



24V AC or DC Power Supply Outdoor, Sealed Construction User's Manual 45QX-40V160-xx Series



General Product Specifications

Model Number	Nominal Input Rating	Output		
		Channel-1	Channel-2	Channel-3
45QA-40V160A65-01	14-32Vac, 19-46Vdc	40Vdc 1.75A	40Vdc 1.75A	10Vdc 0.75A
45QA-40V160B65-01	14-32Vac, 19-46Vdc	40Vdc 1.75A	40Vdc 1.75A	10Vdc 0.75A
'A':	Bluetooth Communications not installed			
'B':	Bluetooth Communications installed and is the standard product			

NOTE: ADDITIONAL UTILITY AND/OR PATENT PENDING APPLIED IN 2022-2024



For direct access to the latest copy of this manual, please scan this QR Code or refer to the *Product Manuals* section at:
www.Hydro-Bioscience.com

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

















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1. Safety Information

SAFETY SYMBOLS AND TERMS


Safety Symbols

The following symbols may appear on the product:

	Direct current (DC)		Caution, risk of danger
	Alternating current (AC)		Warning, risk of electric shock
	Both direct & alternating current		Risk of explosion
	Ground terminal		Recycle lithium-ion batteries
	Chassis ground		Do not incinerate
	Power on/off		Power port
	Battery/cell power connection		Battery/cell power connection
	Communication port		Solar panel port
	Repair/service		AC connection port
	Navigation light connection		MyQuattro App communication
	Conforms to European Union directives		
	Complies to the Federal Communications Commission		
	Complies with the Restriction of Hazardous Substances Directive (2002/95/EC)		
	This product complies with the WEEE Directive (2002/96/EC) marking equipment. The affixed product label indicates that you must not discard this electrical/electronic product in domestic household waste.		

Safety Terms

Terms in this manual:

 **Warning/Caution:** BE ALERT – YOUR SAFETY IS INVOLVED'. If you do not follow these safety instructions, personal injury, loss of life, and/or property damage may occur.

Terms on the product:

Danger: Indicates an immediate hazard which will result in death or serious injury.

Warning: Indicates a hazard which may result in death or serious injury.

Caution: Indicates a hazard which may result in minor or moderate injury.

GENERAL SAFETY REQUIREMENTS

 **WARNING - Read this manual thoroughly before using the product.**

User Safety and General Product Precautions

1. Locate/route all cords where they will not be tripped over or damaged by vehicles or equipment with cutting blades such as lawn mowers and hedge clippers and away from vehicle/boat traffic to prevent being driven over.
2. When deploying, follow all equipment and vehicle (such as boats, rafts) operator safety manual instructions.



3. Installation and working in and around water requires two or more individuals to be involved for safety concerns.
4. If wildlife such as beavers, minks, nutria, otters, muskrats, turtles, etc., are present in the water body, additional cable protection is recommended such as a nylon or polyester braided sheath from the surface down to about 2 meters (6 feet) depth.
5. Other manuals included with this manual, such as battery, solar controller/charger, Sonic Head, and SolaRaft manuals must be read fully. Comply with all safety precautions in those manuals. This manual contains only assembly excerpts from these other manuals. **Visit our website www.hydro-bioscience.com to locate these manuals. Alternately, download the manuals by scanning the QR code shown on the white label located on the top of the Power Supply.**

User Safety Precautions

6. Do not operate the Power Supply if it has received a sharp blow, been dropped, or otherwise damaged in any manner. Refer to a qualified service agent.
7. Power Supply contains no serviceable parts. If the power supply fails during its warranty period, contact Hydro Bioscience, LLC at 888-500-5011 or visit HBS's website, www.hydro-bioscience.com for information concerning a warranty replacement or repair.
8. Before attempting any maintenance or cleaning, unplug Power Supply from input power source. For external cleaning use a clean damp towel.
9. Have your distributor, dealer or other qualified service agent repair or replace worn or damaged parts immediately. Repairs should not be attempted by people who are not qualified.

10. Whenever removing the input cable from its power source, pull from the body of the connector, not from the cord.
11. Do not operate the Power Supply or any component attached to it if it is malfunctioning. Personal injury or property damage could result.

Input Power Source Warnings

1. Location of Power Supply must be in a shaded location and must not be installed in direct sunlight. Derating of the output power may occur.
2. If installing underground electric utility power to a receptacle near a body of water such as a pond, lake, pool or reservoir, a customer supplied armored cable, run through conduit, must be used to minimize risk of damage and installed in accordance with Country, State and Local regulations.

Personal Precautions While Working with Batteries

1. Have someone within range of your voice to come to your aid if needed.
2. Have plenty of fresh water and soap nearby in case battery acid contacts your skin, clothing or eyes. Wear eye and clothing protection and avoid touching eyes.
3. If battery acid contacts skin or clothing, wash immediately with soap and water.
4. If acid enters eye, immediately flush eye with running cold water for at least 10 minutes. Get medical attention immediately.
5. NEVER smoke or allow a spark or flame in vicinity of battery.
6. Be extra cautious not to drop a metal tool onto battery. It might spark or short circuit battery or other electrical part that may cause an explosion.
7. Remove personal metal items such as rings, necklaces, watches, etc. Batteries can produce a short-circuit current high enough to weld such items causing a severe burn.
8. NEVER charge a frozen battery. Thaw it out for safer and more efficient charging.
9. **WARNING: For your own protection, when using ANY type of charger, always ensure that the batteries in your Battery Pack ARE ALL at the same state of charge, same condition, same size, and same rating. DO NOT MIX DIFFERING BATTERY SIZES, BATTERY TYPES OR OLD BATTERIES WITH NEW. Never use charger for any purpose contrary to its intended**



purpose of charging rechargeable batteries in accordance with ALL instructions printed in the Charger's manual.

Personal Precautions While Working with Solar Panels

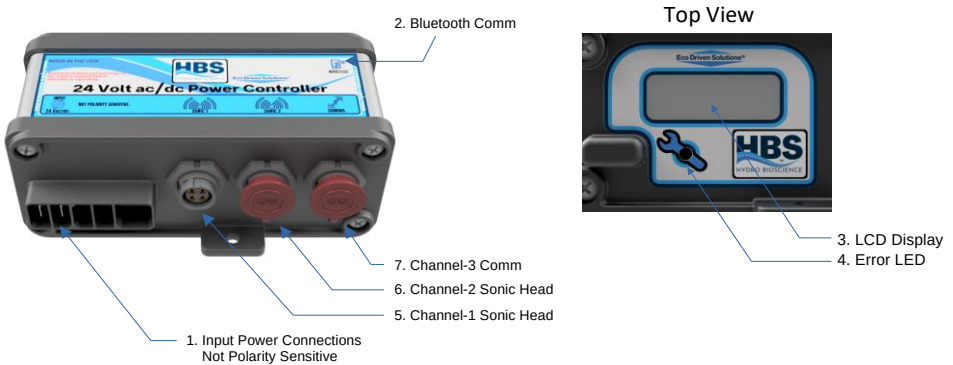
1. Follow all safety precautions recommended by the solar panel supplier, including safe installation practices
2. Solar Panel's open circuit voltage generates a voltage less than 43.2Vdc.
3. Necessary precautions include:
 - a. Avoid short circuits which can produce energy arcing which can cause severe burns and/or property damage
 - b. Avoid touching bare wires which can cause personal harm, and even death – DC currents can be lethal
 - c. Use a minimum of 1 gauge larger conductor than the appropriate rated wire for solar panel's Short Circuit Ampacity rating

Limitations and Disclaimers

Due to environmental and manmade conditions contributing to excessive nutrient loading and many other factors, varying degrees of product efficacy should be expected and therefore, there is no guarantee regarding the total prevention or eradication of algae or algal blooms. HBS Algae Remediation products do not treat any body of water to produce potable or drinkable water. HBS Algae Remediation Products do not treat for other bacterium, pollution, viruses, toxins, micro-organisms, or other matter which may be present, and other methods of treatment may be needed to provide prevention, remediation, or elimination of such. HBS Algae Remediation Products are not a replacement for other water treatment methods, including, but not limited to, aeration, chlorination, oxidation, skimming, or other treatments meant to prevent, reduce, or eliminate other bacterium, pollution, viruses, toxins, micro-organisms, or other matter which may be present. HBS Algae Remediation Products are not to be utilized for off-label or unintended uses. Such off-label or unintended use may void the product's warranty and/or cause damage to persons or property.

2. Product Features And Specifications

PRODUCT FEATURES



1. Input Power Connections

- a. Two terminals are used to connect power. The inputs are NOT polarity sensitive which means that it does not matter which is positive or negative.
- b. The two terminals are male tabs 0.250 (6.35mm) tabs which accept female fast-on 0.250 (6.35mm) terminals.
- c. **The female fast-on terminal must be filled with Food Grade Dielectric Grease prior to mating the female fast-on onto the male tabs.**
- d. **Wire Gauge Minimum: 16Ga, Type UL-1015 or better**
- e. Female Fast-on Terminal part numbers (or equivalent):
 - i. Tyco Electronics: 3-350820-2
 - ii. Molex: 019005-0009

2. Bluetooth Communications

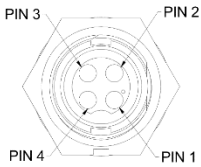
- a. The product contains a Bluetooth registered internal device that connects to smart phones. Refer to the MyQuattro™ App instruction manual found on www.hydro-bioscience.com.
- b. App functions include on/off power scheduling to the sonic heads, pausing or resuming functions, stats display, and more.
- c. At the time of print of this manual, communications work with Android Smartphones and Apps only

3. LCD 16x2 character display
 - a. Backlight flashes periodically to show that the unit is powered on.
 - b. Displays status of operation of each Sonic Head attached to Channels 1 and 2
4. Error LED
 - a. Flashes RED to annunciate a condition that may need attention
5. Channel-1 Sonic Head
 - a. Provides 40Vdc to power the first Sonic Head
 - b. Refer to the Channel-1 Connector pinout for circuit details
 - c. Output is protected from short circuits by the use of an internal resettable fuse. To reset this fuse, disconnect the Sonic Head for 2seconds and then reconnect. Ensure short circuit is removed.
6. Channel-2 Sonic Head
 - a. Provides 40Vdc to power the second Sonic Head
 - b. Keep Dust Cover installed on Connector when not used
 - c. Refer to the Channel-1 Connector pinout for circuit details since it is the same pinout functionality.
 - d. Output is protected from short circuits by the use of an internal resettable fuse. To reset this fuse, disconnect the Sonic Head for 2seconds and then reconnect. Ensure short circuit is removed.
7. Channel-3 Comm
 - a. This channel supplies RS-232 communication and 10Vdc power to an optionally purchased and installed remote modem. When used with the optional modem, data and alerts can be sent to the cloud to the H2Oinfo™ Application.
 - b. Other functions include remote re-flashing from a PC, Modbus communications to implement SCADA, direct connection to a SONDS water quality monitoring probe and more. Consult with your dealer or request more information via 'Contact Now' on our website www.hydro-bioscience.com.
 - c. Keep Dust Cover installed on Connector when not used
 - d. Output is protected from short circuits by the use of an internal resettable fuse. To reset this fuse, disconnect the load for 2seconds and then reconnect. Ensure the source of the short is removed.

CHANNEL CONNECTOR CIRCUIT DESCRIPTION

Channel-1 and Channel-2 Connector Pinout and Signals:

View from Front of the Connector:



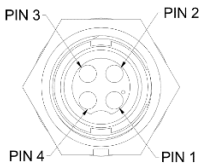
Pin-1:	+40Vdc Output
Pin-2:	Reserved/RS-485
Pin-3:	Sonic Head Heartbeat/RS-485
Pin-4:	Circuit Common

Connection Notes:

1. When using a voltmeter, connecting the probes to Positive(+) Pin-1 and Negative(-) Pin-4, the reading can be between 39Vdc to 50Vdc.
2. The connections are rated as IP-67. But the use of a very small amount of Food Grade Dielectric Grease on the face of the connector and very small 'spot' amounts in the sockets acts as an added layer of protection from humidity.

Channel 3 Connector Pinout and Signals:

View from Front of the Connector:



Pin-1:	+10Vdc Output
Pin-2:	RxD from external modem
Pin-3:	TxD to external modem
Pin-4:	Circuit Common

Connection Notes:

1. When using a voltmeter, connecting the probes to Positive(+) Pin-1 and Negative(-) Pin-2, the reading can be between 8Vdc to 12Vdc.
2. The connections are rated as IP-67. But, the use of a very small amount of Food Grade Dielectric Grease on the face of the connector and very small 'spot' amounts in the sockets acts as an added layer of protection from humidity.

If the cable-side connector needs replacing request KITS0233 from our website www.hydro-bioscience.com used on Channels 1, 2, and 3.

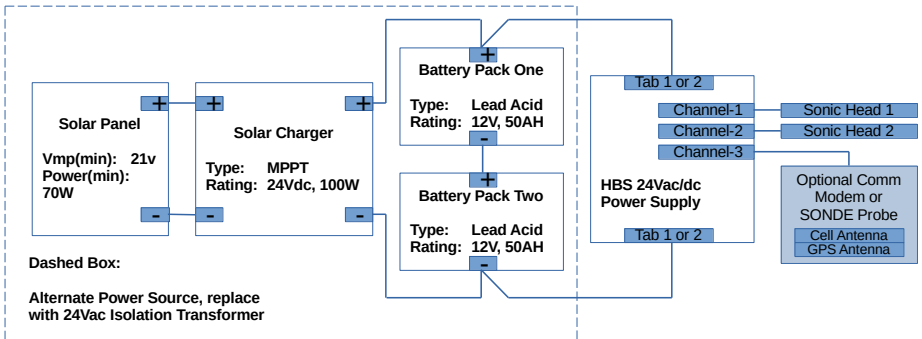
3. Electrical And Block Diagrams

TYPICAL CIRCUIT CONNECTIONS

Circuit Notes And Disclaimer:

1. All wiring and assembly must be performed by a certified electrician in accordance with all local authority regulations
2. Charger and solar panel may or may not be provided by manufacturer of the 24Vac/dc Power Supply – always read instruction manuals provided by the manufacturer of the components such as batteries, transformers, chargers, and solar panels.
3. Wiring Gauge is 16ga, UL-1015 minimum rated conductors
4. Hydro Bioscience is a manufacturer of lithium battery packs, solar panel assemblies, wiring and cabling, and transformers and can supply many of the components shown below in the connection schematics. Please visit www.Hydro-Bioscience.com for more component information.

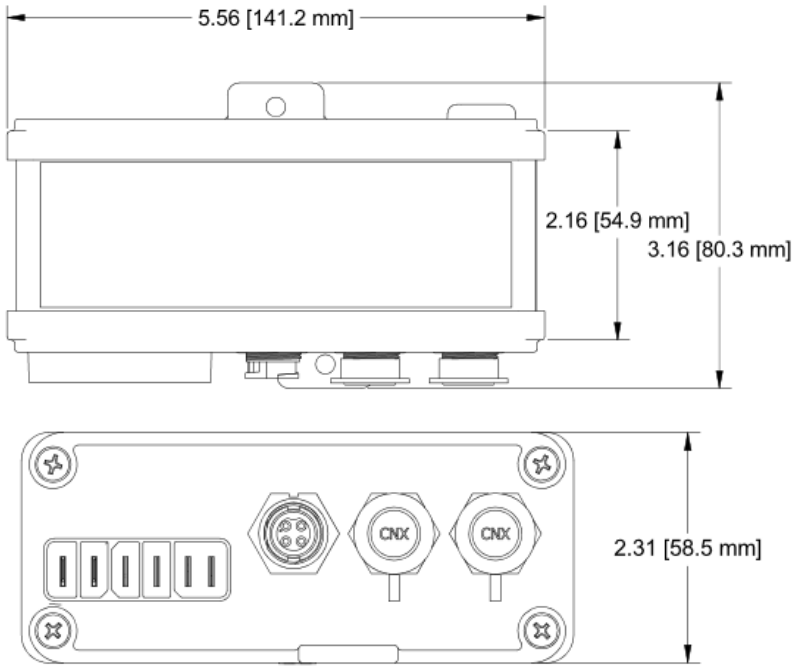
TYPICAL BATTERY/SOLAR CIRCUIT CONNECTION



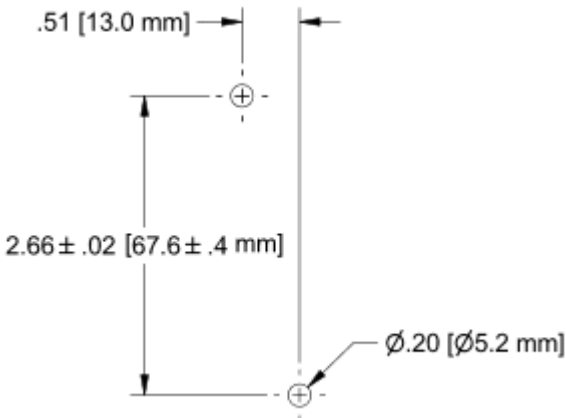
Also shown in the dashed boarder box, is a way to connect an isolation 24Vac transformer. The primary side of the transformer is connected to Utility Power 120Vac or 230Vac, 50/60Hz, and whose secondary side output is 24Vac, 50/60Hz.

4. Appendix

PRODUCT DIMENSIONS



MOUNT PATTERN AND MOUNTING HOLE DESCRIPTIONS



Drill Hole:

#6 Drill Size, 0.204in, 5.2mm
#8-32 or equivalent screw

Use Stainless Steel 18-8
minimum Hardware

SPECIFICATIONS

<u>Parameter</u>	<u>Specification</u>	<u>Notes/Descriptions</u>
Vac Nominal Input Rating:	14Vac to 32Vac, 8Aac max	
Vdc Nominal Input Rating:	19Vdc-46Vdc, 8Adc max	
Channel-1 Output Rating:	40Vdc, 1.75A Continuous	
Channel-2 Output Rating:	40Vdc, 1.75A Continuous	
Channel-3 Output Rating:	10Vdc, 0.75A Continuous	
Bluetooth Range:	Approximately 60m to 100m	
Ingress Rating, Enclosure:	IP-68 Typical	Typical based on 2weeks testing
Ingress Rating, Connectors:	IP-67 minimum	
Dimensions, L x W x H mm, in:	141 x 80 x 59mm, 5.6 x 3.2 x 2.3in	
Weight, kg, lb:	0.54kg, 1.2 lbs	
Storage Temperature:	-35°C to 80°C, -31°F to 176°F	
Operating Temperature:	-35°C to 55°C, -31°F to 131°F	

5. General Warranty

Hydro BioScience, LLC (HBS) warrants that the product will be free from defects in materials and workmanship for a period of 3 years (1 year for accessories) from the date of purchase of the product by the original purchaser from HBS. This warranty only applies to the original purchaser and is not transferable to the third party.

If the product proves defective during the warranty period, HBS either will repair the defective product without charge for parts and labor or will provide a replacement in exchange for the defective product. Parts, modules, and replacement products used by HBS for warranty work may be new or reconditioned like new performance. All replaced parts, modules and products become the property of HBS.

To obtain service under this warranty customer must notify HBS of the defect before the expiration of the warranty period. Customer shall be responsible for packaging and shipping the defective product to the service center designated by HBS, and with a copy of customer proof of purchase. Customer must ensure that an RMA (Return Material Authorization) number has been received from HBS. This RMA number must be printed on the outside of the return packaging.

This warranty shall not apply to any defect, failure or damage caused by improper use or improper or inadequate maintenance and care. HBS shall not be obligated to furnish service under this warranty:

- a) to repair damage resulting from attempts by personnel other than HBS representatives to install, repair or service the product;
- b) to repair damage resulting from improper use or connection to incompatible equipment;
- c) to repair any damage or malfunction caused by the use of non-HBS supplies;
- d) to service a product that has been modified or integrated with other products when the effect of such modification or integration increases the time or difficulty of servicing the product.

Please contact the nearest HBS's Sales and Service Offices for services. For better after-sales service, please visit www.hydro-bioscience.com and register the purchased product online. Warranty may also be requested online, along with obtaining an RMA, automatically.

Excepting the after-sales services provided in this summary or the applicable warranty statements, HBS will not offer any guarantee for maintenance declared or hinted, including but not limited to the implied guarantee for marketability and special-purpose acceptability. HBS should not take any responsibility for any indirect, special, or consequent damages.

For Customer Service, and to request an RMA or obtain Return Information, please call Hydro Bioscience, LLC at 888-500-5011.

For all returns, clearly mark the RMA # on the outside of the packaging and send to:

Hydro Bioscience, LLC
414 Century Court
Piney Flats, TN 37686
RMA Number: _____

