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**ENERGY
SOLUTIONS**



Comprehensive Energy Optimization Solutions

for ESCOs, Utility-driven
Programs, and
Energy Retrofits

An update from RES:
UV and Anti-Microbial
Lighting for Disinfection

May 2020

rexelenergy.com

AN UPDATE FROM RES

RES continues to support our employees and partners in response to COVID-19. We are here and are fully available to support you.

While health and safety are of upmost importance, we are also thinking about the future. And in looking to the future of the business and in an effort to provide an increased level of service to our partners and communities, we continue to investigate new partners and technologies in the form of Disinfecting Lighting – UV, Antimicrobial Light, as well as similar distribution items.

The following pages outline what we have been researching and vetting. Training and more information will be provided as available.

As always, please reach out to your RES Account Manager with questions or concerns. Or you can e-mail us at info@rexelenergy.com

TRAINING SESSIONS

Puro: There is a lot of information out there right now regarding enhanced disinfection practices and fighting viruses with UV Light Disinfection. America and the world are looking for a trusted, fast, effective and proven solution to disinfecting potentially contaminated environments wherever people gather, from schools and hospitals to subway stations, restaurants and more. Puro Lighting's products represent a significant breakthrough in viral protection and clinical level disinfection. Puro Lighting uses a powerful, broad-spectrum light, including germicidal UV-C, UV-B and anti-bacterial UV-A to optimize their germ-killing efficiency. [Click here to register to access the recording of this webinar.](#)

Healthe: Healthe's Cleanse® Series created to protect people's health and wellness while combating spreads of common contagions. By employing specially designed ultraviolet (UV) technology, the Cleanse sanitization process eliminates up to 99.9% of germs, bacteria, and viruses by modifying and destroying their genetic material (DNA/RNA) preventing further replication.

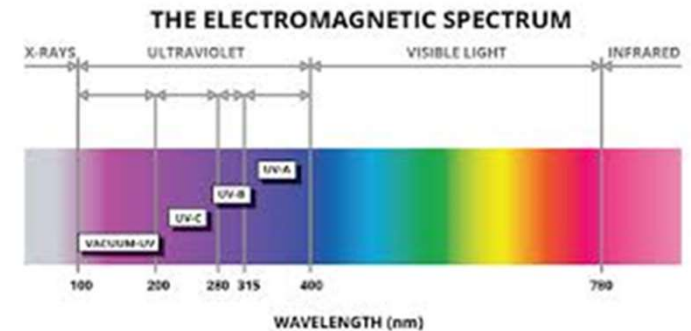
Join us to learn about their downlight, equipped with built-in far-UVC light and delivering an appropriate dose of 222 nanometer light while inactivating over 90% of contaminants, and their Retrofit Troffer, which utilizes a combination of air filtration with UV (A+C) light to sanitize air, inactivate pathogens, and decrease contamination while providing comfortable healthy light to illuminate the work space, and more. [Click here to register to access the recording of this webinar.](#)

GERMIDICAL TECHNOLOGY

Non-UV or Anti-Microbial Lighting does not kill viruses, but does kill bacteria and can run 24/7 with no ill-effects for human tissues.

UV & NON-UV

UV (Ultraviolet) light for this presentation is electromagnetic radiation between 200 and 400 nanometers. The length of the wave determines whether it is UVA, UVB or UVC. UVC is what has been used to sterilize surgical equipment etc., for some time, and is proven to eradicate all viruses, pathogens, and bacteria.



FAR-UVC operates at the frequency of 222nm and at low-doses can kill airborne flu viruses without harming human tissues*

*Welch, D., Buonanno, M., Grilj, V. et al. Far-UVC light: A new tool to control the spread of airborne-mediated microbial diseases. Sci Rep 8, 2752 (2018). <https://doi.org/10.1038/s41598-018-21058-w> (excerpt on following page)

FAR-UVC

Influenza virus spreads from person to person mainly through fine liquid droplets, or aerosols, that become airborne when people with flu cough, sneeze, or talk. The current study was designed to test if far-UVC light could efficiently kill aerosolized influenza virus in the air, in a setting similar to a public space.

In this study, aerosolized H1N1 virus—a common strain of flu virus—was released into a test chamber and exposed to very low doses of 222-nm far-UVC light. A control group of aerosolized virus was not exposed to the UVC light. The far-UVC light efficiently inactivated the flu viruses, with about the same efficiency as conventional germicidal UV light.

“We show for the first time that far-UVC efficiently inactivates airborne aerosolized viruses, with a very low dose of 2mJ/cm² of 222-nm light inactivating >95% of aerosolized H1N1 influenza virus,” the authors wrote. “Continuous very low dose-rate far-UVC light in indoor public locations is a promising, safe and inexpensive tool to reduce the spread of airborne-mediated microbial diseases.”

UV: PROS & CONS

UV PROS

Kills Viruses, Pathogens, Bacteria, & Fungi (200-400nm)

Far UVC lights (early studies have shown continuous low-doses have been proven safe at 222nm)

UV CONS

Can cause skin-cancer and is very damaging to the eye without the proper protective equipment.

Needs separate Lighting Controls (ties into BAS system)

ANTI-MICROBIAL LEDs: PROS & CONS

ANTI-MICROBIAL LEDs PROS (405nm)	ANTI-MICROBIAL LEDs CONS
Kills Bacteria (Salmonella, E.Coli, MRSA, Fungi, C-diff, Staph* etc.)	Does Not Kill Viruses or Pathogens
These LEDs would be in with the other COB LEDs and are constantly emitting the 'blue' light (frequency 405nm) produces intra-cellular Reactive Oxygen Series (ROS) –Similar to bleach, these ROS kill bacteria and prevent it from repopulating the space.	Non-Dimming and should run 24 hours per day 7 days a week for optimal disinfection. Visually the lens will have a slight purple tint.
Does NOT harm occupants	
Good option for fitting rooms, cash wrap, bathrooms, shopping cart corrals etc.	

UV INTERNAL- AIR SANITIZING TROFFER

cleanse[®] AIR SANITIZING TROFFER

AIR SANITIZATION

- Multi-stage process achieves 99.9% kill rate among common airborne pathogens using Activated Carbon and HEPA filtration and UV (A+C) LEDs
- Defends against MOLD, BACTERIA & VIRUSES
- One Cleanse per 800ft³ (10x10x8) achieves 4 Air Exchanges per hour (50cfm)

LIGHTING

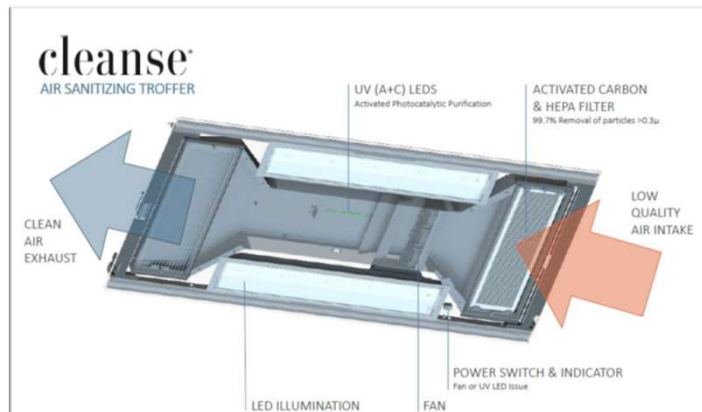
- 3200K lumens with 90+ CRI
- Other CCTs available
- Dimming (and fan speed control) via Bluetooth[®] wireless switch

INSTALLATION

- Retrofits into standard 2x4 troffer housing



This Troffer employs **UV Light internally** to cleanse the air –the output light is standard LED.



UV SANITIZING ENTRY GATE & DOWNLIGHT

SAFETY

Early studies* have shown that continuous low doses of far-UVC radiation results in no harm to humans. The far-UVC light does not penetrate the top layer of the skin. The smaller cell structure of viruses and bacteria allow the far-UVC light to penetrate and cause damage.

Cleanse® Portal UV SANITIZING ENTRY GATE

While a ten second pause to reduce the spread of infection may sound like science fiction, the future is most certainly now.

Far-UVC, the Ultraviolet radiation band between 200-230 nanometers (nm), has been proven to penetrate and inactivate surface pathogens, such as bacteria, parasites, fungi and viruses. Simply step into the Cleanse Portal and make a slow 360 degree turn for a 10-12 second dosage of Far-UVC.

Early studies* indicate no harm to humans from continuous low dosages of 222 nanometer, far-UVC light. Yet the source effectively inactivates over 90% of contaminants, based on the intensity and brief exposure time described.

Position the free-standing Cleanse PORTAL next to any high traffic or critical entry point to significantly reduce infection transmission rates.



Patent Pending

APPLICATIONS

In today's global environment, we have experienced first hand how our connectivity leads to the exponential growth rate of infectious disease. It is therefore an easy exercise to identify locations for entry sanitization in critical infrastructure, such as healthcare clinics, hospitals, medical office buildings, assisted living communities, schools, daycares, prisons, and transportation hubs.



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health by
BY LIGHTING SCIENCE

Cleanse® Downlight UV SANITIZING AND ILLUMINATION

Reducing the spread of infection is now as simple as a flip of a light switch!

Simply unscrew the existing light from your 6" recessed light, remove existing trim (if applicable), screw in the Cleanse Downlight, push it in place and flip the switch to start the eradication of pathogens.

Equipped with built-in far-UVC light, the Downlight delivers an appropriate dose of 222 nanometer light while inactivating over 90% of contaminants, based on the dosage, wavelength and distance described. Early studies* indicate no harm to humans from far-UVC exposure.

While far-UVC light does its job to sanitize surfaces, choose from comfortable white light available in various CCTs or Health's GoodDay light source to provide comfortable general illumination suitable for all applications.



Patent Pending

APPLICATIONS

With studies suggesting harmful microbials, including virus that causes COVID-19, can survive on common surfaces for up to several days, the Cleanse Downlight is the ideal 2-in-1 solution to combat infectious spreads while offering illumination for workspaces such as nurse stations, medical offices, and other applicable areas inside hospitals, clinics, assisted living communities as well as schools, and childcare centers. Let's provide a contaminant-free environment and the protection needed for our frontline healthcare professionals.



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CLEANSE TOTE

Cleanse® Tote PORTABLE UV SANITIZING CASE

Clean, Sanitized Items at the Touch of a Button

In today's world, keeping people and their environments healthy is more important than ever. The Cleanse® Tote provides a quick and easy method to clean and sanitize your personal belongings, creating a safe and effective way to protect against germs, bacteria and viruses. True to our mission of using light to enhance health and wellness, Healthe welcomes this partner product into the Cleanse family.

Equipped with ultraviolet (UV) LEDs, the Cleanse Tote employs a 3-minute, chemical-free cleaning cycle, which deactivates up to 99.9% of harmful pathogens. The portable case is a simple, safe and effective way to prevent from spreading germs and bacteria and protect against unwanted illness and disease.



APPLICATIONS

The CDC recommends frequent cleaning and disinfecting of common household items to combat the spread of germs, bacteria and viruses. The Cleanse Tote is another safe and effective option to sanitize personal belongings, such as glasses, wallets, watches, phones or other items, including surgical or N95 masks.

EASY TO USE IN JUST FOUR STEPS



1. Connect the power and open the lid.
2. Place personal items separately into the tote, ensuring the items are not touching. Close lid.
3. Press the button.
4. When the light stops flashing, the sanitization process is over and you may remove your items.

SPECIFICATIONS *All data shown is nominal*

UVC SOURCE	
Wavelength	260~280nm
Life	10,000 hrs
LED	24pcs
Sanitization	99.9% pathogens eliminated
ELECTRICAL	
Input Voltage	24V / 0.65A
Power	15W
Mode	3 Minute Sanitizing Cycle
Power Interface	DC Power Adapter (included)
MECHANICAL	
Dimensions	9.5 x 7.7 x 5.9 in (240 x 195 x 150 mm)
Material	Water resistant twill polyester
Safety	Auto shut-off when lid opens
Certification	CE, FCC, FDA Class I Listed



CABINET

healthē
BY LIGHTING SCIENCE

Cleanse® Cabinet UV SANITIZATION STATION

Safe and Effective Sanitization for Medical Personal Protective Equipment (PPE)

Keeping our healthcare professionals, first responders and front-line workers healthy and safe is more important than ever. Today, frequent cleaning and sanitizing is commonplace and unfortunately, reusing masks, N95 respirators and PPE is often becoming the new normal. The Cleanse® Cabinet is a heavy duty cleaning station that offers onsite sanitization for these items, as well as small medical instruments, to protect against the spread of germs, bacteria, and viruses.

Armed with multiple ultraviolet (UV) technologies, the Cleanse Cabinet's quick 5-minute sanitization process can inactivate up to 99.9% of harmful pathogens. Equipped with a large cleaning chamber that can accommodate multiple sizes and types of items, the cabinet is a must-have solution for all medical facilities.



Patent Pending

CONFIDENTIAL

APPLICATIONS

Simply load the Cleanse Cabinet with items that require sanitization in a single layer on each shelf, including stethoscopes, small medical instruments, PPE, surgical masks, N95 respirators and other medical equipment. Close the door, turn on, and wait 5 minutes for it to complete its task. This simple process makes the Cabinet a much-needed solution that can be used frequently and repeatedly to keep our health workers safe and to avoid spread of unwanted illness and disease.

SPECIFICATIONS *All data shown is nominal*

UVC SOURCE	
Wavelength	250–280 nm
Life	Up to 10,000 Hrs depending on usage
Sanitization	99.9% pathogens eliminated
ELECTRICAL	
Input Voltage	110–120 V
Power	250W
Mode	5 Minute Sanitizing Cycle
MECHANICAL	
Outer Dimensions	43 x 18 x 48 in
Interior Volume	20 ft³
Weight	300 lbs
Material	Stainless Steel with UV Resistant Finish
Safety	Auto-Shut Off when door opens

TWO-LIGHT UV UNIT

Safety and Occupancy Sensors

The redundant safety systems ensure the unit will not activate while the room is occupied and will immediately suspend operations if motion is detected in a previously unoccupied room. If interrupted, the unit will resume its programmed cleaning cycle once motion is no longer detected.



Helo F2 UV DISINFECTING FIXTURE

The Helo F2 disinfects a whole room, delivering protection from above. It is installed simply by positioning it in a drop ceiling or can be recessed in a hard ceiling, suspended or wall mounted. It emits broad spectrum UV light to eliminate up to 99.9% of the bacteria, viruses, and fungi in a space! In rooms that have been cleaned of mold, the unit will help control return growth if used routinely².

The unit can be ordered for manual commissioning or integration into the facility Building Automation System (BAS). Manual commissioning can be done with the assistance of a local rep using a Setup Wizard. Units integrated into BACnet are programmed through the BAS dashboard.

Protection from Above



Ceiling, suspended, or wall mounted installation to disinfect a whole room without staff requirements to relocate.



Broad Spectrum UV-C, UV-B and UV-A light to kill bacteria and viruses.



Programmed manually or integrated into building automation systems through BACnet.



Two UV Light Engines with pulsed Xenon lamp for a 12' x 12' ft coverage area.

PURO Helo F2

2 of 4

Product Specifications

Illumination	
Light Source	Proprietary Pulsed Xenon Lamp
Pulse Interval	1 UV Flash every 6 seconds
Wavelengths	UV-C (200-280nm) Germicidal UV-B (280-320nm) Germicidal UV-A (320-400nm) Antibacterial
Range	12' x 12' typical (144 sq feet)
UV Bulb Rated Life	> 2 Million UV Flashes ²

Electrical System	
Input Voltage	110V AC
Max Current	7 Amps
Total Power	60W per standard, 30 minute cycle
Power Connection	3-prong grounded plug

Physical	
Weight	8.4 lbs
Housing/Finish	Brushed Aluminum
Optics	Two patented UV Light Engines with transmissive UV lens and pulsed Xenon UV lamp
Beam Angle	170°

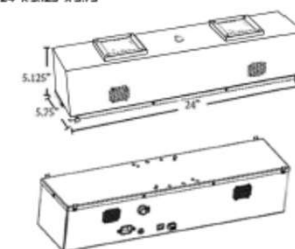
Environment	
Ambient Operating Temperature	41°F to 104°F
Ambient Operating Humidity	<80%RH non-condensing

Certifications and Qualifications	
Safety	TUV Certified, tested to UL 61010-1:2012
FCC	Compliant with Part 15 Class A
RoHS	Compliant
FDA	Materials are cleared for use in food and medical areas
EPA	Registered

Warranty	
Warranty	1 year

Dimensions

24" x 5.125" x 5.75"




Notes

- Disinfection is a function of device run time and the distance to the UV light source.
- Operating Life is dependent on frequency and duration of disinfection cycles.

Cycle	Time	Aprox. Bulb Life
Standard	30 min/day	18.3 years
Deep	1 hr/day	9.1 years
Terminal	2 hr/day	4.6 years

Certifications

 This device is TUV Certified, tested to UL 61010-1:2012 specifications.

 Tested to be compliant with FCC Part 15 Class A.

Internal components of this device are UL Listed or UL Recognized.

The manufacturer is registered with the US Environmental Protection Agency (EPA). Clinical laboratory testing has been performed at independent labs.

www.purolighting.com

PURO
UV disinfection lighting

ONE-LIGHT UV UNIT



shown with 12"x12" flange





Protection from Above

Helo F1 UV DISINFECTING FIXTURE

The Helo F1 disinfects a whole room, delivering protection from above. The unit can be ordered for installation in a drop-in grid ceiling, recessed in a hard ceiling, surface or wall mounted, or used as a portable, table top unit. It emits broad spectrum UV light to eliminate up to 99.9% of the bacteria, viruses, and fungi in a space¹. In rooms that have been cleaned of mold, the unit will help control return growth if used routinely².

The unit can be ordered for manual commissioning or integration into the facility Building Automation System (BAS). Manual commissioning can be done with the assistance of a local rep using a Setup Wizard. Units integrated into BACnet are programmed through the BAS dashboard.

1. Study Report August 2017, "Antimicrobial Effectiveness of Puro Device", using modified ASTM International Standard Test Method E1153.
2. Research Journal of Microbiology, 2 (1), 42-49, 2017; Mycological Research, Vol. 92, Issue 3, 1969

-  Ceiling or wall mounted installation to disinfect a whole room without staff requirements to relocate it.
-  Broad Spectrum UV-C, UV-B and UV-A light to kill bacteria and viruses.
-  Programmed manually or integrated into building automation systems through BACnet.
-  One UV Light Engine with pulsed Xenon lamp for a 10' x 10' ft coverage area.

PURO Helo F1

2 of 4

Product Specifications

Illumination		
Light Source	Proprietary Pulsed Xenon Lamp	
Flash Interval	1 UV Flash every 6 seconds	
Wavelengths	UV-C (200-280nm) UV-B (280-320nm) UV-A (320-400nm)	Germicidal Germicidal Antibacterial
Range	10' x 10' typical (100 sq feet)	
UV Bulb Rated	> 2 Million UV Flashes ²	
Electrical System		
Input Voltage	110V AC	
Max Current	3.5 Amps	
Total Power	25W per standard, 30 minute cycle	
Power Connection	3-prong grounded plug	
Physical		
Weight	F1 26 lbs F1-12 4lbs F1-24 6.5 lbs	
Housing/Finish	Brushed Aluminum	
Optics	One patented UV Light Engine with transmissive UV lens and pulsed Xenon UV lamp	
Beam Angle	170°	
Environment		
Ambient Operating Temperature	41°F to 104°F	
Ambient Operating Humidity	<80%RH non-condensing	
Certifications and Qualifications		
Safety	TUV Certified, tested to UL 61010-1:2012	
FCC	Compliant with Part 15 Class A	
RoHS	Compliant	
FDA	Materials are cleared for use in food and medical areas	
EPA	Registered	
Warranty		
Warranty	1 year	

CAUTION

CAUTION - IF THE FIXTURE EXHIBITS UNDESIRABLE OPERATION (BUZZING, FLICKERING, OR IF THE UNIT'S LED STATUS INDICATOR IS FLASHING RED), IMMEDIATELY TURN OFF POWER AND CONTACT MANUFACTURER.

INDOOR USE ONLY.

• IMPORTANT ORDERING NOTE

THIS UNIT MUST BE ORDERED FOR INTEGRATION INTO A BUILDING AUTOMATION SYSTEM VIA BACNET OR FOR MANUAL COMMISSIONING. UNITS ARE NOT INTERCHANGEABLE.



Notes

- Disinfection is a function of device run time and the distance to the UV light source.
- Operating Life is dependent on frequency and duration of disinfection cycles.

Cycle	Time	Aprox. Bulb Life
Standard	30 min/day	18.3 years
Deep	1 hr/day	9.1 years
Terminal	2 hr/day	4.6 years

Certifications



This device is TUV Certified, tested to UL 61010-1:2012 specifications.



Tested to be compliant with FCC Part 15 Class A.

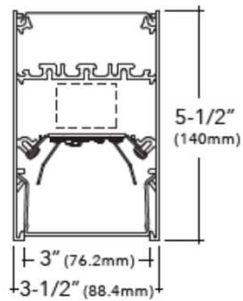
Internal components of this device are UL Listed or UL Recognized.

The manufacturer is registered with the US Environmental Protection Agency (EPA). Clinical laboratory testing has been performed at independent labs.

NON-UV: ANTI- MICROBIAL LINEAR OPTION

What is Visible Light Disinfection?

- ✓ Target spectrum of light
- ✓ Light fixture becomes a disinfecting component
- ✓ Kills harmful bacterial on hard and soft surfaces



EDGE EX3D

3" Suspended Direct Linear



Key Features

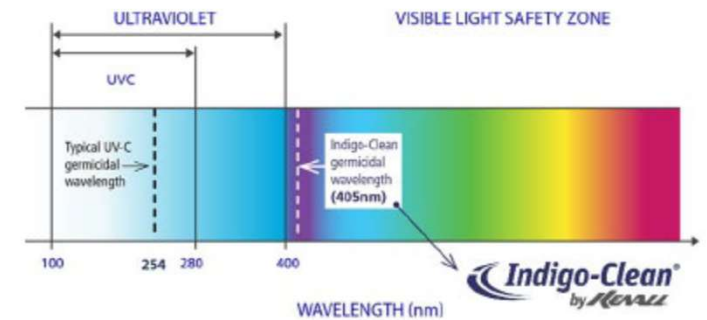
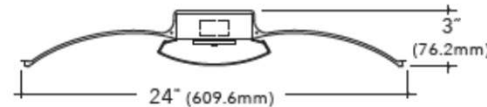
- Boards and driver are specifically for Indigo Clean®
- Indigo Clean® emits 405nm light which targets bacteria & produces intra-cellular Reactive Oxygen Species (ROS)
- Standard, white luminaire that provides on-demand disinfection when light is on
- Laboratory-tested disinfection
- Unlike UV disinfection, light is safe for occupants
- Proven effectiveness per independent lab test results
- Provides a cleaner, safer environment, even in areas normal cleaning doesn't reach



NON-UV: ANTI-MICROBIAL 2X2 OPTION



ADEO AD22
2x2 Architectural Recessed



Key Features

- Boards and driver are specifically for Indigo Clean[®]
- Indigo Clean[®] emits 405nm light which targets bacteria & produces intra-cellular Reactive Oxygen Species (ROS)
- Standard, white luminaire that provides on-demand disinfection when light is on
- Laboratory-tested disinfection
- Unlike UV disinfection, light is safe for occupants
- Proven effectiveness per independent lab test results
- Provides a cleaner, safer environment, even in areas normal cleaning doesn't reach



Example Part #: AD22-A-IC37-G1-U-ND-1-0-W

NON-UV: HUBBELL LIGHTING TROFFER

SCLT

LENSED TROFFER WITH SPECTRACLEAN™ ANTIMICROBIAL LIGHTING

CATALOG #:

SPECTRACLEAN™
ANTIMICROBIAL LIGHTING

FEATURES

- Option 1: Blended — SpectraClean enhanced white light for ambient lighting with continuous disinfection
- Option 2: Blended Plus — SpectraClean enhanced white light with a high intensity, Dedicated SpectraClean mode for scheduled maximum disinfection
- Option 3: Independent — Alternates between pure white light and Dedicated SpectraClean mode for scheduled maximum disinfection
- Hinged optical system allows easy access to LED modules and electrical from below the ceiling
- All models standard with IC rating



END VIEW, 1X4



END VIEW, 2X2



END VIEW, 2X4



***Must be used with Hubbell Controls**

SPECIFICATIONS

CONSTRUCTION

- Luminaire housing, end caps, and reflectors are die formed cold drawn cold rolled steel

ELECTRICAL

- An access plate is furnished with each recessed fixture for fast wiring connections

WARRANTY

- 5 year warranty



THANK YOU.

For more information,
contact your RES Sales Rep, or:

✉ info@rexelenergy.com

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