm*297mm) 4 pcs Color: White -----				
Category	Client Case	Sample Testing Start Date	2019-11-05	Report Release Date	2019-11-11
Foundation	----				
General Conclusion	----				
Testing Results	Test Item	Test Method	Variation	Testing Results	Comments
	Filtering Performance	GTT TM 018-2010 Air Flow: 32L/min Particulate: NaCl Particulate Concentration: 15mg/m <sup>3</sup> Temperature: 24.0°C Humidity: 38.0%	-----	Filtering Rate: Average: 99.954%	-----
Comments	All report was tested at No. 1 Zhujiang Road, Panyu District, Guangzhou City.				

Signed by:

Engineer

End of Report

Headquarters: No.1 Hebin West Road, Qijing, Huadu District, Guangzhou, Guangdong, P.R. China.

Tel: +86-20-61994598 61994599

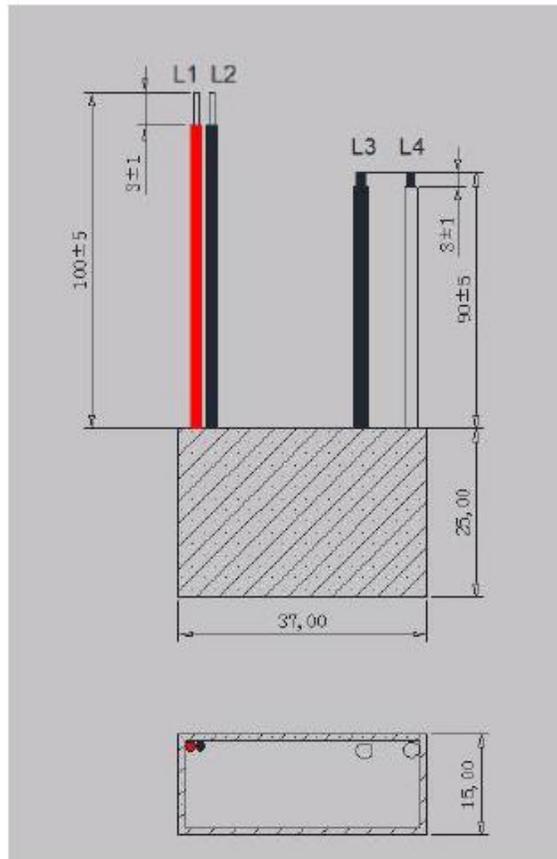
E-mail: gfbusiness@gttc.net.cn



# Specifications for Cello OMNI 4-in-1 Fixture

## VII. NPBI Specifications (Cello NPBI D24)

### Cello Needlepoint Bipolar Ionizer



L1	Input +	UL 1007 AWG24 80°C 300V Red Wire L=100±5 mm & tail tin of 3mm
L2	Input -	UL 1007 AWG24 80°C 300V Black Wire L=100±5 mm & tail tin of 3mm
L3	HV Out +	UL 3239 AWG24 150°C 6kV Black L=90±5 mm & tail tin of 3mm
L4	HV Out -	UL 3239 AWG24 150°C 6kV White L=90±5 mm & tail tin of 3mm

Customer\_service@CelloLighting.com

888-588-8849

2570 N. First Street, San Jose, CA 95131



# Specifications for Cello OMNI 4-in-1 Fixture

## Technical Specifications

Input Voltage/Frequency	DC24V
Output Voltage	120 - 277V, 47Hz - 60Hz
Negative Ion Concentration	$\geq 15 \times 10^8$ PCS/cm <sup>3</sup> (measured at 100mm)
Positive Ion Concentration	$\geq 15 \times 10^8$ PCS/cm <sup>3</sup> (measured at 100mm)
Impedance	power supply to case $\geq 40M\Omega$ (500VDC)
Dielectric Strength	Power supply to case AC3000V 60Hz 5 mA 3 sec, no discharge
Rated Power	$\leq 0.2W$
Input Current	$10 \pm 3$ mA
Ozone Concentration	$\leq 0.045$ ppm
Working Temperature	+14°F ~ +140°F (-10 °C ~ +60 °C)
Working Moisture	35% ~ 85%
Storage Temperature	-4°F ~ +158°F (-20 °C ~ +70 °C)
Moisture resistance	No conduction at +25°C and 95% moisture for 72 hours.
High Temperature Characteristics	Not conductive at +70°C for 12 hours.
Low Temperature Characteristics	Not conductive at -25°C for 72 hours.
Drop Test	Still working after free falling drop test from 100cm high to ground

## Working Theory

NPBI systems utilize electricity to produce particles known as ions. These electrified materials combine with water vapor and oxygen to create substances called free radicals. As the presence of free radicals grows, these particles are believed to absorb and eliminate a discernible concentration of potentially detrimental airborne pathogens.

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# Specifications for Cello OMNI 4-in-1 Fixture

## Test Results

SEQ \ ITEM	Output Voltage (KV DC)	ION- Concentration (X 10 <sup>6</sup> PCS/cm <sup>3</sup> )	Impedance	Dielectric Strength
NO: 1	-4.78	15.05	OK	OK
NO: 2	-4.82	15.80	OK	OK
NO: 3	-4.75	15.90	OK	OK
NO: 4	-4.86	15.30	OK	OK
NO: 5	-4.69	15.40	OK	OK

SEQ \ ITEM	Output Voltage (KV DC)	ION+ Concentration (X 10 <sup>6</sup> PCS/cm <sup>3</sup> )	Impedance	Dielectric Strength
NO: 1	4.88	15.05	OK	OK
NO: 2	4.72	15.80	OK	OK
NO: 3	4.75	15.90	OK	OK
NO: 4	4.86	15.30	OK	OK
NO: 5	4.79	15.40	OK	OK



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## VIII. Quick Start Guide

1. Turn on light switch to energize the fixture.

2. Tune Fan Speed



3. Hold remote to control the Wi-Fi Panel:



4. Turn on CH2 (Turn on UVC lamps)

5. Turn on CH3 (Turn on NPBI)

6. Turn on CH4 (Turn on FAN)



Wi-Fi Control Panel

CH	ON	OFF
1	UV UP <b>SURFACE</b>	UV DOWN <b>AIR</b>
2	UV ON	UV OFF
3	NPBI ON	NPBI OFF
4	FAN ON	FAN OFF

7. Turn on CH1 to enter SURFACE Mode (UV lamps rise)

8. Turn off CH1 to enter AIR Mode (UV lamps descend)



# Specifications for Cello OMNI 4-in-1 Fixture

## IX. Cello Cloud Services (CelloVira.com)

To enjoy the powerful Cello Cloud Services at CelloVira.com, please do the following:

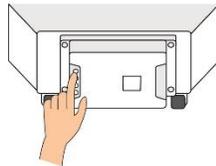
1. Identify the APP ID on your Cello OMNI 4-in-1 Fixture.
2. Email your APP ID to: **Customer\_Service@CelloLighting.com**  
**SUBJECT:** APP ID = 100109ce70 (your own ID)  
**CONTENT:** Model Name (e.g., Cello OMNI 4-in-1 Fixture)  
 Contact Name  
 Organization Name  
 Address  
 Phone Number



3. Once you received your user/password, follow instructions to connect Cello UV 3-in-1 to Internet through your existing Wi-Fi networks:



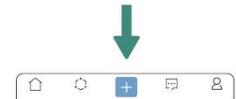
1. Download "eWeLink" app.



2. Power up your cello omni device, press and hold one of the 4 switch buttons for 7 seconds until the wifi LED fast blinks 3 times and repeats.



3. Login to "eWeLink" app. (If you don't have an account, please send us an email to request for a new account: **Customer\_service@CelloLighting.com**)



4. Once you login, Click the "+" icon on eWeLink to search device.



5. Select the quick pairing icon. The App will auto-search the device.



6. Enter your home SSID & password: Now eWeLink only support 2.4G wifi communication protocol, 5G-WiFi-router is not supported



7. Next, the device will be registered by eWeLink and add it to your account, it takes 1-3 minutes



8. Finished. Your device will be listed in the home page.

9. To manage your device, such as scheduling, timer, or view your usage report, please go to our website (<http://cellovira.com/>).

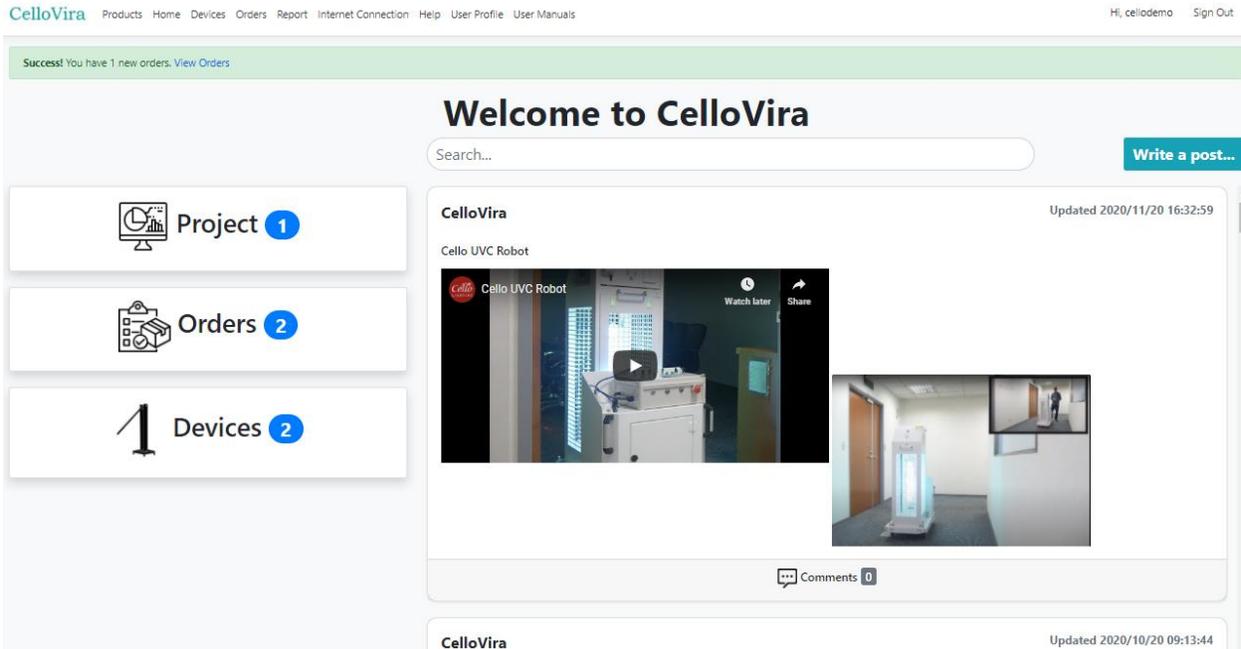
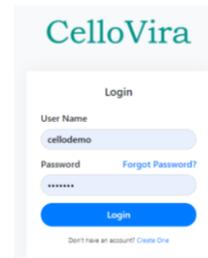


# Specifications for Cello OMNI 4-in-1 Fixture

Use your new CelloVira USER/PASS to log in at:

**CelloVira.com**

Once logged in, you will see the following home page:



The top Menu includes the following:

- Products: Specifications sheets of Products
- Devices: Managing your Cello UV devices
- User Profile: Update your profile
- User Manuals: User manuals of Cello UV products.

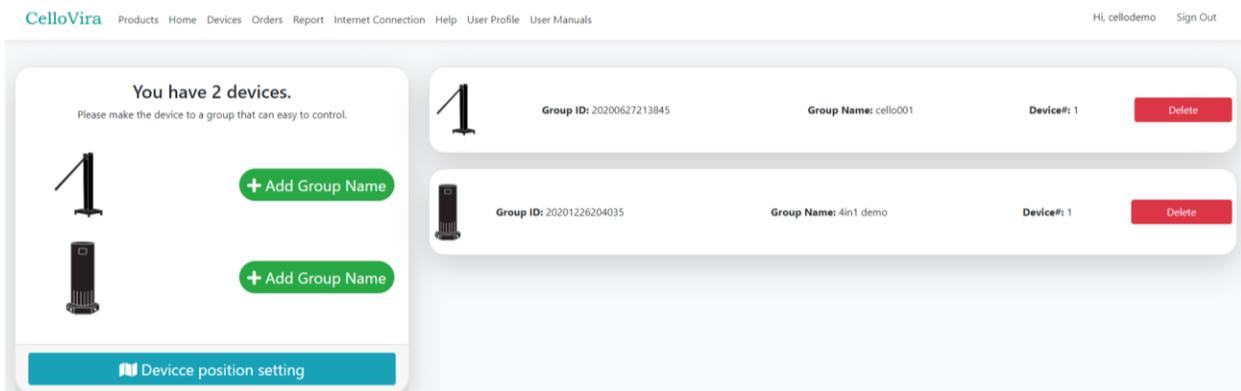


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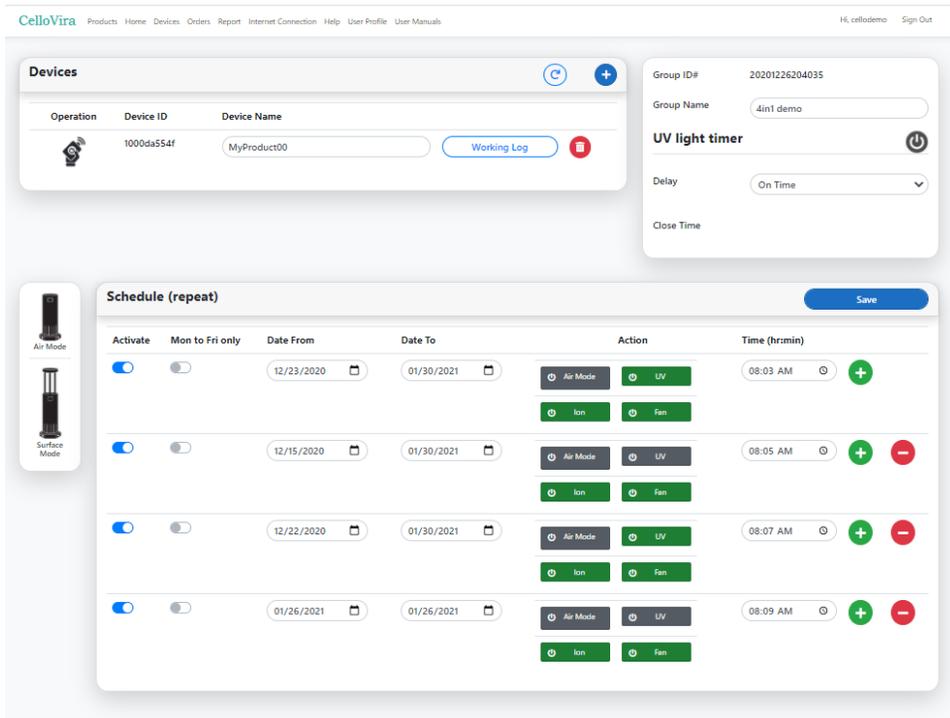
## X. Scheduling of Cello UV AIR 3-in-1 Fixture

Please visit CelloVira.com, log in the portal with your USER/PASS.

Then Click <DEVICES>



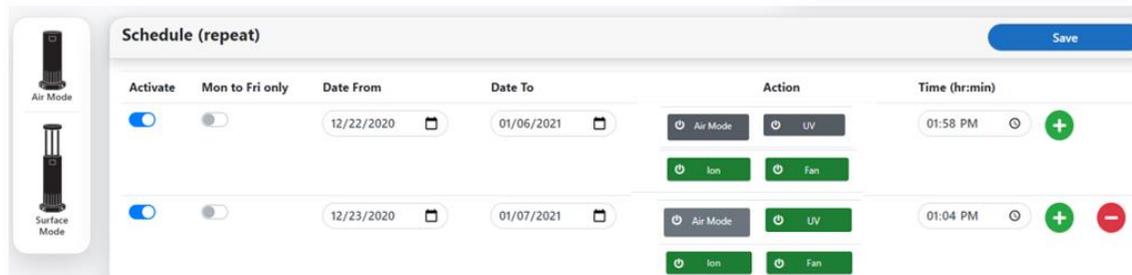
Click <Group Name>





## Specifications for Cello OMNI 4-in-1 Fixture

For instance, in this example:



Cello UV 3-in-1 status at **01:04 PM** is: (Valid from 12/22/2020 to 01/06/2021)

CH2 is turned **ON**: UVC Lamps **ON**

CH3 is turned ON: ION ON

CH4 is turned ON: FAN ON

(**ALL** of UVC Air Disinfection, HEPA Filter and NPBI are working)

Cello UV 3-in-1 status at **01:58 PM** is: (Valid from 12/23/2020 to 01/07/2021)

CH2 is turned **OFF**: UVC Lamps **OFF**

CH3 is turned ON: ION ON

CH4 is turned ON: FAN ON

(Only HEPA Filter and NPBI are working. UVC is turned off to save energy.)



# Specifications for Cello OMNI 4-in-1 Fixture

## Appendix A: Interpolation of SARS-CoV-2 Test Report

(Source : Signify at NEIDL of Boston University)

The team applied a dose of 5mJ/cm<sup>2</sup>, resulting in a reduction of the SARS-CoV-2 virus of 99% in 6 seconds.

Based on the data, it was determined that a dose of 22mJ/cm<sup>2</sup> will result in a reduction of 99.9999% in 25 seconds.

UVC Dosage	Disinfection Rate	Reduction	Comments
5 mJ/cm <sup>2</sup>	99%	2-log	quoted from Signify
10 mJ/cm <sup>2</sup>	99.9%	3-log	Cello UV product specs
15 mJ/cm <sup>2</sup>	99.99%	4-log	data Interpolation
20 mJ/cm <sup>2</sup>	99.999%	5-log	data interpolation
22mJ/cm <sup>2</sup>	99.9999%	6-log	quoted from Signify

For **14.67 mJ/ cm<sup>2</sup>** , Total Reduction of SARS-CoV-2 = **99.99%**

