



MAN-4312

INSTRUCTION MANUAL

BIRNS QUANTUM-Q

Model 4312

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IMPORTANT SAFEGUARDS

- READ AND FOLLOW ALL SAFETY INSTRUCTIONS.
- Do not use outdoors.
- Do not let power supply cords touch hot surfaces
- Do not mount near gas or electric heaters.
- Equipment should be mounted in locations and at heights where it will not readily be subjected to tampering by unauthorized personnel.
- The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition.
- Do not use this equipment for other than intended use.
- Always de-energize and ground the equipment before maintenance.
- Read and understand this manual before installing, operating, or maintaining the equipment.
- Do not use in areas where explosive or flammable vapors may be present.
- Mount and use this unit in strict accordance with National Electrical Code, Uniform Building Code, Life Safety Code, and/or any other local code requirements. Use only approved wiring methods.
- Do not allow servicing or installation of this unit by anyone other than properly trained and qualified personnel.
- SAVE THESE INSTRUCTIONS

SAFETY NOTICE SYMBOLS

Danger, Warning, Caution and Notice statements are used throughout this manual to emphasize important and critical information, and to indicate the degree of hazard that may be encountered by the user. These words and symbols are defined as follows:



Danger: death or serious injury will result if proper precautions are not taken.



Warning: death or serious injury could result if proper precautions are not taken.



Caution: minor or moderate injury could result if proper precautions are not taken.



Notice: addresses practices not related to personal injury.

QUALIFIED PERSON

For the purposes of this manual and product labels, a qualified person is one who is familiar with the installation, construction, operation or maintenance of the equipment and the hazards involved. In addition, this person has the following qualifications:

1. Is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.
2. Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses or face shields, flash clothing, etc., in accordance with established safety practices.

SCOPE

This Manual provides basic information and requirements for installation and maintenance of the BIRNS Quantum-Q LED Floodlight.

GENERAL INFORMATION

Product Description

The BIRNS Quantum-Q™ is a nuclear LED floodlight that delivers powerful, comfortable LED illumination for a range of low bay applications inside containment and throughout nuclear facilities. This floodlight is a precision engineered, robust and compact system that has 5,300-lumens of 5000K daylight illumination. With its low 55W power use, high 97.5 lm/W efficiency, and long >51,000-hour lamp life, it provides safer, more comfortable, and more efficient working conditions while delivering significant energy savings.

The BIRNS Quantum-Q™ is constructed of all nuclear-compatible materials and all-captivated parts to provide safe, efficient, and long-term illumination. It has a sealed (IP56) housing made of Type 430 stainless steel with smooth surfaces for safe and easy cleaning and decontamination, as well as rounded corners and edges for worker safety. The fixture has two options for mounting height, both of which are compatible with ceiling or wall mounting configurations. A tall bracket allows for tilting at any angle, while a short bracket provides a low profile for tight spaces.

Theory of Operation

LED stands for Light Emitting Diode. An LED generates light when an electrical current is passed through it. When the current is passed through the diode, free electrons in the semiconductor are moved to electron holes, releasing energy in the form of light.

Although LED lamps tend to be more expensive than incandescent bulbs, LEDs have two distinct advantages: lower power consumption and longer lifetime. These advantages can offset the higher price entry and make LEDs very desirable in situations where long-lasting lighting is required without the need to constantly replace the lamp.

Thermal management is generally the most important factor in determining the overall lifespan of an LED. The higher the operating temperature, the quicker the LED will degrade and the shorter its lifespan will be. LEDs are designed with heat sinks in order to absorb any heat generated during use and dissipate it into the surrounding environment.

Compared to old incandescent light bulbs, LEDs are much more versatile. LEDs are “directional” light sources, meaning they emit light in a specific direction, as opposed to incandescent bulbs that emit light in all directions. This gives LED lamps greater control over which areas are being lit. Moreover, the small size of LEDs allows them to be designed and arranged in a way that allows a lamp to be omnidirectional if desired. LEDs also have the option of emitting light in a wide range of colors. Millions of colors can be emitted depending on the makeup of the semiconductor, with some of the most common colors being amber, red, green, and blue.

INSTALLATION INSTRUCTIONS

Unpacking



**THE LIGHTING UNIT WEIGHS 24 POUNDS (10.9 kg). DO NOT DROP IT.
TAKE ALL NECESSARY SAFETY PRECAUTIONS WHEN LIFTING HEAVY WEIGHTS.**



To protect the unit during transportation to the installation site, it is recommended that unpacking be performed near the area of final installation.

1. Set the packaged unit on a flat horizontal surface (table, floor, etc.). Lay the carton flat.
2. Cut open the “top” end of the carton and open the carton flaps.
3. Remove the top foam padding to reveal the Quantum-Q unit.



When removing the mounting bracket, do not over-loosen or completely remove the locking nut, as this can damage or dislodge the retaining washer.

4. Remove the mounting bracket from the housing assembly by loosening the two 9/16” locking nuts on either side of the housing by turning them in a counter-clockwise direction until the bracket can be slid off the mounting bracket buttons.
5. Remove the mounting bracket from the box.

Inspect for Damage

Carefully inspect all items for damage. Damage to shipping or packing materials may indicate potential damage to the goods themselves.

Signs of actual or potential damage include:

- Items broken, bent, chipped or cut

- Items scraped or burnt
- Loose parts, clinking or rattling sounds

Should any of these signs be evident, save all packing materials and immediately file a claim with the carrier. Notify your distributor and/or BIRNS directly, in writing, describing the damage.



THE QUANTUM-Q AND BRACKET MUST BE SECURED AS DEFINED BELOW TO AVOID POSSIBLE HAZARDS FROM FALLING OR LOOSE ASSEMBLIES.

Mounting Bracket Installation

As a minimum, the Quantum mounting bracket must be secured to the facility (wall, ceiling, post, etc.) using the two outer mounting holes. For added security, it is recommended that the middle mounting hole also be secured. The bracket must be secured using 5/16-inch (8-mm) (minimum diameter) fasteners. For horizontal (i.e., wall) installation, install the mounting bracket such that the retaining slot openings face up.

Affix the bracket to the substrate as follows:

1. If mounting bolts have not been previously configured and installed:
 - a. Using the bracket as a template with the bracket retaining slot openings facing up, mark the location of the desired mounting holes onto the mounting surface. Ensure the bracket is level and centered when marking the mounting points.
 - b. Using the appropriately sized drill, drill holes through the marked points.
2. Using the appropriate number of mounting bolts (two minimum), secure the bracket to the mounting surface with the bracket retaining slot openings facing up.



THE LIGHTING UNIT WEIGHS 24 POUNDS (10.9 kg). TO AVOID INJURY OR DAMAGE, BIRNS RECOMMENDS LIFTING THE HOUSING AND INSTALLING ONTO THE MOUNTING BRACKET WITH TWO PEOPLE.

Mounting Housing on to Bracket

Install the Quantum-Q housing onto the mounting bracket as follows:

1. Remove the housing from the packing box by grasping the mounting bracket buttons and lifting the housing up and out of the box.
2. Position the housing over the mounting bracket.
3. Carefully slide the mounting bracket button threads into the bracket retaining slot openings.
4. Ensure the bracket button threads are fully forward in the bracket retaining slot.
5. If the tall bracket is being used, aim the Quantum-Q as desired. If the short bracket is being used, the Quantum-Q should be aimed perpendicular from the mounting surface.
6. Ensure the button threads and the lock nut threads are coated with nuclear-grade anti-seize compound.
7. Tighten the two 9/16" locking nuts on either side of the mounting bracket by turning them in a clockwise motion. Tighten the nuts just until the slack is removed from the nut, Belleville washer, and bracket. Then tighten the nut 60 degrees more.

Adjusting the Tilt Angle

NOTICE

Tilt angle should only be adjusted when using the tall mounting bracket.

1. Ensure the lamp is properly supported to prevent any sudden movement.
2. Loosen the two 9/16" locking nuts on either side of the mounting bracket by turning them in a counter-clockwise motion until the lamp is able to tilt.
3. Tilt the lamp towards the desired angle. Support the lamp to hold it in place.
4. Ensure the button threads and lock nut threads are coated with nuclear-grade anti-seize compound.
5. Tighten the two 9/16" locking nuts on either side of the mounting bracket by turning them in a clockwise motion. Tighten the nuts just until the slack is removed from the nut, Belleville washer, and bracket. Then tighten the nut 60 degrees more.

NOTICE

The Quantum-Q is designed to be connected to facility AC power via a user-supplied conduit. The Quantum-Q must be connected to facility input AC and the conduit secured in accordance with appropriate local and industry regulations. Three lever-type connectors are supplied for use at the user's discretion.

Power Cable Installation

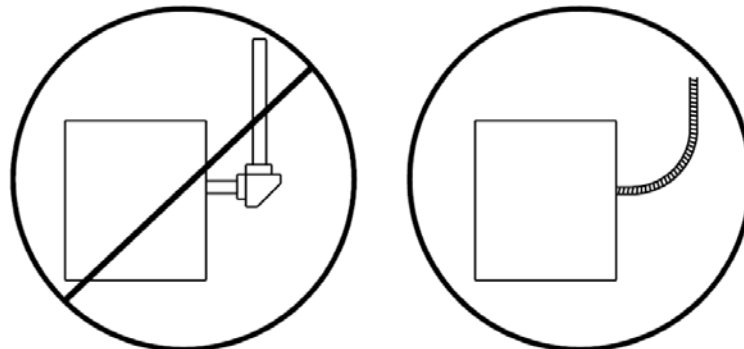
⚠ DANGER

ENSURE AC POWER IS "OFF" (DE-ENERGIZED) PRIOR TO INSTALLATION!

1. Locate the stainless-steel Junction Box on the outside of the Quantum-Q housing.
2. Remove the junction box cover by unscrewing the two (2) No. 6 captive panel screws with a #2 Phillips head screwdriver by turning them in a counter-clockwise direction just until the cover can be removed. The screws are captive and should not be completely removed from the cover.
3. Route input power conductors through a suitable, flexible conduit.

NOTICE

BIRNS recommends that a suitable UL-listed stainless-steel liquid-tight flexible conduit be used (although suitable flexible power cord is an alternative). A rigid conduit should NOT be used.



4. Route the facility AC power supply into the junction box.
5. Connect the facility ground line to the Quantum-Q ground wire (green).



6. For 100 or 120 VAC installations, perform the following:
 - a. Connect the facility live line to the Quantum-Q positive wire (brown).
 - b. Connect the facility neutral line to the Quantum-Q neutral wire (blue).
7. For 220, 240, or 277 VAC installations, perform the following:
 - a. Connect one facility line to the Quantum-Q positive wire (brown).
 - b. Connect the second facility line to the Quantum-Q neutral wire (blue).
8. Ensure the junction box cover threads are coated with nuclear-grade anti-seize compound.
9. Replace the Junction Box cover and secure it using the two (2) No. 6 captive panel screws with a #2 Phillips head screwdriver, by turning them in a clockwise direction. Tighten the screws hand tight.
10. Tighten the fluid-tight cable fitting until the cable is secured.



OPERATION INSTRUCTIONS

The BIRNS Quantum-Q is extremely simple to operate. Simply energize the circuit to operate the fixture. Turn “OFF” the power to turn off the fixture.

PREVENTATIVE MAINTENANCE

The BIRNS Quantum-Q is designed to be maintenance free. However, keeping the unit clean and the cooling fins free of dirt and debris will help ensure a long service life.

TROUBLESHOOTING

The following is a list of possible problems with their causes and required corrective actions.

PROBLEM	PROBABLE CAUSE	CORRECTIVE ACTION
Lamp goes out, then starts again	1. Momentary power failure	1. No action needed
Intermittent light output	1. Loose or bad contact in connector or plug	1. Check wiring, and/or contact BIRNS
Lamp moves while in mounted position	1. Mounting screws/nuts are loose	1. Tighten the screws/nuts as necessary until lamp is secured
AC supply breaker trips	1. Short circuit in AC supply line 2. Overload on circuit 3. Incorrect power connections 4. Short circuit in junction box wiring	1. Remove short circuit 2. Correct for proper load 3. Check input power connections and correct. 4. De-energize power and inspect wiring for loos or dislodged connections, then correct wiring.



1720 Fiske Place, Oxnard, CA 93033-1863 USA – www.birns.com

Title

Instruction Manual, Quantum-Q Model 4312

CONTACTING BIRNS

Voice

You can contact BIRNS by telephone on:

- +1-805-487-5393 (International)
- +1-888-BIRNS-88 (USA toll-free)

We have customer service personnel available to take calls Monday through Friday, 08:00-16:30 PST. We also have 24-hour voice mail service to take calls at other times.

Data

You can contact BIRNS in writing by:

Mail: BIRNS, Inc.
1720 Fiske Place
Oxnard, CA 93033-1863 USA

24-hour Fax: +1-805-487-0427

Email: service@birns.com
(or through our web address: www.birns.com)

Physical

You can ship goods to our receiving department at:

BIRNS, Inc.
Attention: Customer Service 1720 Fiske Place
Oxnard CA 93033-1863 USA

Note: please always contact us prior to shipping items to us, and label the goods as for the attention of Customer Service. Include the RMA (Return Material Authorization) number on the label; the RMA number is available from your customer service representative. For more RMA and Product Return information see <http://www.birns.com/rma.html>.

APPENDIX A — Technical Specifications

Physical

Dimensions

Height:	13.5 cm (5.3 inches)
Width:	32.8 cm (12.9 inches)
Length:	39.8 cm (15.7 inches)
Weight:	10.9 kg (24 pounds)

Mounting

Wall Mounting Type:	Universal Wall/Ceiling Bracket
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Materials

Housing/Box:	430 Stainless Steel
Mounting Hardware:	300-Series Stainless Steel
Gaskets:	Silicone Rubber
Window:	Tempered Glass
Window Frame:	300-Series Stainless Steel

Environmental

Operating Temperature:	57°C
Radiation Tolerance:	2.5×10^5 Gy (2.5×10^7 R)
Protection Level:	IP5X

Electrical

Input

Voltage:	110-277 VAC
Frequency:	55-60 Hz
Power:	55.3 W
Power Factor:	98.5 %
Input Current THD:	12.5 %
Input Voltage THD:	0.1 %

Lighting

Lamp Type:	High-Power LED
Luminous Flux:	5389 lm
Correlated Color Temperature:	5044 K
Lamp Life:	>51,000 hrs
CRI:	73 Ra
Efficacy:	97.5 lm/W
Scotopic/Photopic Lumen Ratio:	1.795
Operating Position:	Universal
Fixture Type:	Flood

APPENDIX B – Wall Mounting Dimensions

