

The Next Generation DE Systems



PHANTOM DE
DOUBLE-ENDED LIGHTING SYSTEM



PHANTOM DOUBLE-ENDED LIGHTING SYSTEMS

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With the controlled environment agriculture market becoming more competitive every day, it is important to seize every opportunity you can to differentiate yourself and your crop from your competitor.

There are many choices in horticultural lighting these days, and the importance of making an informed lighting investment is crucial to the success of your business at any scale. That's why every Phantom DE is designed with the success of the grower as the key objective. With rising energy costs weighing on the shoulders of every cultivator, it is important to employ a lighting solution that will convert electrical energy into yield-producing PAR light at the highest possible rate. That's where engineering prowess and nearly four decades of lighting expertise come into play. Hydrofarm and PARsource joined forces in the development of the Phantom DE in 2014 with distinct design parameters that aimed to provide the professional grower every advantage possible.

This vision is achieved by integrating the highest quality components available and combining them with an unparalleled team of lighting engineers who constantly analyze the needs of the professional grower in today's changing market. To confirm only the highest quality product is delivered, we contract with North America's most experienced independent photometric lab to provide third-party laboratory analysis. Fixtures are tested to the internationally recognized and peer reviewed standards of the Illuminating Engineering Society. Phantom DE fixtures produce more plant usable photons per watt consumed, require fewer fixtures to meet desired micromole levels, and have the lowest operating cost of any double-ended horticultural lighting fixture available worldwide. Hydrofarm is an American horticultural lighting manufacturer who has supported growers around the globe since 1977. Look no further than Phantom DE for the ultimate in performance, quality, efficiency, reliability, and safety.



PHANTOM OPEN SYSTEM FEATURES - PHDEOK11 1000W 208V/240V System Shown

Integrated hangers for easy mounting

Patented reflector (D731,109)
Open & Enclosed Only

Open design for optimum heat management and longer lamp life

Phantom 208/240V DE Ballast with high-precision microprocessor and patented ignition control, internal RF shielding, FCC compliance

German Vossloh-Schwabe K12 x 30s high temperature lamp holders

95% reflective European specular hammertone aluminum

European 2100 $\mu\text{mol/s}$ DE lamp

USB Interface for Autopilot PX1 Controller and Unidirectional vent plug

LED status indicator, end of lamp life signal. Six-way wattage output control: 600W, 750W, 825W, 1000W, 1150W and remote (PX1 Digital Lighting Controller)



Anode (closest to ballast)

Getter (absorbs lamp impurities)

Arc Tube

Quartz Outer Jacket

Triple Capacitor

Cathode

Nitrogen-Filled Pocket & Fill Port

Burner Filament (always position up)

Label & Date Code

Truth In Reporting of Photometric Test Results

An understanding of how goniophotometers are used in the testing of HID lighting fixtures is very important when interpreting the test results offered by lighting manufacturers. While it's well known in the industry that goniophotometers are used to perform light distribution photometry using IESNA (Illuminating Engineering Society of North America) procedures to verify that a given light fixture will meet the requirements of various lighting programs such as Energy Star, Lighting Facts, DLC, etc. A critical fact that is less well known is that there are three distinctly different types of goniophotometers—Type A, Type B and Type C—and that only one of those, Type C, provides accurate results for horticultural HID lighting and is required to test HID indoor luminaires per IES recommended practices LM-46 (the industry recognized testing procedure for HID indoor luminaires).

Testing: It's all in the details

In a Type A goniophotometer, the fixture being tested is swung in X and Y directional planes. Type A goniophotometers are prone to giving inconsistent readings due to the changing orientation of the lamp and air movement involved. Most importantly for our context here, Type A goniophotometers are not recommended for testing HID luminaires. Type B goniophotometers are operated in a similar way to Type A units, but in Type B testing the whole arm is moved around the X axis. It is susceptible to the same inconsistencies in its readings as Type A goniophotometers, for similar reasons relating to changing orientation of the lamp and air movement around the fixture. Like Type A

goniophotometers, Type B goniophotometers are not recommended for HID testing.

At Hydrofarm/PARsource, we test our lighting products using Type C goniophotometers. Test result data from our in-house testing was consistent with results from Type C goniophotometer testing performed by two independent testing labs, and all of it indicated that our fixtures outperform those of our competitors.

Scientific Data or Marketing Propaganda?

One Dutch lighting company who markets their Chinese-made ballast as "made in Holland" has stated in their own promotional videos and published information that their data originates from internal testing performed on an "Everfine GO 2000 Type B Photogoniometer." It's worth noting that Everfine, which is the Chinese manufacturer of the specified goniophotometer, specifically states on their website that this unit is not designed or suitable for HID testing, and will produce flawed results:

"...the changing of burning attitude may cause fluctuation of the irradiation state of the light source and affect the measurement precision. Generally, this influence for the discharge lamps is usually serious [and] can achieve several percent, and even over ten percent sometimes."

<http://www.everfine.net/productinfo.php?pid=75&fid=8>

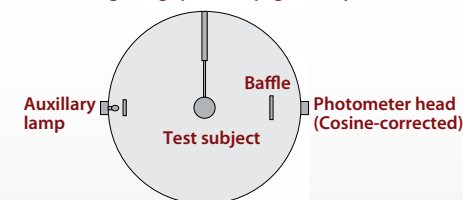
Integrating Sphere and Spectroradiometer

There are many sizes of integrating spheres available. For our testing purposes, two-meter diameter spheres are utilized in conjunction with regularly calibrated spectroradiometers and power analyzers. Used in combination, these instruments provide:

- ▶ Highly precise photosynthetic photon flux (PAR) measurements
- ▶ Spectral power distribution in 1 nanometer increments or finer
- ▶ Kelvin Temperatures
- ▶ CIE Chromaticity diagrams
- ▶ Input electrical data including Total Harmonic Distortion (THD)



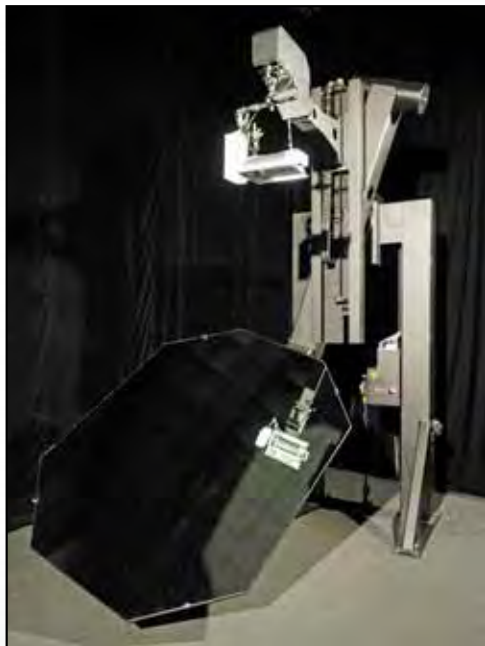
Integrating sphere (4-pi geometry)



Three types of Goniophotometers: Type A - Type B - Type C

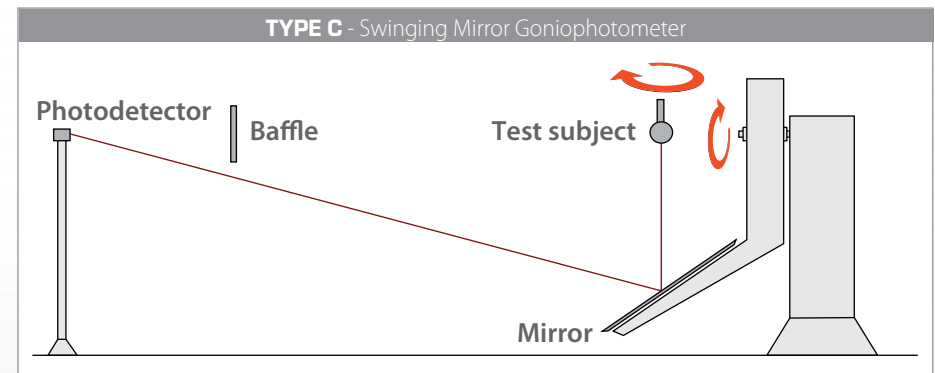
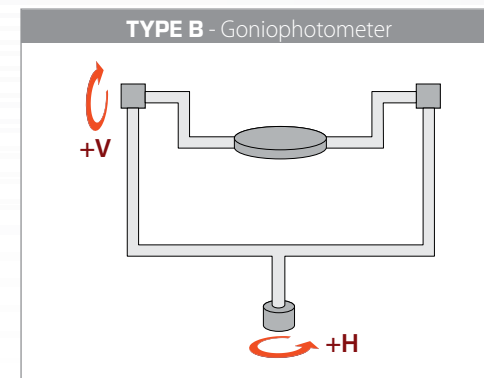
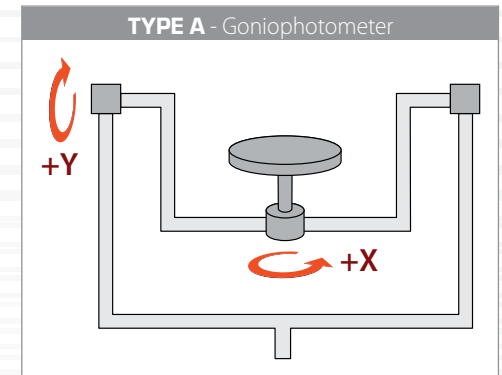
Shedding light on the facts

So it's clear that for the purposes of horticultural HID testing, only a Type C goniophotometer will produce accurate results. Unlike Type A and B units, in a Type C test the light source is tested in the same orientation as it would have in the field, which provides much more realistic data. Testing HID fixtures on a Type A or B goniophotometer is absolutely incorrect because the lamp orientation is continually being changed throughout the test, therefore output is as changing as well. This influence on high pressure sodium lamps is quite serious, and as the quote from Everfine shows, can lead to test results being flawed in excess of 10%.



Type C - Goniophotometer used by Independent Testing Laboratories, Inc. (ITL Boulder), for testing on Phantom DE systems vs. competitors' systems

At Hydrofarm/PARsource, we adhere to the highest ethical standards in conducting our performance and comparison testing, and in reporting the results to our customers and to the industry. Our test results are on file with the independent testing labs we use, and they are readily available. We encourage you to verify our test results and to research those of our competition as well. Once you do, we think you'll see why so many growers trust Hydrofarm to build the finest reflectors and lighting systems available.



The **Phantom DE Systems** consistently **outperform the competition** on every level

DE Systems Comparison Testing

Independent Testing Laboratories, Inc. (ITL Boulder), the most experienced independent photometric testing lab in North America, was recently contracted by Hydrofarm to conduct independent testing of eight commercially available competitive double-ended horticultural lighting systems. Based on the test results generated by ITL, Hydrofarm's Phantom DE Open Lighting System and the Phantom DE Enclosed Lighting System were ranked first and second place, respectively, in all of five testing categories (relative efficiency, total $\mu\text{mol/s}$ output, $\mu\text{mol/s}$ per watt, absolute luminous flux and lumens/watt).

These test results show that the Phantom systems have now been scientifically proven to deliver higher PAR than the other systems tested. The Phantoms have also been confirmed to be more efficient, requiring fewer fixtures to deliver desired light levels, and thus emerge as being more cost-efficient than the other six fixtures in the testing group.

The independent photometric distribution testing, spectral analysis, and efficiency testing provided by ITL Boulder was performed per the procedures and recommendations of the Illuminating Engineering Society of North America (IESNA). All testing was conducted on commercially available luminaires ("commercially available" is used here to indicate units chosen at random from retailers' stock to assure that they represented off-the-shelf quality and were not modified to enhance performance for testing).

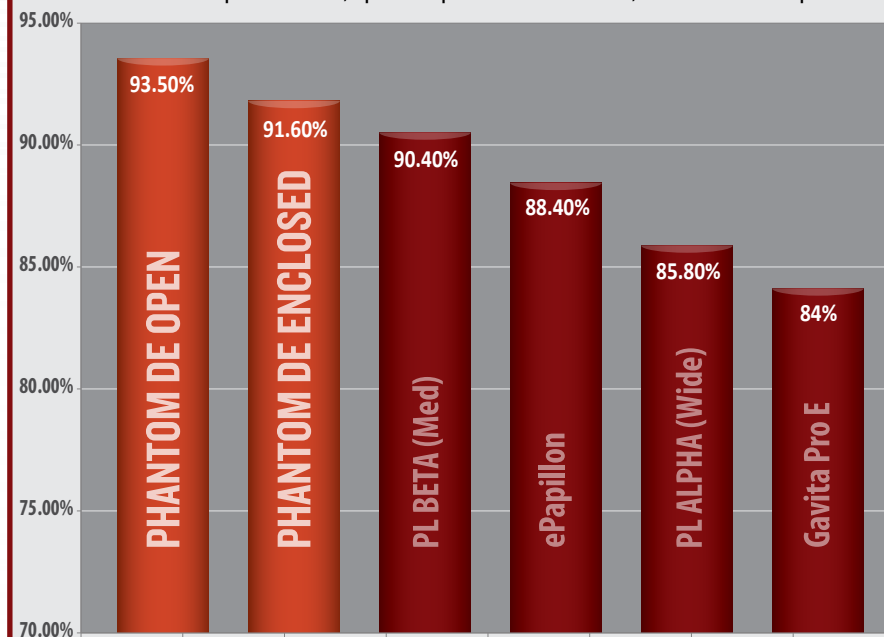
<http://www.ies.org/>

**THIS REPORT IS BASED ON PUBLISHED INDUSTRY PROCEDURES. FIELD PERFORMANCE MAY DIFFER FROM LABORATORY PERFORMANCE.*

See our webpage for
full testing results
PhantomBallast.com

Total Luminaire Efficiency

Total Luminaire Efficiency is a measurement of the percentage of a bare (no reflector) lamp's total output that actually reaches the plant canopy when the lamp is installed in a luminaire. Luminaire efficiency takes into account the effect of the luminaire on the performance of the lamp. This testing was performed using a Type C goniophotometer in conjunction with an integrating sphere and calibrated spectroradiometer, which provided very accurate calculation of photon flux, spectral power distribution, and $\mu\text{mol/s}$ output.

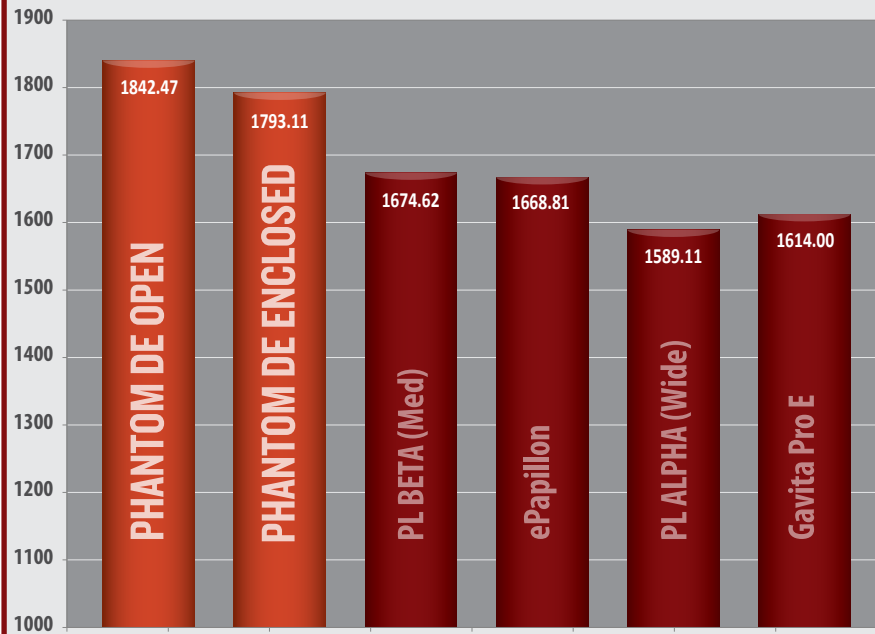


Real Science, Real Data

Phantom DE Systems vs Competitive DE Brands

Total $\mu\text{mol/s}$ Output

Shows the total amount of plant usable light or PAR being emitted by the fixture.



$\mu\text{mol/s}$ Output per Watt

Shows how much plant usable light or PAR is being delivered in relation to the wattage the fixture consumes (how effectively the fixture converts electricity into plant usable light or PAR).



The Phantom Family of Double-Ended Open, Enclosed and NEW Super Deep Reflectors

The importance of using the right tool for the job cannot be understated. That's why the Phantom DE system is configurable with multiple reflector options based upon the needs of your business. The Phantom DE reflector family is the result of a tireless pursuit to engineer and produce the best reflectors available. Performance advantages over other manufacturers have been confirmed by independent lab, university, and commercial grower test results.

So what makes Phantom reflectors different?

A 1000W DE lamp requires sophisticated principles of power distribution to harness the lamp's high photon flux and uniformly distribute these photons over your growing area in the most even manner possible. Phantom DE reflectors provide the perfect synergy of high average light levels and unsurpassed uniformity. When properly applied to genetically similar plant stock, uniformity of light levels is directly related to achieving a uniform plant canopy comprised of like sized plants. A uniform canopy produces a greater yield, is more efficient, and results in improved crop consistency.

When designing a horticultural lighting system, few manufacturers take into account the effect that reflector design has on the overall reliability of the system. Our "grower-centric" design process intimately understands the ripple effect caused by a failed luminaire, and the losses it results in.

Competitive fixtures with lower efficiency reflector designs are indicative of photons being trapped in the reflector and never reaching the plant canopy. Not only is this costly from an electrical consumption standpoint, it creates a damaging condition in which emitted photons are redirected back through the lamp's arc tube. As a result, the vapor pressure in the arc tube is altered, which negatively affects spectral power distribution and results in premature lamp failure.

By employing extremely stringent performance objectives, we engineer our reflectors to ensure that the highest possible ratio of plant-usable photons emitted from the bare lamp actually reaches the plant canopy when fitted into a Phantom DE reflector.

Double-ended system delivers higher PAR value with incredible uniformity

- ▶ Designed for maximum light output, optimum heat management, and longer lamp life
- ▶ Highly efficient in multi-light configurations
- ▶ Premium aluminum European hammertone interior: 99.85% pure, 95% reflectivity
- ▶ Vossloh-Schwabe K12 x 30s high temperature lamp holders

European Hammertone Layering

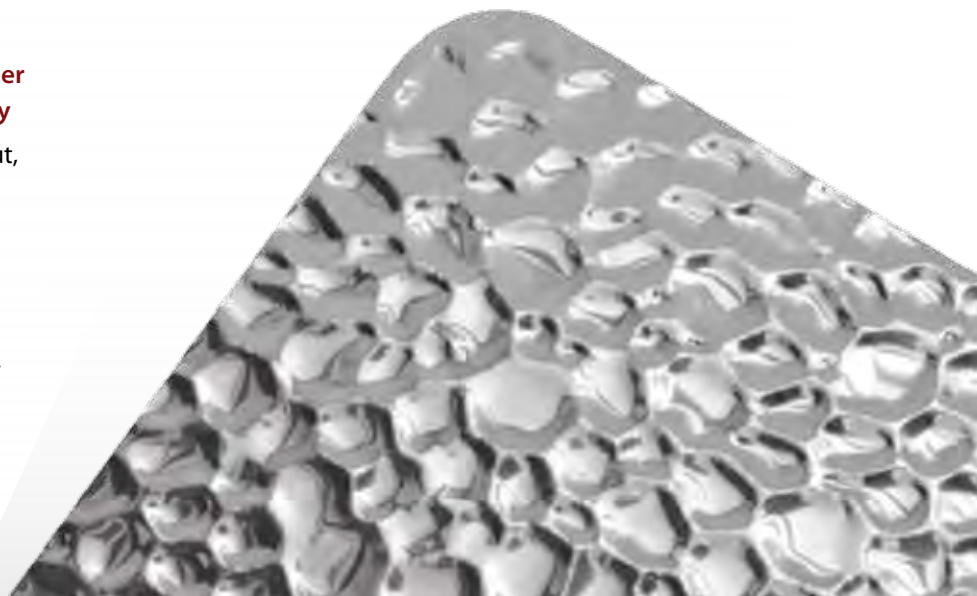
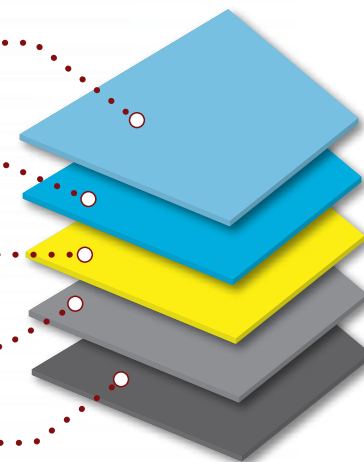
High Optical Index Reflective Enhancing Layer

Low Optical Index Reflective Enhancing Layer

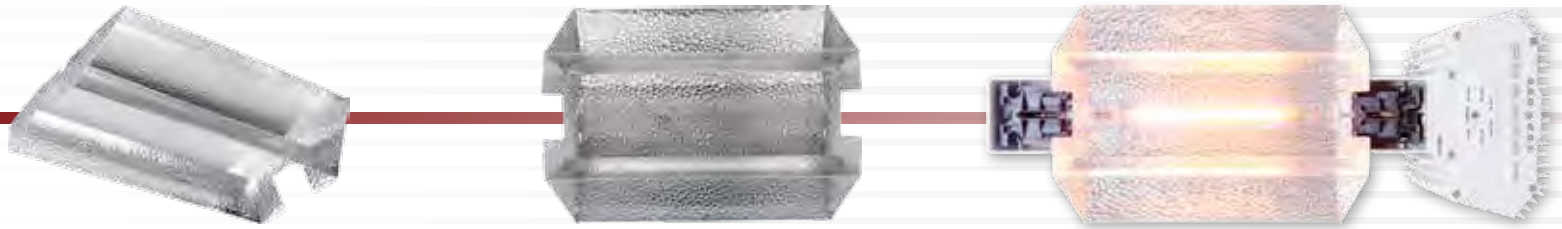
99.85% pure, 95% reflectivity Aluminum Reflective Layer

Bonding Layer

Anodized Aluminum Substrate



PHRW1
Open DE Reflector
Patented (D731,109)



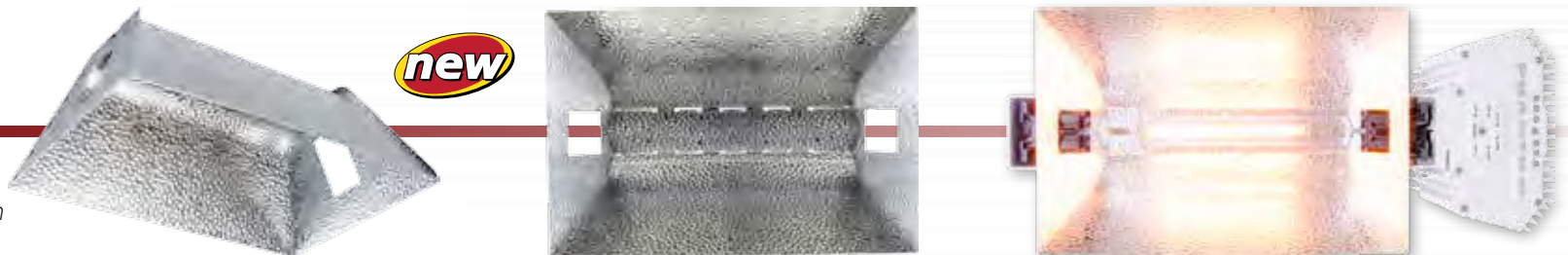
PHRS1
Enclosed DE Reflector
Patented (D765,306)

Ridge vented design for optimum heat dissipation



PHRD010
Super Deep DE Reflector

Ridge vented design for optimum heat dissipation



Environmental Stewardship/Aluminum Quality

Roughly 19% of worldwide electricity consumption is used for lighting. By producing higher efficiency luminaires, we reduce carbon emissions and environmental impact by ensuring that what you pay for at the meter is most effectively converted to yield-producing PAR light at the highest achievable rate. We do this through a marriage of engineering and the incorporation of the highest quality components available. Every Phantom DE reflector is precision crafted from the finest 99.85% pure, 95% reflective

European hammertone aluminum. To achieve such a high rate of reflection, the aluminum goes through a process known as physical vapor deposition in which extremely high purity, reflectivity-enhancing oxide layers are bonded to the base material in a heavy vacuum environment. This several-nanometer-thick PVD coating not only provides excellent reflectivity, but also improves corrosion, chemical, and wear resistance. By building a more efficient reflector with higher-efficiency materials, Phantom DE fixtures will reduce your electrical costs and carbon footprint alike.

AUTOPILOT PX1 DIGITAL LIGHTING CONTROLLER



The **Autopilot PX1 Digital Lighting Controller** provides centralized, dual-zone digital control of your Phantom DE lighting systems, allowing you to switch, dim and boost multiple Phantom DE ballasts at once—**up to 256 in each of two independent zones for a total capacity of 512 ballasts**. The trunk-line cable connections ensure perfect communication between the controller and all ballasts in the chain.

The PX1 Digital Lighting Controller is easy to set up, and is compact and lightweight. It is a true digital ballast

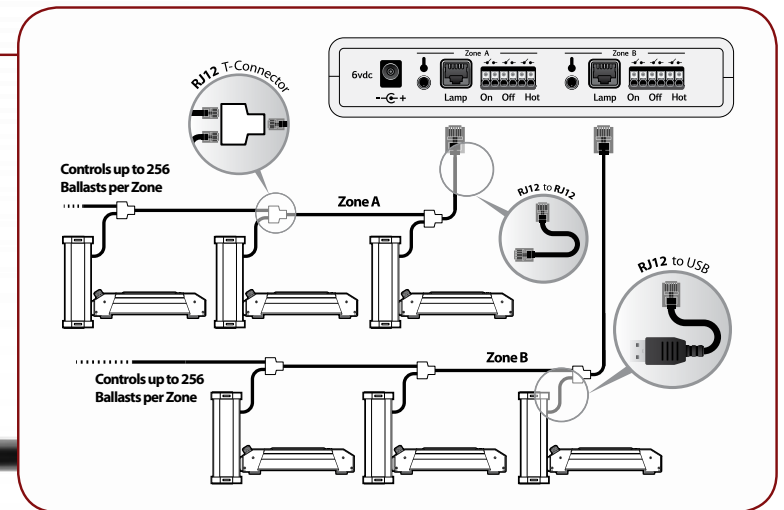
interface that makes multiple-ballast control easy and affordable to achieve. It is simply more powerful, more reliable, and more capable than competing controllers.

The PX1 has two dedicated temperature sensors—one for each zone—that provide real-time data for automated temperature-based dimming, as well as a high temperature shutdown feature that protects your garden while you're away.

COMPATIBLE WITH 40 AND 50 SERIES PHANTOM DE BALLASTS

Phantom DE Ballasts can only be controlled remotely via USB with the Autopilot PX1 Digital Lighting Controller

controls
512
BALLASTS
256 PER ZONE



Each of its dual zones provides precise and independent:

- ▶ Photoperiod timing to control light and dark cycles
- ▶ Wattage output control, which allows users to control the intensity of the light being emitted from fixtures
- ▶ Auto-dimming when temperature exceeds set points
- ▶ Emergency auto-shutdown of lights upon user-defined overtemperature events
- ▶ Configurable restrike delay times, which eliminates lamp-damaging hot starts
- ▶ Sunrise/sunset simulation settings, which provide a gradual ramp-up and down at both ends of your photoperiod

autopilot®

The Phantom Family 50 Series Double-Ended Ballasts



Phantom ballasts have a proven track record of quality, reliability, and performance. The Phantom 50 Series commercial DE ballast represents a decade of product evolution and refinement to the Phantom line. The high frequency design is optimized specifically for double-ended 1000W HPS lamps, and features a highly precise microprocessor to ensure the lamp that it is driving is provided exactly what it needs to produce the highest possible photon output. The ballast's intelligent circuitry automatically senses

the specific lamp being used and provides it with the appropriate strike voltage, which ensures long service life for your lamps. When your lamps are no longer suitable for service due to age, the ballast communicates the need to re-lamp your fixtures. Totally silent, efficient, and reliable, they will power all double-ended reflectors and DE lamps on the market.

**377V & 480V available by Special Order Only*

Double-ended HPS lamps rock the industry!

As the first company to create enhanced spectrum metal halide lamps, Hydrofarm has a solid place in the evolution of color-specific lamp technology and we continue to be at the forefront of those efforts.

With a wide range of choices available—from traditional sodium lamps to spectrally augmented halides all the way through to our new double-ended lamps—the Agrosun family offers excellent value and performance.

Our new Agrosun double-ended bulb is ideal for cultivation with high light demands, with the highest output of PAR light to promote photosynthesis—

plus high proportions of red light for good plant development and blue light for a robust, compact plant structure.

Agrosun HPS Double-Ended lamps bring the latest technology to the indoor garden. These lamps significantly increase light intensity and PAR light production compared to single-ended lamps, while consuming the same amount of energy. Agrosun DEs combine long life with high PAR light output, making them the preferred lamp for professionals worldwide.

- ▶ High proportions of red and blue light guarantee efficient photosynthesis
- ▶ Highest output of PAR light

promotes photosynthesis

- ▶ Quartz glass outer jacket for superior optical quality
- ▶ Lamp design eliminates shadowing from arc tube support
- ▶ Lots of red light for more photosynthesis and good plant development
- ▶ Blue light for a robust, compact plant structure
- ▶ Designed for use with Hydrofarm and PARsource high frequency DE fixtures & ballasts
- ▶ Long service life
- ▶ Long maintenance intervals
- ▶ Superior lamp symmetry



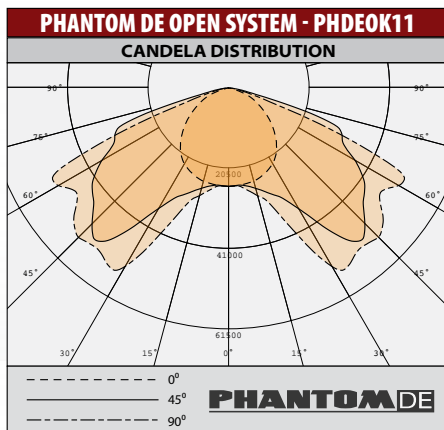
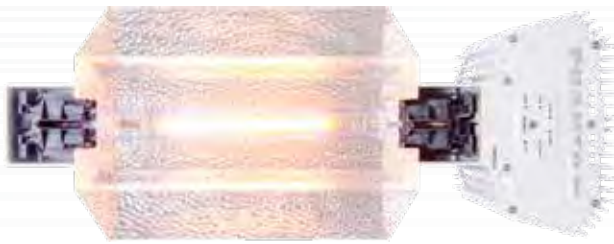
LAMP TYPE	PAR RATING OUTPUT	RATED AVG LIFE HRS	CORRELATED COLOR TEMP
750W HPS Double-Ended	1450 $\mu\text{mol/s}$	10,000	2100K
1000W HPS Double-Ended	2100 $\mu\text{mol/s}$	10,000	2100K

PHANTOM DE OPEN SYSTEMS

Super-efficient, wide, uniform light delivery

The Phantom DE Open Lighting System features state-of-the-art double-ended technology that uniformly delivers optimum PAR value over a broad footprint.

At the heart of this system is the Phantom Commercial DE Ballast. It is designed with a high precision microprocessor that makes it highly efficient, and extremely reliable. It is totally silent and lightweight. Its USB interface enables connection with the Autopilot PX1 Digital Lighting Controller. The PX1 provides centralized, dual-zone digital control of your DE lighting, allowing you to switch, dim and boost multiple (USB-compatible) Hydrofarm ballasts at once—up to 256 in each of two independent zones for a total capacity of 512 ballasts.



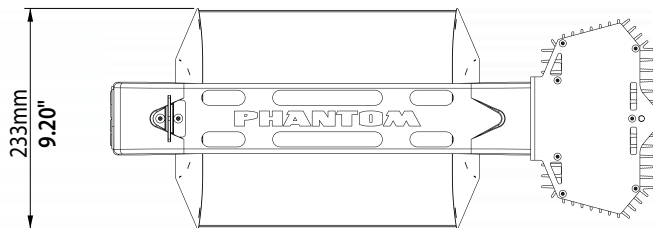
**OVERLAPPING
ILLUMINATION**



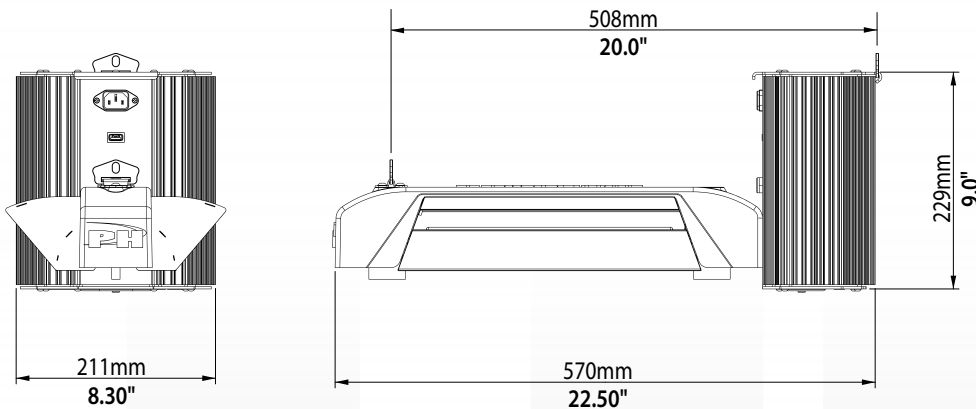
1000W Open System 208/240V (PHDEOK11)

The ballast model included in this system, PHB5015, is for 208/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 240V 16/3 AWG power cord, and instructions.

Rounding out this kit are our PHRW1 Open Reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.



PHDEOK11
OPEN SYSTEM 1000W 208V/240V



SPECIFICATIONS

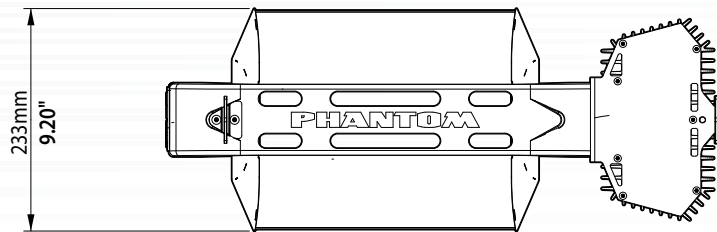
Rated Wattage:	1000W
Main Voltage:	208/240V 60 Hz
Input Amperage:	6.0/5.3A @ I _{max} 5.8/5.1A @ 1150W 5.1/4.4A @ 1000W 4.2/3.7A @ 825W 3.9/3.3A @ 750W 3.1/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Open DE (PHRW1)
Ballast Type:	Phantom DE Smart Ballast (PHB5015)
Dimensions:	22.5" L x 9.2" W x 9.0" H
Weight:	13.1 lbs
Warranty:	3-Year on Ballast Only



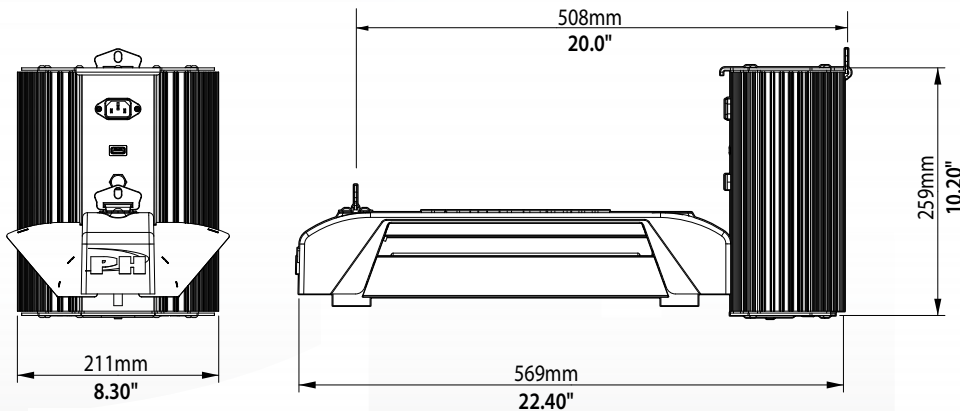
1000W Open System 120/208/240V (PHDEOK12)

The ballast model included in this system, PHB5010, is for 120/208/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V 14/3 AWG power cord, and instructions.

Rounding out this kit are our PHRW1 Open Reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.



PHDEOK12
OPEN SYSTEM 1000W 120V/208V/240V



SPECIFICATIONS

Rated Wattage:	1000W
Main Voltage:	120/240V 60 Hz
Input Amperage:	10.5/5.3A @ I _{max} 10.2/5.1A @ 1150W 8.9/4.5A @ 1000W 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Open DE (PHRW1)
Ballast Type:	Phantom DE Smart Ballast (PHB5010)
Dimensions:	22.4" L x 9.2" W x 10.2" H
Weight:	14.4 lbs
Warranty:	3-Year on Ballast Only

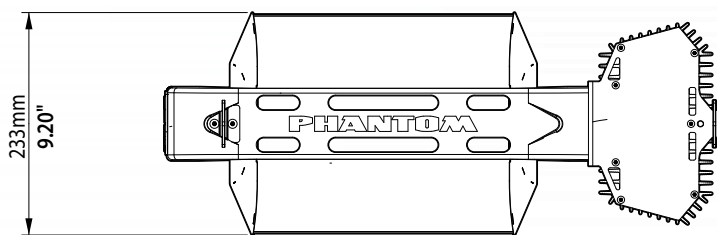


750W Open System 120/240V

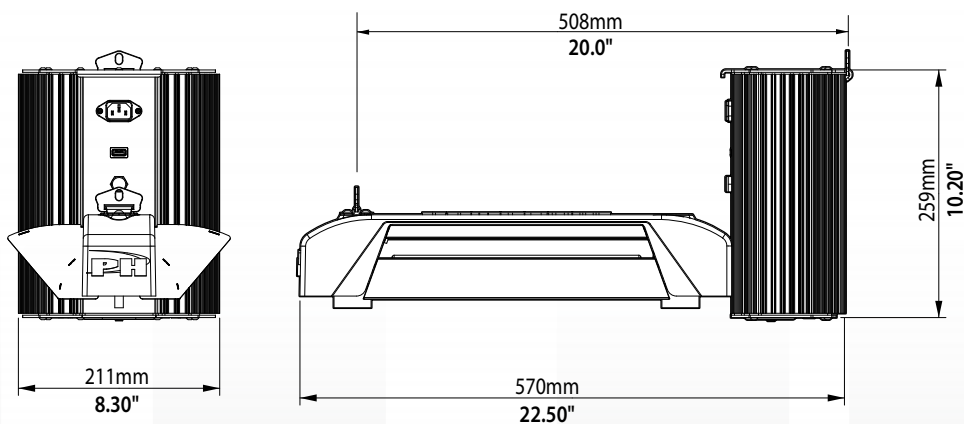
(PHDEOK72)

The ballast model included in this system, PHB5040, is for 120/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V power cord and instructions.

Rounding out this kit are our PHRW1 Open Reflector and a European-made premium DE lamp with a rated PAR output of 1450 $\mu\text{mol/s}$.



PHDEOK72
OPEN SYSTEM 750W 120V/240V



SPECIFICATIONS

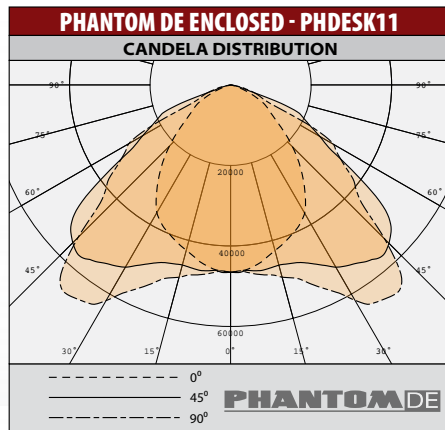
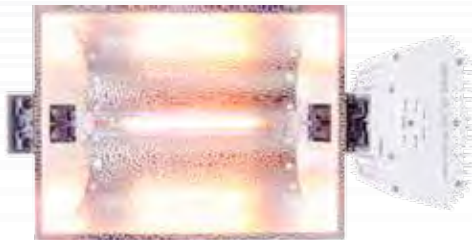
Rated Wattage:	750W
Main Voltage:	120/240V 60 Hz
Input Amperage:	7.6/3.8A @ I _{max} 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W 4.5/2.2A @ 500W 3.6/1.8A @ 400W
Lamp:	European 750W DE HID 1450 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Open DE (PHRW1)
Ballast Type:	Phantom DE Smart Ballast (PH5040)
Dimensions:	22.5" L x 9.2" W x 10.2" H
Weight:	14.4 lbs
Warranty:	3-Year on Ballast Only



PHANTOM DE ENCLOSED SYSTEMS

Downward focused, uniform light delivery

Precision engineering and uncompromising quality come together in the creation of our DE enclosed PHRS010 reflector. It was specifically designed to concentrate the high output of DE lamps in a standard, traditional spread, yielding super-high intensity when positioned closer to the canopy, or—if more appropriate for your application—a wider distribution of still powerful illumination when raised higher. The design utilizes a premium European aluminum hammertone interior and open roof for optimum lamp heat management. Combine it with the Phantom High Frequency DE Ballast and Agrosun DE lamps to create the ultimate DE system.



**TRADITIONAL
ILLUMINATION**

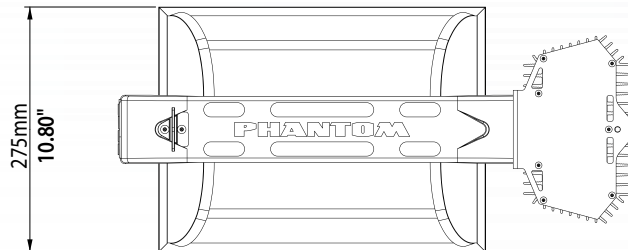


1000W Enclosed System 208/240V

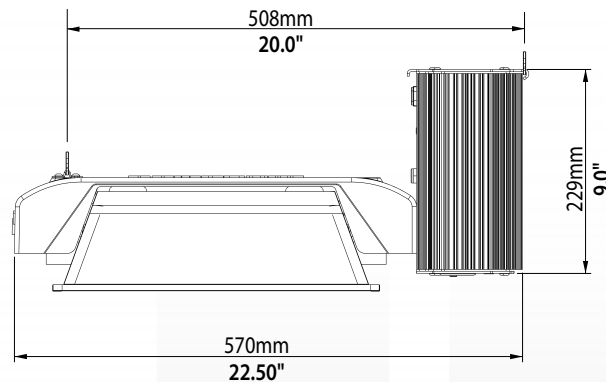
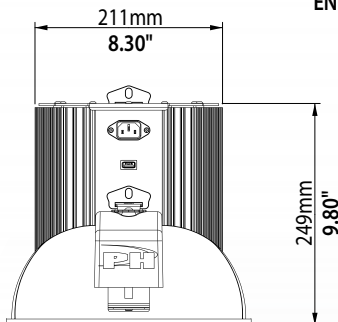
(PHDESK11)

The ballast model included in this system, PHB5015, is for 208/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 240V 16/3 AWG power cord, and instructions.

Rounding out this kit are our PHRS1 Enclosed Reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.



PHDESK11
ENCLOSED SYSTEM 1000W 208V/240V



SPECIFICATIONS

Rated Wattage:	1000W
Main Voltage:	208/240V 60 Hz
Input Amperage:	6.0/5.3A @ I _{max} 5.8/5.1A @ 1150W 5.1/4.4A @ 1000W 4.2/3.7A @ 825W 3.9/3.3A @ 750W 3.1/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position	Horizontal
Reflector:	Phantom Enclosed DE (PHRS1)
Ballast Type:	Phantom DE Smart Ballast (PHB5015)
Dimensions:	22.5" L x 10.8" W x 9.8" H
Weight:	13.4 lbs
Warranty:	3-Year on Ballast Only

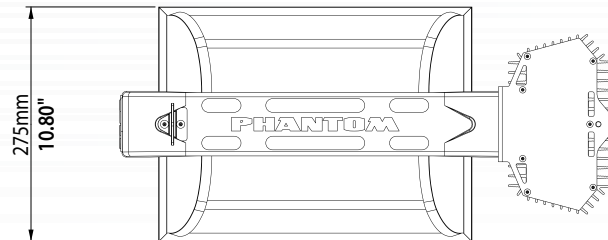


PHANTOM DE ENCLOSED SYSTEMS

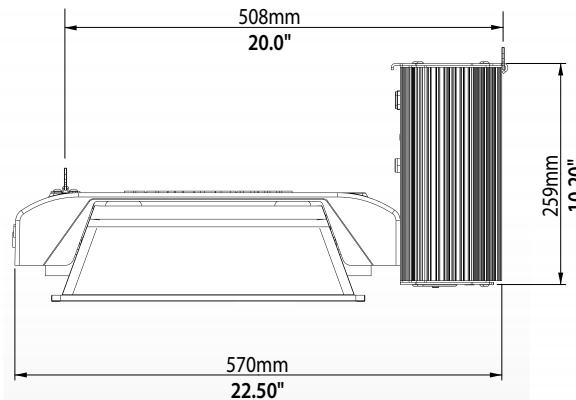
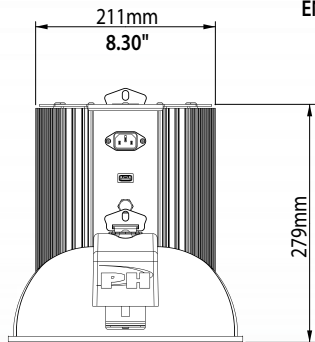
1000W Enclosed System 120/208/240V (PHDESK12)

The ballast model included in this system, PHB5010, is for 120/208/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V 14/3 AWG power cord, and instructions.

Rounding out this kit are our PHRS1 Reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.

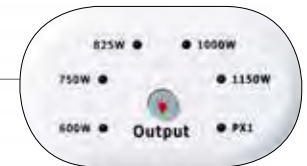


PHDESK12
ENCLOSED SYSTEM 1000W 120V/208V/240V



SPECIFICATIONS

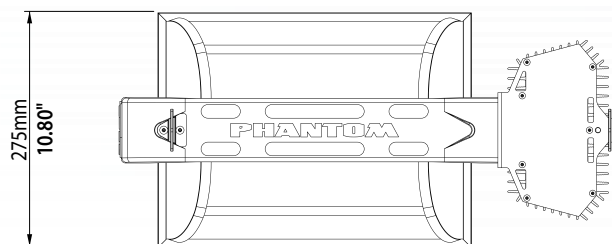
Rated Wattage:	1000W
Main Voltage:	120/240V 60 Hz
Input Amperage:	10.5/5.3A @ I _{max} 10.2/5.1A @ 1150W 8.9/4.5A @ 1000W 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Enclosed DE (PHRS1)
Ballast Type:	Phantom DE Smart Ballast (PHB5010)
Dimensions:	22.5" L x 10.8" W x 11.0" H
Weight:	14.6 lbs
Warranty:	3-Year on Ballast Only



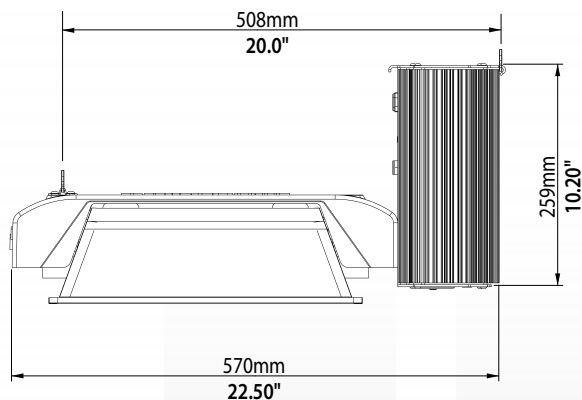
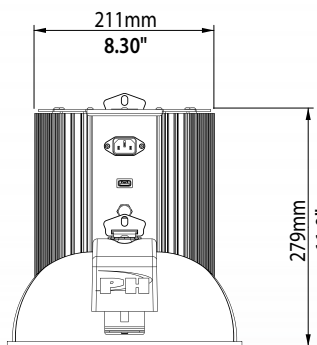
750W Enclosed System 120/240V (PHDESK72)

The ballast model included in this system, PHB5040, is for 120/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V power cord and instructions.

Rounding out this kit are our PHRS1 Enclosed Reflector and a European-made premium DE lamp with a rated PAR output of 1450 $\mu\text{mol/s}$.



PHDESK72
ENCLOSED SYSTEM 750W 120V/240V



SPECIFICATIONS

Rated Wattage:	750W
Main Voltage:	120/240V 60 Hz
Input Amperage:	7.6/3.8A @ I _{max} 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W 4.5/2.2A @ 500W 3.6/1.8A @ 400W
Lamp:	European 750W DE HID 1450 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Enclosed DE (PHRS1)
Ballast Type:	Phantom DE Smart Ballast (PHB5040)
Dimensions:	22.5"L x 10.8"W x 11.0"H
Weight:	14.6 lbs
Warranty:	3-Year on Ballast Only

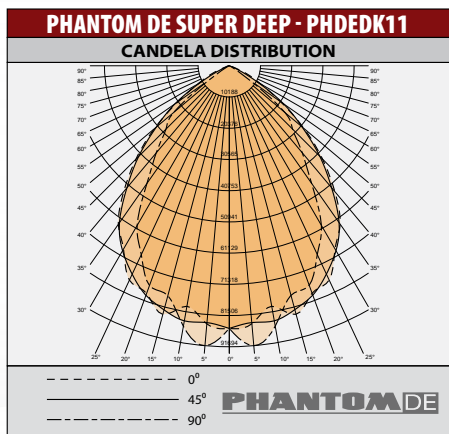




Downward focused, uniform light delivery

Designed by Hydrofarm's in-house engineering team, the PHRD010 Super Deep Reflector was created to fill the need for a DE reflector that delivers an ultra-focused light spread of maximum intensity. Specifically conceived to provide intense downward-focused light from higher mounting heights, the Super Deep is perfect for applications where very high PAR levels concentrated on a less broad canopy area are desired.

Constructed from the same proven 99.85% purity, 95% reflective European specular hammertone aluminum as our Phantom Open DE and Enclosed DE Reflectors, the Super Deep efficiently capitalizes on the intensity of DE lamps, maximizing light energy to the area directly below it—which is ideal for smaller grow rooms with tighter lighting zones and extreme PAR requirements.



**PRECISE
ILLUMINATION**

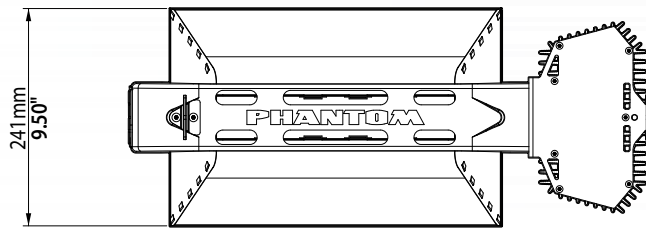


1000W Super Deep System 208/240V (PHDEDK11)

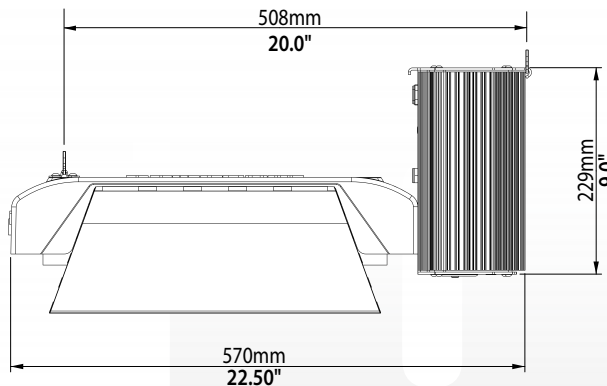
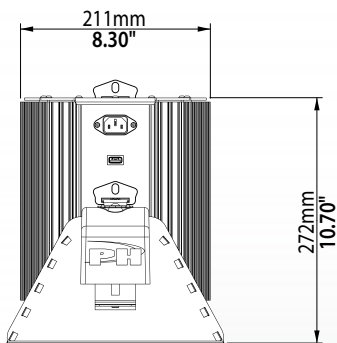


The ballast model included in this system, PHB5015, is for 208V/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 240V power cord, and instructions.

Rounding out this kit are our PHRD010 Super Deep Enclosed reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.



PHDEDK11
SUPER DEEP SYSTEM 1000W 208V/240V



SPECIFICATIONS

Rated Wattage:	1000W
Main Voltage:	208/240V 60 Hz
Input Amperage:	6.0/5.3A @ Imax 5.8/5.1A @ 1150W 5.1/4.4A @ 1000W 4.2/3.7A @ 825W 3.9/3.3A @ 750W 3.1/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position	Horizontal
Reflector:	Phantom Super Deep DE (PHRD010)
Ballast Type:	Phantom DE Smart Ballast (PHB5015)
Dimensions:	22.5" L x 9.5" W x 10.7" H
Weight:	13.3 lbs
Warranty:	3-Year on Ballast Only



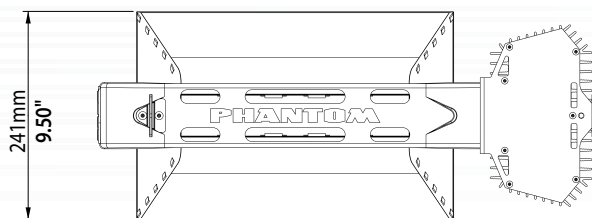
NEW! PHANTOM DE SUPER DEEP SYSTEMS

1000W Super Deep System 120/208/240V (PHDEDK12)

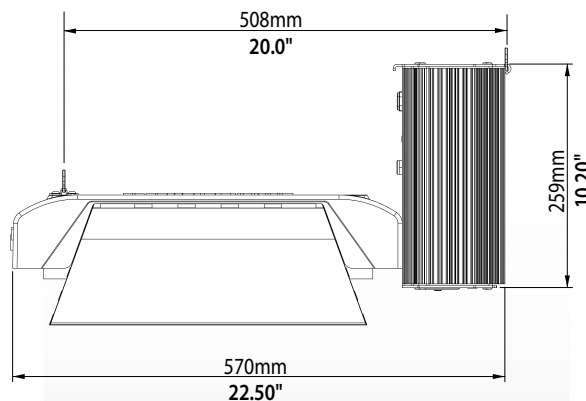
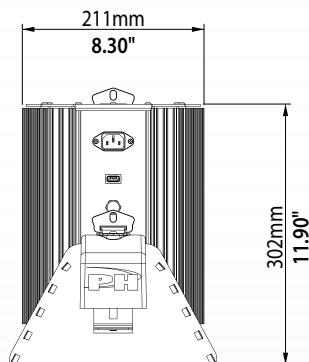


The ballast model included in this system, PHB5010, is for 120/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V 14/3 AWG power cord, and instructions.

Rounding out this kit are our PHRD010 Super Deep Enclosed reflector and a European-made premium DE lamp with a rated PAR output of 2100 $\mu\text{mol/s}$.



PHDEDK12
SUPER DEEP SYSTEM 1000W 120V/208V/240V



SPECIFICATIONS

Rated Wattage:	1000W
Main Voltage:	120/240V 60 Hz
Input Amperage:	10.5/5.3A @ I _{max} 10.2/5.1A @ 1150W 8.9/4.5A @ 1000W 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W
Lamp:	European 1000W DE HID 2100 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position:	Horizontal
Reflector:	Phantom Super Deep DE (PHRD010)
Ballast Type:	Phantom DE Smart Ballast (PHB5010)
Dimensions:	22.5"L x 9.5"W x 11.9"H
Weight:	14.5 lbs
Warranty:	3-Year on Ballast Only

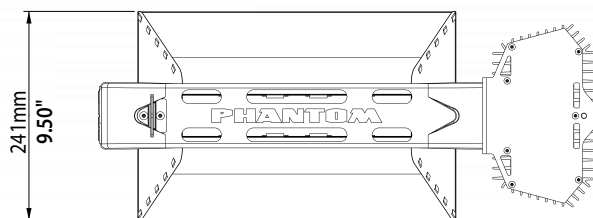


750W Super Deep System 120/240V (PHDEDK72)

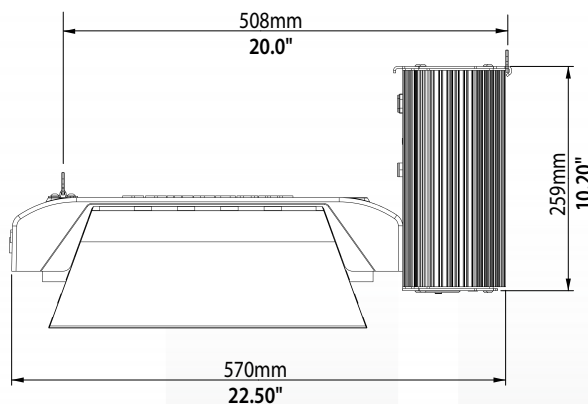
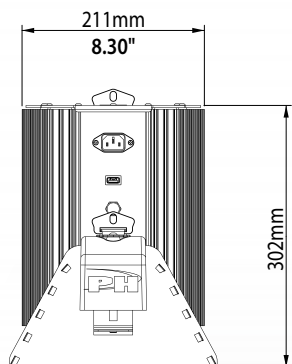


The ballast model included in this system, PHB5040, is for 120V/240V operation. It is generator ready, FCC-compliant, and comes with USB to RJ12 cable, RJ12 to RJ12 cable, RJ12 splitter, an 8-foot IEC 120V power cord, and instructions.

Rounding out this kit are our PHRD010 Super Deep Reflector and a European-made premium DE lamp with a rated PAR output of 1450 $\mu\text{mol/s}$.



PHDEDK72
SUPER DEEP SYSTEM 750W 120V/240V



SPECIFICATIONS

Rated Wattage:	750W
Main Voltage:	120/240V 60 Hz
Input Amperage:	7.6/3.8A @ lmax 7.4/3.7A @ 825W 6.7/3.3A @ 750W 5.4/2.7A @ 600W 4.5/2.2A @ 500W 3.6/1.8A @ 400W
Lamp:	European 750W DE HID 1450 $\mu\text{mol/s}$
Socket Type:	K12 x 30s
Lamp Position	Horizontal
Reflector:	Phantom Super Deep DE (PHRD010)
Ballast Type:	Phantom DE Smart Ballast (PHB5040)
Dimensions:	22.5" L x 9.5" W x 11.9" H
Weight:	14.5 lbs
Warranty:	3-Year on Ballast Only



Get the NEXT Generation

PHANTOM DE

DOUBLE-ENDED LIGHTING SYSTEM



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