



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

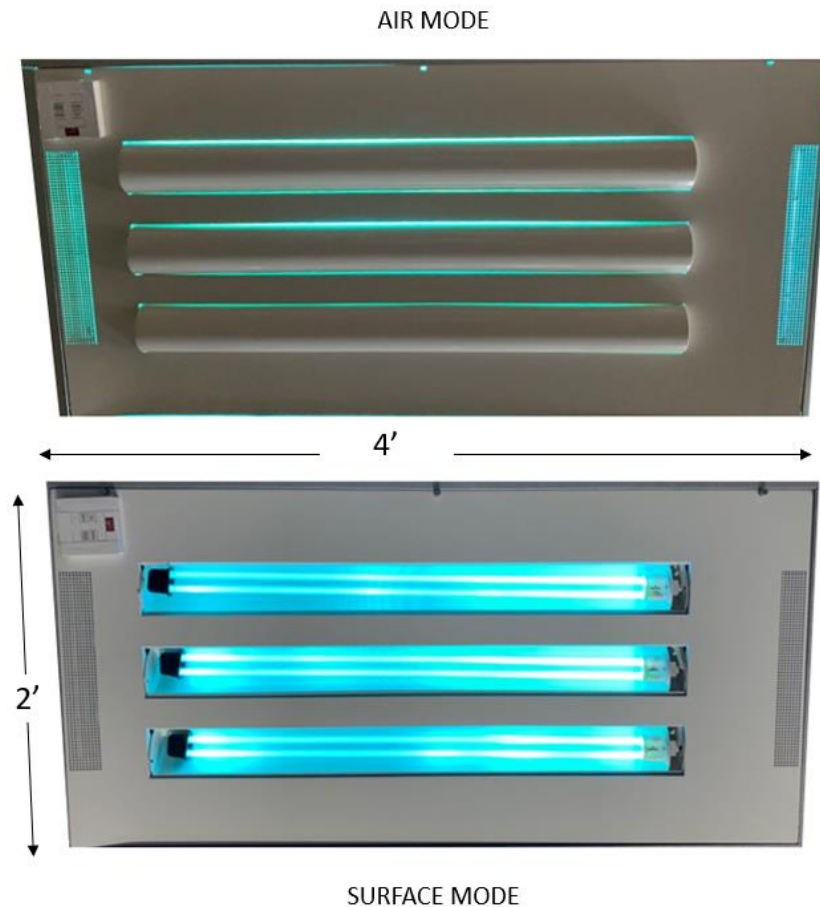
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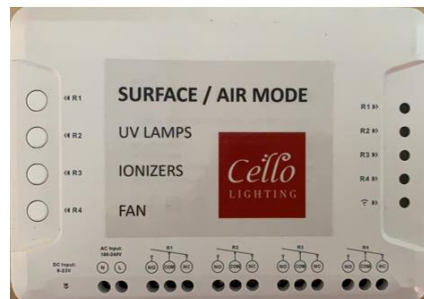


Specifications for Cello OMNI 4-in-1 Fixture

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



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II. Disinfection Guidelines

Surface Mode UVC Disinfection

Area	500 sq. ft.	1000 sq. ft.	1500 sq. ft.
Time*	5 min	10 min	15 min

*Suggested 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

* Time to exchange 100% of air.

HEPA Filter Disinfection

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

NPBI Disinfection (Optional)

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

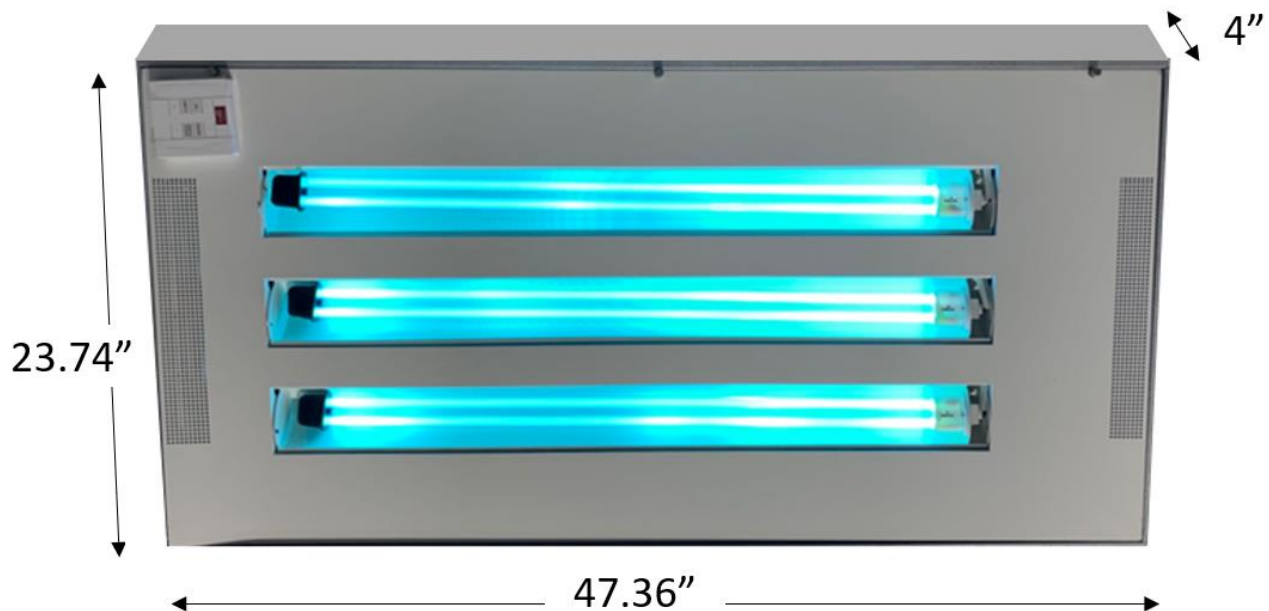
*Independent testing in April 2020 showed that NPBI deactivated **99.4%** of SARS COVID-2 (the virus that causes COVID-19) in **30 minutes**. Importantly, NPBI technology safely deactivates pathogens in the air and **on surfaces** in real time, while spaces are occupied.

** 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.



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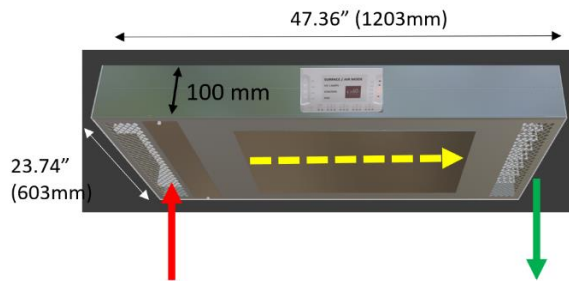
III. Technical Specifications



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 ²
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 9000 cu. ft. Classroom (1000 sq. ft. x 9 ft.)



UVC power = 300W

Specified UVC intensity = 1 mW/cm² @ 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 = $1 (1/0.15)^2 = \mathbf{44.4 \text{ mW/cm}^2}$ @ 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/cm² x 0.28 seconds = **12.43 mJ/ cm²**

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.



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V. 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 Filter (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 ³ 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

方明

End of Report

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

Tel: +86-20-61994598 61994599

E-mail: gfbusiness@gttc.net.cn

01/27/2021

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TEL: +1-888-588-8849 Email: customer_service@CelloLighting.com

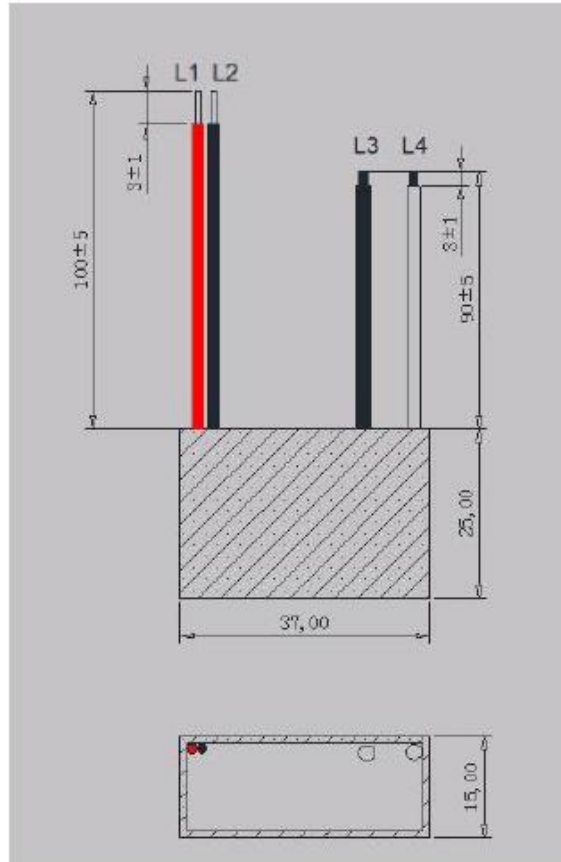
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VI. NPBI Specifications (Cello NPBI D24)

Cello Needlepoint Bipolar Ionizer



L1	Input +	UL 1007 AW024 80°C 300V Red Wire L=100±5 mm & tail tin of 3mm
L2	Input -	UL 1007 AW024 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

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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	$\geq 15 \times 10^6$ PCS/cm ³ (measured at 100mm)
Positive Ion Concentration	$\geq 15 \times 10^6$ PCS/cm ³ (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 ± 3 mA
Ozone Concentration	≤ 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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Test Results

ITEM SEQ	Output Voltage (KV DC)	ION- Concentration (x 10 ⁶ PCS/cm ³)	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

ITEM SEQ	Output Voltage (KV DC)	ION+ Concentration (x 10 ⁶ PCS/cm ³)	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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VII. Quick Start Guide

1. Turn on Power Switch
2. Turn the Timer Dial to “Always On”
(or 1-120 minutes)



3. Tune Fan Speed



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



5. Turn on CH2 (Turn on UVC lamps)
6. Turn on CH3 (Turn on NPBI)
7. Turn on CH4 (Turn on FAN)
8. Turn on CH1 to enter SURFACE Mode
(UV lamps rise)
9. Turn off CH1 to enter AIR Mode
(UV lamps descend)



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



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VIII. Cello Cloud Services (CelloVira.com)

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

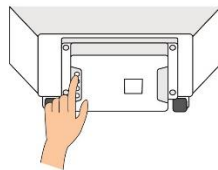
1. Identify the APP ID on your Cello OMNI 4-in-1 Fixture.
2. Email your APP ID to: **Customer_Service@CelloLighting.com**
SUBJECT: APP ID = 100109ce70 (your own ID)
CONTENT: Model Name (e.g., Cello OMNI 4-in-1 Fixture)
Contact Name
Organization Name
Address
Phone Number



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/>).



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

CelloVira.com

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

The login form for CelloVira. It features the CelloVira logo at the top. Below it is a 'Login' section with a 'User Name' field containing 'celldemo', a 'Password' field with masked characters, and a 'Forgot Password?' link. A blue 'Login' button is at the bottom, with a small link 'Don't have an account? Create One' underneath.

The screenshot shows the CelloVira home page. At the top is a navigation bar with links: Products, Home, Devices, Orders, Report, Internet Connection, Help, User Profile, and User Manuals. On the right of the bar is the user 'Hi, celldemo' and a 'Sign Out' link. A green success banner reads 'Success! You have 1 new orders. View Orders'. The main content area is titled 'Welcome to CelloVira' and includes a search bar and a 'Write a post...' button. On the left is a sidebar with three cards: 'Project 1' with a monitor icon, 'Orders 2' with a shopping cart icon, and 'Devices 2' with a robot icon. The main content area displays a post titled 'CelloVira' with the subtitle 'Cello UVC Robot', updated on 2020/11/20 16:32:59. The post contains a video player showing the robot and a smaller image of the robot in a room. Below the video is a 'Comments 0' section. At the bottom of the page, there is a footer with the CelloVira logo and the update date 'Updated 2020/10/20 09:13:44'.

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.

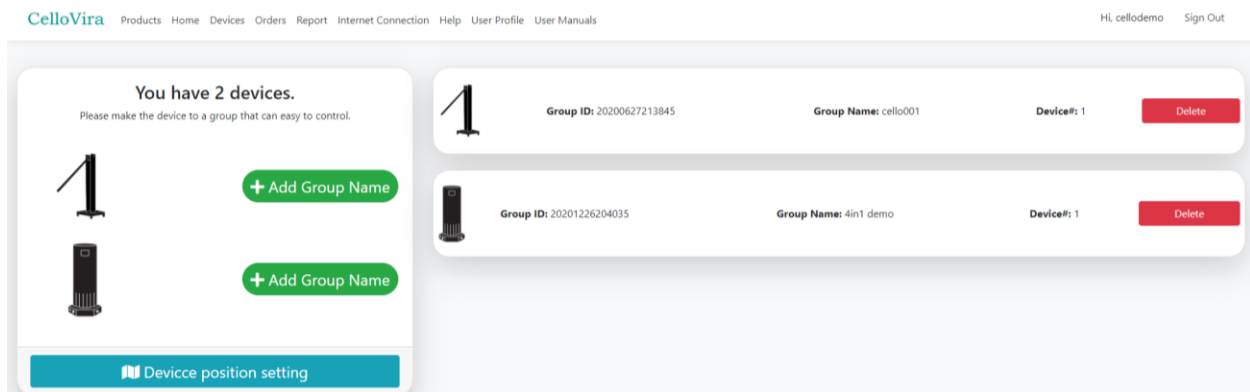


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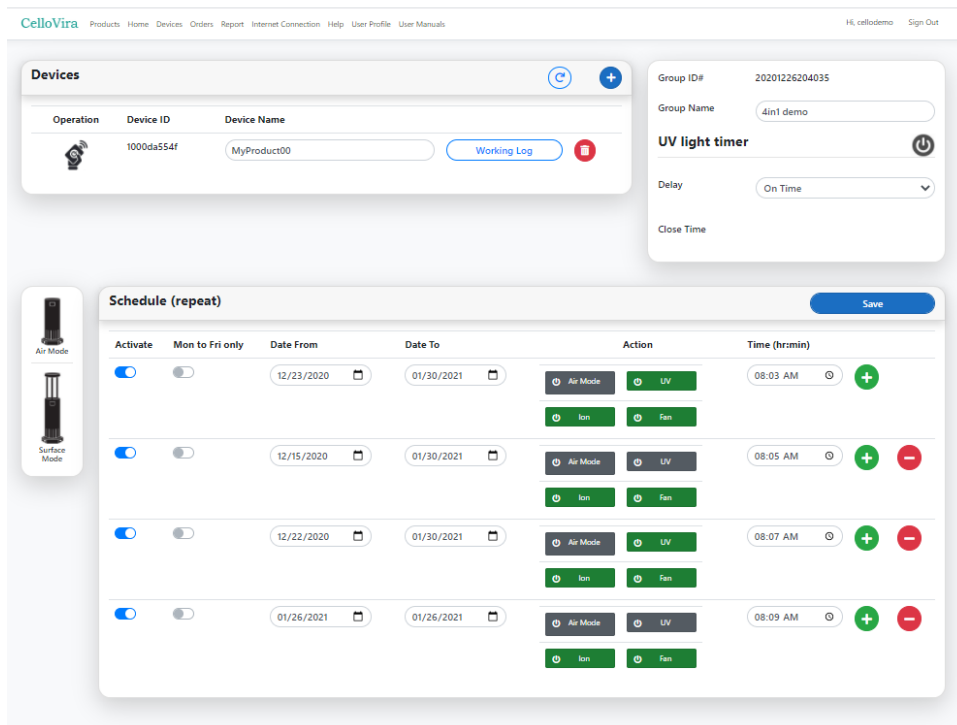
IX. Scheduling of Cello UV AIR 3-in-1 Fixture

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

Then Click <DEVICES>



Click <Group Name>



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For instance, in this example:

Schedule (repeat)							Save
Activate	Mon to Fri only	Date From	Date To	Action		Time (hr:min)	
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12/22/2020	01/06/2021	<input checked="" type="checkbox"/> Air Mode	<input checked="" type="checkbox"/> UV	01:58 PM	+
				<input checked="" type="checkbox"/> Ion	<input checked="" type="checkbox"/> Fan		
<input checked="" type="checkbox"/>	<input type="checkbox"/>	12/23/2020	01/07/2021	<input checked="" type="checkbox"/> Air Mode	<input checked="" type="checkbox"/> UV	01:04 PM	+ -
				<input checked="" type="checkbox"/> Ion	<input checked="" type="checkbox"/> Fan		

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.)



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

(Source : Signify at NEIDL of Boston University)

The team applied a dose of 5mJ/cm², 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/cm² will result in a reduction of 99.9999% in 25 seconds.

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

For **14.67 mJ/ cm²** , Total Reduction of SARS-CoV-2 = **99.99%**

