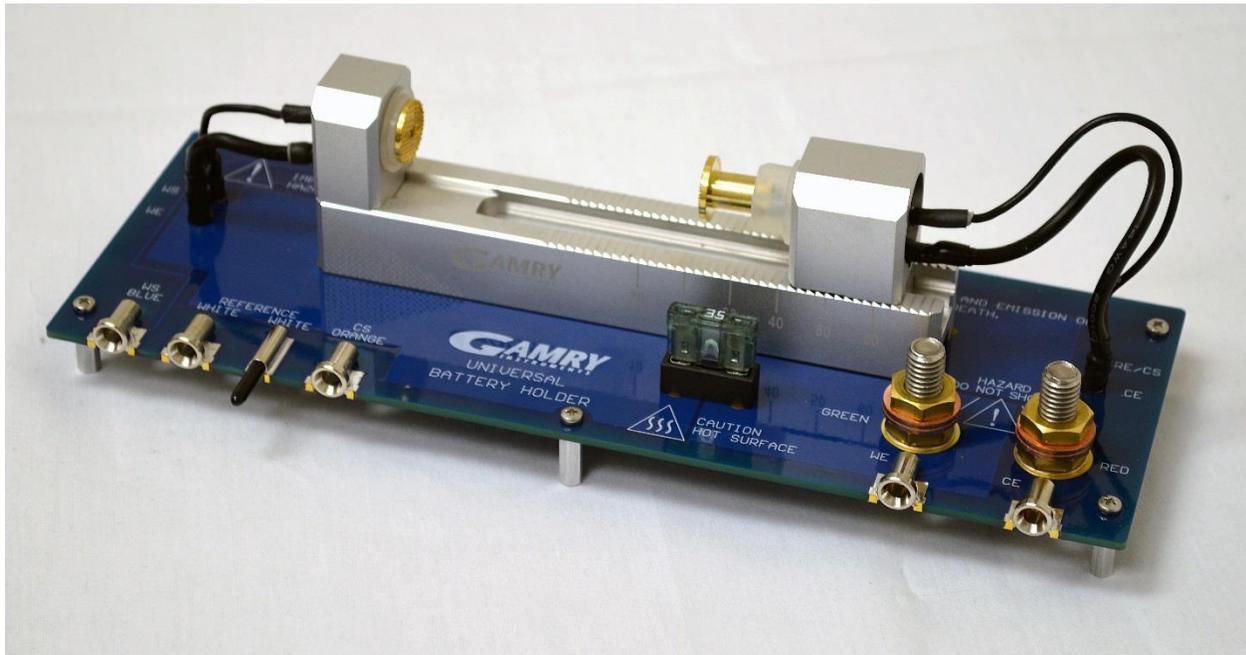




Universal Battery Holder

Operator's Manual



Copyright © 2018–2019 Gamry Instruments, Inc.
Revision 1.1
March 12, 2019
988-00068

Limited Warranty

Gamry Instruments, Inc. warrants to the original user of this product that it shall be free of defects resulting from faulty manufacture of the product or its components for a period of one year from the original shipment date of your purchase.

Gamry Instruments, Inc. makes no warranties regarding either the satisfactory performance of the cell kit or the fitness of the product for any particular purpose. The remedy for breach of this Limited Warranty shall be limited solely to repair or by replacement, as determined by Gamry Instruments, Inc., and shall not include other damages.

Gamry Instruments, Inc. reserves the right to make revisions to the product at any time without incurring any obligation to install same on systems previously purchased. All product specifications are subject to change without notice.

There are no warranties which extend beyond the description herein. This warranty is in lieu of, and excludes any and all other warranties or representations, expressed, implied or statutory, including merchantability and fitness, as well as any and all other obligations or liabilities of Gamry Instruments, Inc., including but not limited to, special or consequential damages.

This Limited Warranty gives you specific legal rights and you may have others which vary from state to state. Some states do not allow for the exclusion of incidental or consequential damages.

No person, firm, or corporation is authorized to assume for Gamry Instruments, Inc., any additional obligation or liability not expressly provided herein except in writing duly executed by an officer of Gamry Instruments, Inc.

If You Have Problems

Please visit our service and support page at www.gamry.com/service-support/.

This page contains information on installation, software updates, and training. It also contains links to the latest available documentation. If you are unable to locate the information you need from our website, you can contact us via form submission using the link provided on our website. Alternatively, you can call us using one of the telephone numbers listed below:

Tech support form	www.gamry.com/service-support/contact-technical-support/
Telephone	(215) 682-9330 9:00 AM–5:00 PM US Eastern Standard Time (877) 367-4267 Toll-free US & Canada Only

Replacement parts for this kit are available from Gamry Instruments, Inc. Optional parts may be available from Gamry Instruments, or from third-party vendors. Contact your local Gamry sales representative to discuss any special requirements or accessories that you need.

Disclaimer

The information in this manual has been carefully checked and is believed to be accurate as of the time of printing. However, Gamry Instruments, Inc. assumes no responsibility for errors that might appear.

Copyrights and Trademarks

Universal Battery Holder manual copyright © 2018 Gamry Instruments, Inc. Reference 600+ and 30k Booster are trademarks of Gamry Instruments, Inc.

No part of this document may be copied or reproduced in any form without the prior written consent of Gamry Instruments, Inc.

Table of Contents

Limited Warranty	i
If You Have Problems.....	ii
Disclaimer	ii
Copyrights and Trademarks	ii
Introduction.....	4
Placing the Battery in the Holder	4
Four-Point Contacts	5
Connecting the Universal Battery Holder to Instruments	5
General Gamry Instruments Potentiostats	5
Other Potentiostats.....	6
30k Booster	6
Heat-generation During Use	6
Fuse	6
Specifications.....	7
Index.....	8

Introduction

The Universal Battery Holder allows the researcher to connect a large variety of batteries, from coin-sized to larger cylindrical shapes, to Gamry Instruments' potentiostats. High currents, up to 30 A, may be passed through the battery holder, without danger of destroying the holder. The Universal Battery Holder allows four-point measurements, and is usable with all Gamry Instruments potentiostats, including the 30k Booster.

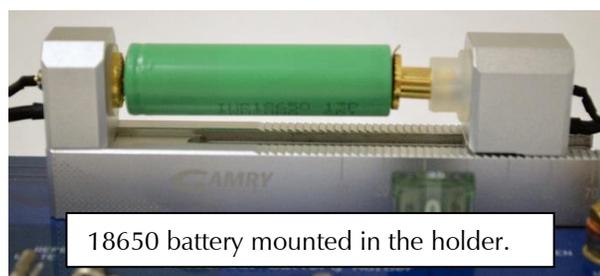
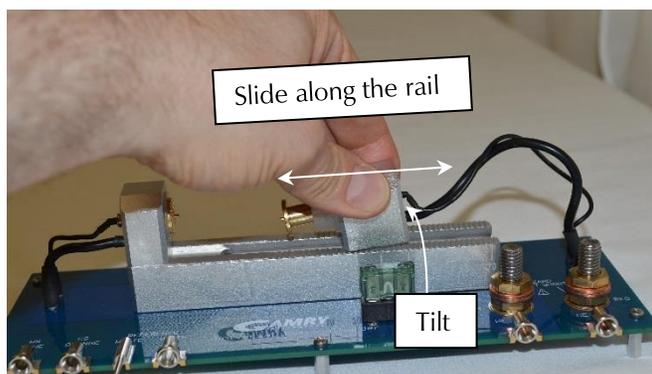


Warning: Improper operation creates a safety hazard which can lead to fire, explosion, and emission of hazardous chemicals, potentially causing severe damage, personal injury, or death. Gamry Instruments, Inc. is not responsible for battery failures caused by misuse of the equipment or defects in battery construction.

Placing the Battery in the Holder

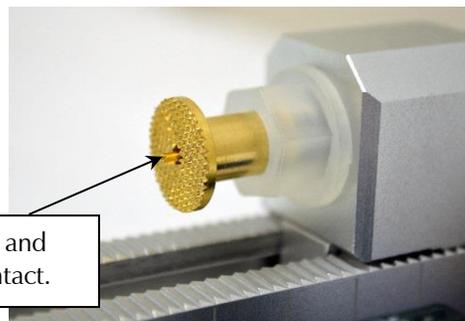
The Universal Battery Holder has a millimeter gauge for coarse adjustment of the battery contacts. Insert the battery. Tilt the moveable contact and slide it along the rail to the approximate length of the battery. The moveable contact is spring-loaded to ensure a firm contact with the battery. Common battery types that are compatible with the Universal Battery Holder are given in the table below. Many more batteries are compatible as well.

Battery Type	Length (mm)
CR2016	1.6
CR1220	2.0
CR2025	2.5
CR2325	2.5
CR2430	3.0
CR2032	3.2
CR2450	5.0
16340/CR123A	34
14500 Lithium AA	53
18650	65
26650	65
20700	70
21700	70



Four-Point Contacts

Each battery contact has two independent, insulated contact points: a patterned circular plate (current-carrying contact), and a projecting pin (the sense connector). These four contacts are used for four-point measurements.



The central pin is independent of and isolated from the surrounding contact.

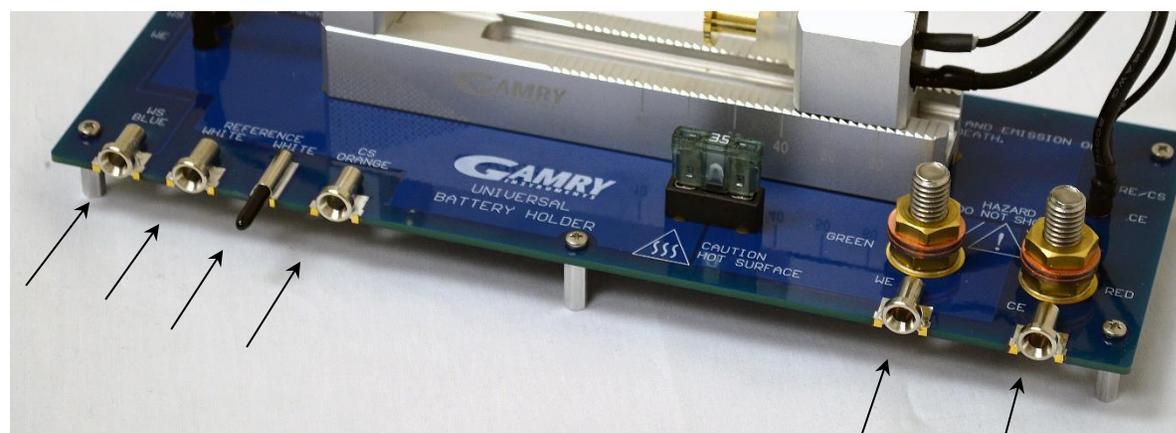
Connecting the Universal Battery Holder to Instruments

Be sure to follow the color-coding and labels for connecting the correct cables to your instrument.

Warning: Never short the WE (Working Electrode) and CE (Counter Electrode) connectors! Doing so can cause sparks, injury, and fire hazards.

General Gamry Instruments Potentiostats

Standard 4-mm banana-plug receptacles are mounted on the front edge of the holder to connect to your Potentiostat. A dual receptacle or pin connection is available for the reference electrode. Be sure to remove the plastic guard from the pin on the reference connection before use. For the Reference™ 600+ Potentiostat, we supply 4-mm-to-2-mm adapters.



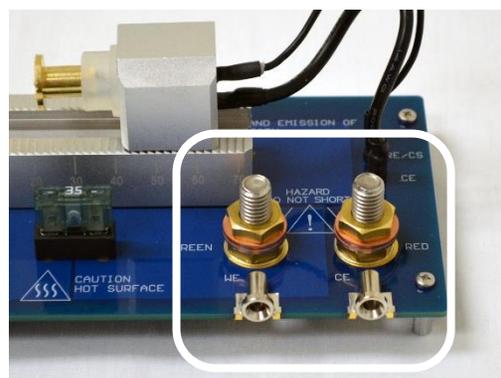
Warning: The reference banana plug is sharp and can cause injury. Be careful when connecting this pin to your cables. When it is not in use, always keep the plastic guard over the pin as a safety precaution.

Other Potentiostats

The Universal Battery Holder may be connected to potentiostats made by other manufacturers, but ensure that you follow the manufacturer's guidelines for connecting current-carrying cables (counter and working) as well as the sense leads (reference and working sense). Their color-coding of the cables may not follow our scheme.

30k Booster

The Universal Battery Holder is compatible with Gamry Instruments' 30k Booster™ for high-current work. Connect the Booster to the Holder via the threaded connections to the Working Electrode (WE) and Counter Electrode (CE). Place the Booster's connectors between the copper washers, and lock the connectors in place with the nuts. Use the M8 wrench (spanner) supplied with your 30k Booster to loosen and tighten the nuts.



 The M8 wrench is not included with the Universal Battery Holder.

Heat-generation During Use

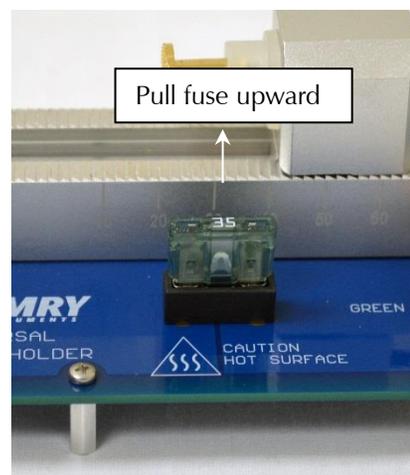
The battery, the area around the fuse, the fuse itself, and the battery holder can warm up, depending on the applied current.

Fuse

A 35 A fast-acting ATC blade fuse for automotive and low-voltage control circuits is mounted in the circuit with the Universal Battery Holder. Gamry Instruments' potentiostats and accessories are normally well-protected, and the fuse does limit the current flow in case the battery gets shorted. However, the fuse or other protection mechanisms cannot prevent batteries from catching fire or exploding. Smaller batteries such as coin cells have only a low current rating, and can easily burst. The fuse does not help prevent damage in this case.

If the fuse blows, remove the fuse by gently pulling upward out of the socket.

A spare fuse is included with the Universal Battery Holder. The fuse is a typical automobile type, and can be found in many shops that sell car parts.



Specifications

Maximum battery diameter:	28 mm
Maximum battery length:	84 mm
Minimum battery length:	1 mm
Width × Length × Height:	231 mm × 95 mm × 60 mm (9.10" × 3.75" × 2.36")
Weight:	450 g (1 lb.)
Maximum current rating:	30 A
Maximum operational temperature:	80°C (176°F)
Relative Humidity:	90% (non-condensing)
Storage and Shipping Temperature:	-40 to 75°C
Maximum Shipping acceleration:	30 G
Fuse	35 A Eaton BK/ATC-35, 32 V maximum

Index

30k Booster, ii, iii, 4, 6
banana plug, 5
battery types, 4
CE, 6
copper washers, 6
Counter Electrode, 6
four-point measurements, 4, 5
fuse, 6
M8 wrench, 6
millimeter gauge, 4
Problems, ii
rail, 4
reference electrode, 5
spare fuse, 6
specifications, iii, 7
Warranty, i
WE, 6
Working Electrode, 6