

# iPA DUAL BATTERY CHARGING CRADLE OPERATING MANUAL



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Document Issue	IR	Description of Document Change	Date	Edited By	Authorization
Rev A		Creation of document by Eng	16/05/2013		MJH
Rev B	IR11141 IR11200	Battery Charge Warning Implementation of new Kaelus format	21/11/2017	SR	TL

## Precautions



### **WARNING: ELECTRICAL HAZARD**

This unit charges a 25.9V Li-ion battery pack. The unit performs this charging with a supplied smart charger. This charger is supplied with a protective ground lead for AC supply safety reasons. To maintain this level of protection, the supply lead must always be connected to the supply via a socket with an earth contact.

Do not remove covers as there are no user serviceable parts inside.

### **GENERAL CONDITIONS OF USE**

This equipment should be protected from the ingress of liquids and precipitation such as rain and snow. The equipment must be operated indoors within the environmental conditions specified in Section 1.3. This equipment is not approved for use in hazardous atmospheres or medical applications.

### **WARRANTY**

Kaelus warrants all of its products<sup>1</sup> and services to be free from defects in material and workmanship for a period of 60 months from first receipt into customer store. The limit of liability under this warranty shall be to repair or replace any product, or part thereof, which proves to be defective after inspection by Kaelus provided that:

- The products are returned properly packed, carriage paid, to Kaelus or their agent or distributor, at the customer's risk within the warranty period
- An adequate description of fault conditions is included with the returned products
- The products have not been misused, mishandled, overloaded, modified or repaired in anyway, or used for any purpose other than that for which they were designed

Kaelus shall be responsible for one way freight charges, from Brisbane to customer store destinations within Australia.

Repair and replacement work carried out by Kaelus on products manufactured by them, shall be warranted against the same defects re-occurring in a period of 60 months, or until the expiration of the original product warranty, which ever shall be the latter.

Kaelus shall not be liable for any direct or consequential injury, loss or damage incurred through the use, or the inability to use, any Kaelus product. Kaelus reserves the right to make design changes to Kaelus product without incurring any obligation to make the same changes to previously purchased products.

<sup>1</sup> This Warranty does not apply: (a) to consumable parts, such as batteries or protective coatings that are designed to diminish over time, unless failure has occurred due to a defect in materials or workmanship; (b) to cosmetic damage, including but not limited to scratches, dents and broken plastic on ports; (c) to damage caused by use with another product; (d) to damage caused by accident, abuse, misuse, liquid contact, fire, earthquake or other external cause; (e) to damage caused by operating the Product outside published guidelines; (f) to damage caused by service (including upgrades and expansions) performed by anyone who is not a representative of Kaelus or a Kaelus Authorized Service Provider; (g) to a Kaelus Product that has been modified to alter functionality or capability without the written permission of Kaelus; (h) to defects caused by normal wear and tear or otherwise due to the normal aging of the Kaelus Product, or (i) if any serial number has been removed or defaced from the Kaelus Product.

### **UNPACKING**

Ensure that the total number of boxes of equipment is checked off against the delivery documentation. At the same time inspect for any obvious transit damage. Should any damage be noted, notify the carrier immediately to file a transit damage claim. Do not discard any packing material until notified by the carrier or Kaelus Carefully unpack all containers and check that all items listed on the delivery documentation. Please notify Kaelus of any damaged or missing items from the shipment.



**WARNING: BATTERY**

The iPA Battery Pack is fitted with a non user replaceable lithium-ion battery(Li-ion). Rechargeable Li-ion batteries contain organic solvents and reactive materials. Erroneous handling of Li-ion batteries may result in heat generation, explosion or fire, possibly leading to injury. Do not recharge batteries while inside an accessory or transport case. Do not charge in a moving vehicle. Do not operate or charge the equipment while inside an accessory or transport case.

Observe correct handling and disposal of Li-ion batteries.

## Table of Contents

<b>1.</b>	<b>Operating Instructions</b>	<b>6</b>
1.1	Introduction	6
1.2	Features	6
1.3	Specifications	6
<b>2.</b>	<b>Battery Charge Procedure</b>	<b>7</b>
2.1	Connection Procedure	7
<b>3.</b>	<b>LED Panel And Fault Condition</b>	<b>8</b>
3.1	Front Panel LED Display	8
<b>4.</b>	<b>General Detail</b>	<b>9</b>
4.1	Getting The Best From The Test Equipment	9
4.2	Safety Features	9
4.3	Handling And Transport	9
4.4	Cleaning The Equipment	10
4.5	Troubleshooting Guide	10
4.6	Declaration Of EC Compliance	10
4.7	End of Life Statement	11
4.8	Contacts	11

## List of Figures

Figure 1	R92-1979 Battery Charger	7
Figure 2	iPA Dual Battery Charging Cradle (R92-0443) (Battery Inserted)	7
Figure 3	Battery Charging Cradle Front Panel LED Display	8

# 1. Operating Instructions

## 1.1 Introduction

This operating manual is for the IPA Dual Battery Charging Cradle (R92-0443).

The charging cradle is available as an option and is intended to be used only with the Universal Smart Charger (R92-1979) supplied with the IPA Portable Intermodulation Test Set analyser.

The charger can house two batteries simultaneously, one in each slot but can only charge one battery at a time. If there is a battery in each slot the charger will automatically change to the next battery that needs charging.

## 1.2 Features

- The charger is designed only to charge authorized batteries with Li-ion chemistry.
- Other types of batteries may not charge or may damage the charger permanently.
- The charger must only be used in a well ventilated and dry area and not be exposed to extreme weather conditions.
- The charger is not suited for outdoor use.
- Care must be taken when charging batteries and they should not be left un-attended for long periods of time.
- Charging time is approximately 2.5 hours.
- It is recommended that the batteries are removed from the charger once fully charged
- Do not open or dismantle the charger.
- There are no service replacement parts inside the charger
- Return to authorized Kaelus service centre for repairs

## 1.3 Specifications

<b>Electrical</b>	
Battery Pack	25.9 VDC, 2500mAH Li-ion battery packs (removable)
Battery Charging Time	2.5 hrs min. to 80% charge per battery pack
Battery Charger	Output: 29.4 VDC, 1.2 Amp

<b>Mechanical</b>	
Dimensions	185 x 135 x 50mm
Weight	< 2kg
Cooling	Natural Convection

<b>Environmental</b>	
Max. Operating Temperature	0°C to +45°C (Operating) -10°C to +60°C (Storage)
Ingress Protection (IP)	IP54.
Relative Humidity	5% to 95% RH non-condensing
Mechanical Shock	40G shock/vibrating rating

## 2. Battery Charge Procedure

### 2.1 Connection Procedure

1. Connect the battery charger (R92-1979) to the charging cradle.
2. Now connect the battery charger to the mains supply.
3. Both the green LED's should flash alternately.
4. Insert a battery into any one slot. The LED corresponding to that slot will start to flash orange/YELLOW and the other LED will go out. The Charging Cradle is now charging the battery.
5. When the battery is fully charged, the LED will go solid green. The battery is now ready for use.
6. When a battery is inserted into each slot the charger will charge the battery first inserted and then automatically proceed to charging the battery in the second slot once the first battery is fully charged. If a fault condition is detected the charger will automatically start charging the next battery.



Figure 1 R92-1979 Battery Charger



Figure 2 iPA Dual Battery Charging Cradle (R92-0443) (Battery Inserted)

### 3. LED Panel And Fault Condition

#### 3.1 Front Panel LED Display



Figure 3 Battery Charging Cradle Front Panel LED Display

LED Indication	Description
Both LED's Flashing GREEN	Charger ready to accept battery for charge
One LED flashing ORANGE/YELLOW	Battery charging
One LED solid ORANGE/YELLOW	Battery in Standby, waiting to charge
One LED solid GREEN	Battery fully charged
Both LED's flashing ORANGE/YELLOW	Supply voltage to charger too low
Both LED's flashing RED	Supply voltage to charger too high
One LED flashing RED	Battery over/under temperature
LED solid RED	Battery fault detected
Both LED's off	No power to charger

Table 1 Condition of Front Panel LED's



## 4. General Detail

### 4.1 Getting The Best From The Test Equipment

There are a number of practices that will allow the best to be gained from the IM test system, especially for taking PIM measurements.

#### DC Connector Care

- Take good care of the DC battery connectors on the Cradle.
- Care should be taken when mating a battery to the connector of the Battery Cradle. Ensure the mating surfaces line-up correctly, and the connector couples smoothly. DO NOT force the battery into the Cradle.
- Ensure that the Battery pack and Cradle connectors are cleaned regularly as lack of cleanliness can cause connection problems

#### General Tips and Caution

- To start charging, connect the R92-1979 Charger to the Charging Cradle and then connect the R92-1979 Charger to the AC supply.
- When charging is complete be sure to remove the batteries from the Charging Cradle.
- When not charging, disconnect the charger from the AC supply.

### 4.2 Safety Features

There are several features to enhance the Charging Cradle's safety and prevent damage to the instrument. It is important that the operator is aware of these built-in features.

#### Auto-Charging Control

- The Charging current automatically turns off when the charge current drops below 200mA.
- If a second battery is inserted, the charger will automatically begin charging the next battery.

#### Fuses

- The R92-0443 iPA Battery Charging Cradle has a 2 Amp fuse on the internal DC bus to protect the internal circuitry.
- This fuse is not user-accessible or replaceable.

#### Battery Over-temperature shutdown

- When the battery temperature rises above 45 °C , the unit shows a battery over-temperature alarm (Red LED, see Table 1) and will stop charging.
- Charging will automatically restart when the Battery temperature drops below 42 °C.
- For lower temperatures the Battery Cradle will stop charging when the Battery temperature reaches 0°C and will automatically restart charging when the Battery temperature rises above 3°C.
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### 4.3 Handling And Transport

The equipment is designed for rugged handling, but it remains a precision instrument and should be handled with care.

- Do ship the equipment in a padded external box where possible
- Airfreight is allowed as there are no dangerous items contained within the Charging Cradle (but battery packs should be transported in accordance with Airline Company regulations).
- Transport via road freight is preferred to air freight due to care of handling

## 4.4 Cleaning The Equipment

Before commencing any cleaning, switch off the equipment.

- We recommend that the exterior surface of the Cradle case is cleaned using a soft cloth moistened in water.
- Do not use aerosol or liquid solvent cleaners.
- To prevent damage to the LED display panel, care should be taken not to scratch the surface during use and also when cleaning.
- To prevent the access of moisture and lint into the device, we recommend that the battery slot area should be cleaned by wiping with a slightly damp, lint-free cloth gently over the surface.

## 4.5 Troubleshooting Guide

If the remedies indicated in the chart below do not solve the problem, consult the manufacturer for further instructions.

### Power

#### No Power upon connecting R92-1979 Charger

- Check R92-1979 Charger DC and AC power cables.
- Check AC supply.
- If the above action does not fix the problem the Charging Cradle and Charger should both be returned to a Kaelus/ Summitek approved service facility.

### Operation


#### Cradle LED display showing a fault.

- Battery may be defective. Perform Charging test with another Battery pack.
- Charging Cradle may be defective. Perform Charging test with Battery pack in iPA.
- Consult Manufacturer.

## 4.6 Declaration Of EC Compliance

Hereby, Kaelus at 34 Corporate Drive, Cannon Hill QLD 4170, AUSTRALIA declares that the following products:

Part Number	Model Number	Description
R92-0443	R92-0443	iPA_Dual Battery Charging Cradle

bearing the “” marking first affixed in year 2013 is in compliance with the essential requirements of Directive 2004/108/EC (EMC Directive) and Directive 2006/95/EC (LVD Directive) if installed and operated in accordance with manufacturer’s instructions.

These products are in conformity with the following European, harmonized and published standards at the date of this declaration

Referenced EMC Standard	Referenced Safety Standard
EN 61326-1:2006	EN 61010-1
EN 61326-2-1:2006	
EN 55011 "Class A"	
EN 61000-4-2	
EN 61000-4-3	
EN 61000-4-4	
EN 61000-4-5	
EN 61000-4-6	
EN 61000-4-11	

The design, development and manufacturing of Kaelus products is controlled by an ISO 9001:2008 certified Quality Management System.

## 4.7 End of Life Statement

Equipment marked with the symbol below (Crossed Out Wheelie Bin) complies with the European Parliament and Council Directive 2002/96/EC (the "WEEE Directive") in the European Union.



Please contact your local Kaelus representative (see next section) at the end of the product's useful life to arrange its disposal in accordance with your local regulations.

## 4.8 Contacts

Kaelus has service center locations globally. Please visit <http://www.kaelus.com/Contact-Us/Locations/> to find the service center nearest you.

When ringing, ask for IM tester support (technical or otherwise) & quote the relevant part numbers.

Send feedback to: [info@Kaelus.com](mailto:info@Kaelus.com)