

FROMECO

SCALE AVIONICS LLC

Kiwi Regulator

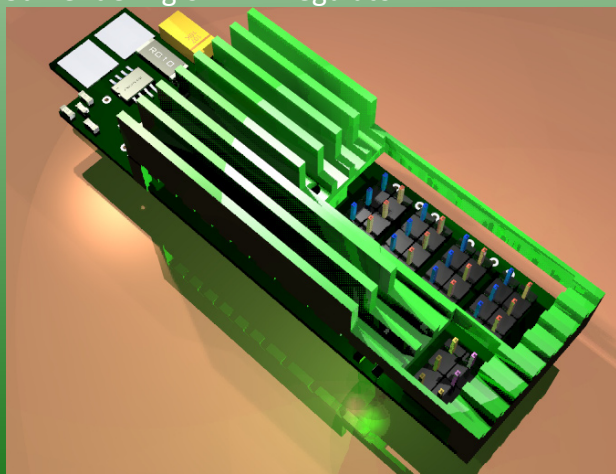


The Kiwi Regulator, born of Helicopter pilots who asked for a different kind of regulator.

What is a Kiwi? Kiwi are a small flightless birds, Kiwi are also a small sweet green fruit, Kiwi can also refer someone who calls home the country of New Zealand.

Now there is a Fromeco Kiwi. The Fromeco Kiwi is a pass through regulator. Designed specifically for Helicopter use, the Kiwi can also be thought of as a small power bus system.

3d Rendering of Kiwi Regulator.



KIWI BASICS?

The Kiwi regulators can be used in 2 different configurations.

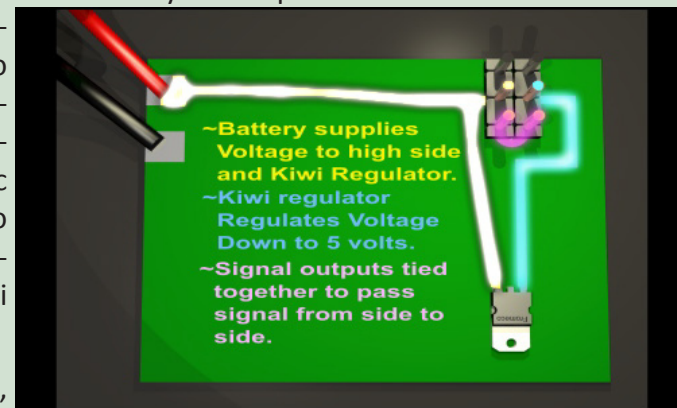
1. The Kiwi can be used to supply high performance servos such as the JR8717©* or Futaba BLS451©* with raw battery voltage, while still supplying *regulated* power back to the receiver for Gyro, Rudder servo, and all other support equipment.
2. The Kiwi can be used to supply raw battery voltage to a Receiver such as a spread spectrum unit while regulating power for the Gyro, Rudder servo, and support equipment connected directly to it.



** Running Servos such as the 8717 and BLS451 and others is not recommended or condoned by Fromeco, we do understand there are many pilots that use their servos in this capacity with great success. Pilots choosing to operate their servos at higher voltages for performance enhancement do so at their own risk. Please consult your servo instructions and specs. before you operate any servo at a higher than design voltage.*

THE BASICS ON HOW A KIWI OPERATES.

Below is a small video on the very basic operation of the Kiwi. This video is not physically accurate according to how the Kiwi is actually laid out electrically. The graphic was simplified to help users understand how the Kiwi works.



On the actual Kiwi, the pin out locations

are reversed, the ground is on the inside of the board towards the heat-sink, the regulated pin set is on the left, the high voltage pin set would be on the right, our signal wires are on the outside of the board. Again this video is for ease of understanding.

LAY OUT

Below you can see a 3D rendering of the actual layout on a Kiwi Regulator. This view simulates the Kiwi without a Heatsink installed.

You will notice that the Kiwi is a 4 channel unit, all 4 channels are capable of either regulating voltage or passing battery voltage straight through.

NOTE: Any single channel set, can only power one device. It can only either pass High Voltage or regulate to 5 volts.

Warning!

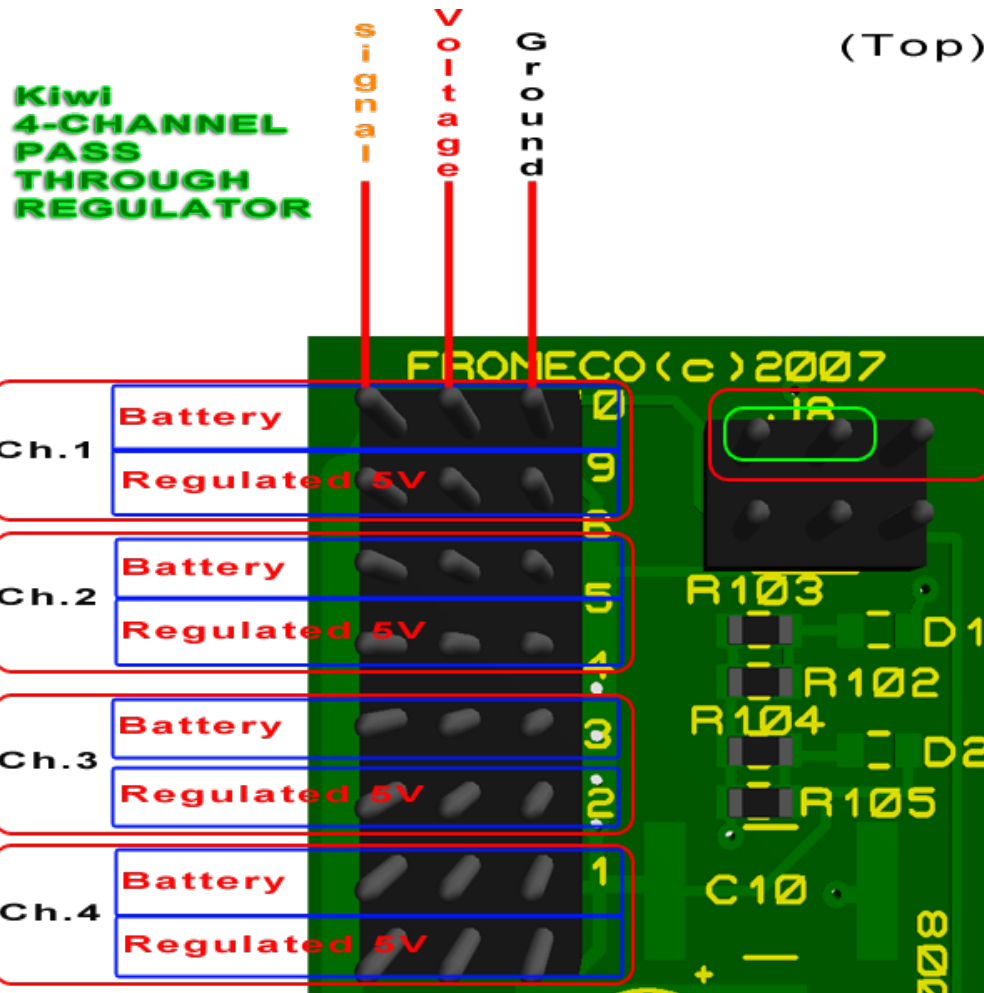
NOTE: Kiwi can either have "Battery" Voltage (high) routed back to the receiver, or Regulated voltage routed back to the receiver. It can not have both.

It is possible for the end user if not careful to mistakenly plug a jumper in from the Battery pin set on one channel of the RX, and a jumper from a Regulated pin set on another channel of the RX.

It is imperative that users understand this before hook up.

Please go to Page5 of this PDF document column 1 about volt meters, read and understand warnings!

Making this mistake on a Receiver not designed for higher voltages will cause almost certain failure instantly.

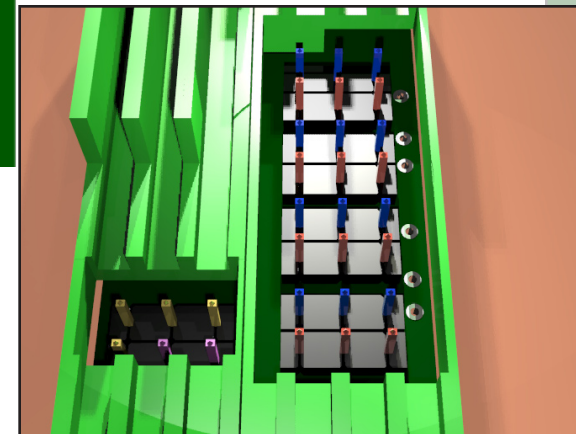


(Top)

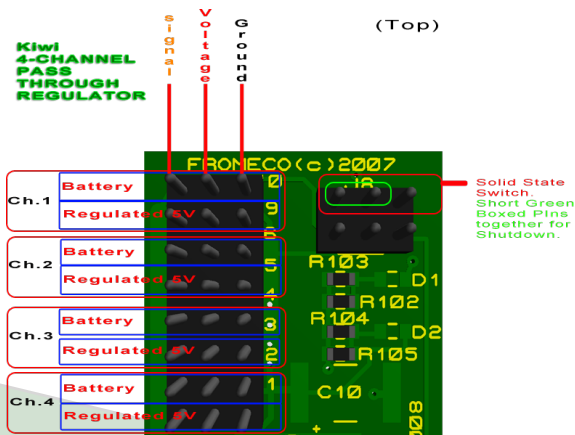
BUILT IN SWITCH

Every Kiwi is produced with ability to also be used as an ON/OFF switch. This can be done by either using the Fromeco Pin and Flag Switch, or a suitable replacement shorting type switch.

Solid State Switch.
Short Green Boxed Pins together for Shutdown.



Each Kiwi Channel is actually a set or pair of 2, 3 pin headers. This 3d rendering shows these channels "sets" spaced apart to give a better idea of how the channels are set up.



• *NOTE: Observe that the Signal (white or orange) lead for each male plug goes to the OUTSIDE (see diagram).*

- The topmost connection in each channel places full battery voltage on the center (red) wire.
- The bottom-most connection in each channel places a regulated 5 volt supply on the center (red) wire.
- The signal pins of both the top and bottom-most connections in each channel are linked together. This lets the signal from the receiver “pass through”, onto the connection with the regulated 5 volt supply.
- All voltages on all connections are switched OFF when the Solid State Switch pins are shorted together (see diagram). This can be done with a Fromeco Pin & Flag assembly, or a standard HD switch after its output wires are shorted together.
- A JR / Futaba Male to Male adapter jumper is provided for each channel, to link the KIWI to its receiver.

AN EXAMPLE WIRING SETUP FOR *RECEIVER HIGH VOLTAGE*:

A gyroscope RUDDER plugs into the REGULATED connector of KIWI CHANNEL 1.

A Male to Male (M/M) jumper plugs into the UNREGULATED connector of KIWI CHANNEL. (5 JR® M/M jumpers supplied with every Kiwi)

The other end of this M/M jumper plugs into the receiver port for the gyro RUDDER.

*NOTE: The receiver will be powered from the KIWI through the M/M plug, at **FULL BATTERY VOLTAGE**. The RUDDER SIGNAL will be passed back from the receiver, through the M/M jumper, and out of the KIWI CHANNEL 1 REGULATED connector. The 5 volt power is placed on the KIWI CHANNEL 1 REGULATED connector.*

A gyro GAIN plugs into the REGULATED connector of KIWI CHANNEL 2.

A M/M jumper plugs into the UNREGULATED connector of KIWI CHANNEL 2.

The other end of this M/M jumper plugs into the receiver port for the gyro GAIN.

Warning!

Please read all warnings associated with this set up. Warnings are on page5.

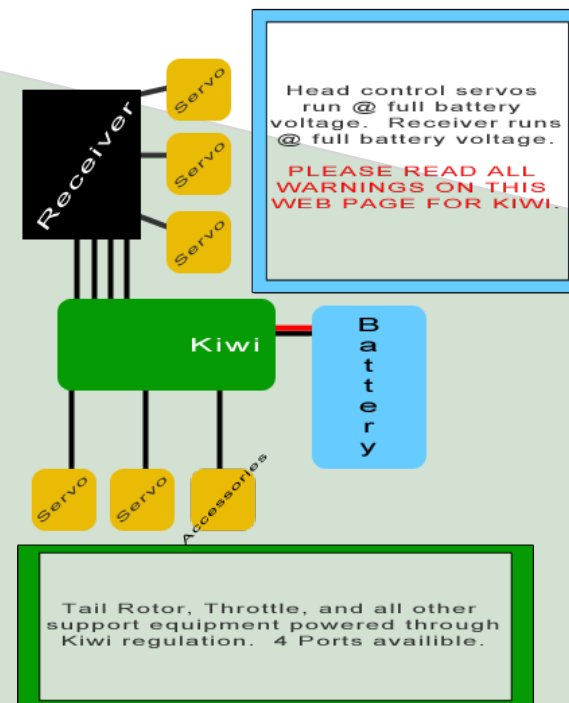
To the right there is a very basic flow diagram of the high voltage config.

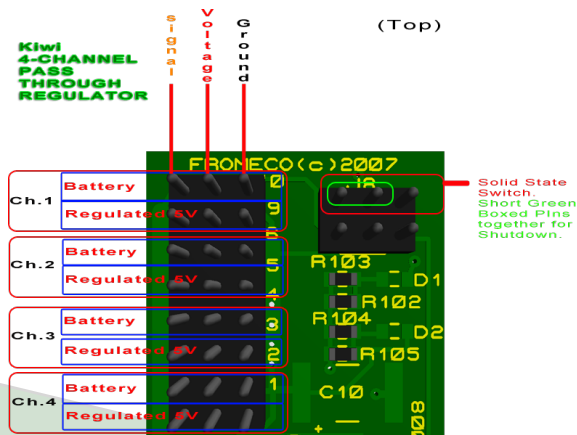
Receiver is powered directly from the battery unregulated via Kiwi. Head servos are connected directly to the Receiver.

Kiwi is passing receiver signal through pinned sets. *See video on first page.*

Gyro, Rudder, Throttle, Support electronics are being regulated by Kiwi.

High Voltage RX Set up





• *NOTE: Observe that the Signal (white or orange) lead for each male plug goes to the OUTSIDE (see diagram).*

- The topmost connection in each channel places full battery voltage on the center (red) wire.
- The bottom-most connection in each channel places a regulated 5 volt supply on the center (red) wire.
- The signal pins of both the top and bottom-most connections in each channel are linked together. This lets the signal from the receiver “pass through”, onto the connection with the regulated 5 volt supply.
- All voltages on all connections are switched OFF when the Solid State Switch pins are shorted together (see diagram). This can be done with a Fromeco Pin & Flag assembly, or a standard HD switch after its output wires are shorted together.
- A JR / Futaba Male to Male adapter jumper is provided for each channel, to link the KIWI to its receiver.

AN EXAMPLE WIRING SETUP FOR *RECEIVER LOW VOLTAGE*:

A Cyclic servo plugs into the UNREGULATED connector of KIWI CHANNEL 1.

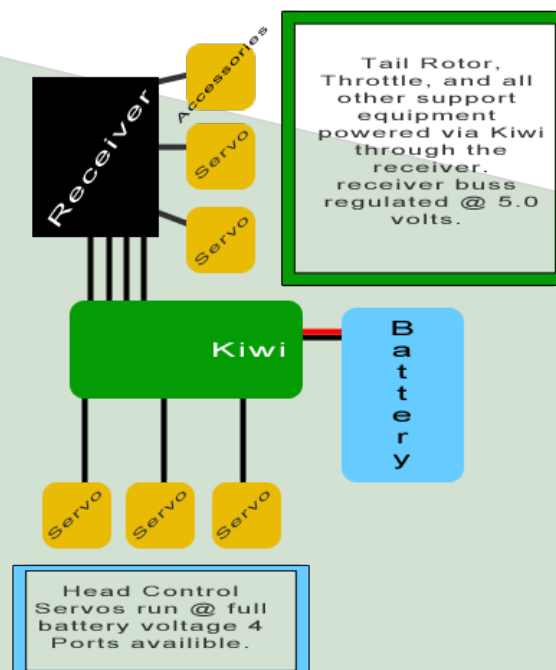
A Male to Male (M/M) jumper plugs into the REGULATED connector of KIWI CHANNEL 1. (5 JR® M/M jumpers supplied with every Kiwi)

The other end of this M/M jumper plugs into the receiver port for that Cyclic servo.

*NOTE: The receiver will be powered from the KIWI through the M/M plug, at *REGULATED 5VOLTS*. The Cyclic will be passed back from the receiver, through the M/M jumper, and out of the KIWI CHANNEL 1 UNREGULATED connector.*

The other 2 or 3 Cyclic servos would be connected in the same manner as that stated above.

Low Voltage RX Set up



To the right there is a very basic flow diagram of the low voltage config.


Receiver is powered directly from the Kiwi Regulated at 5 volts. Gyro, Rudder, Throttle, Support electronics are being regulated by Kiwi.

Head servos are connected directly to the Kiwi's unregulated ports.


Kiwi is passing receiver signal through pinned sets. *See video on first page.*

WARNINGS!


The Kiwi is a powerful unit when set up correctly. Please read these warnings CAREFULLY!

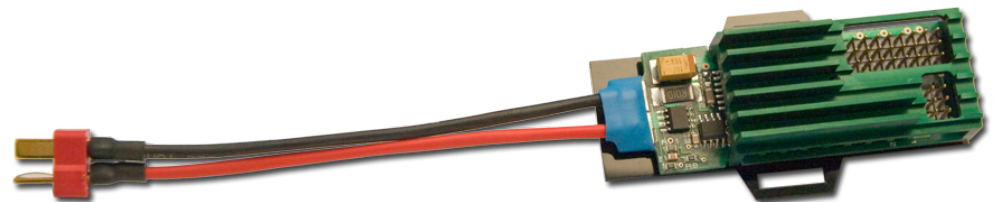
- Kiwi can easily be hooked up incorrectly. Because of this FROMECO recommends that you do not even buy a Kiwi unless you own a reliable device that is capable of measuring voltage. Such as Expanded Voltmeter, or accurate load checker, or an 8 Ball or like device. Every device hooked to a Kiwi **MUST** be measured for proper voltage before use.
- If Kiwi instructions are not followed closely end users can easily smoke their support equipment. This presentation is designed to help users interested in Kiwi understand how it is used and installed. Fromeco will **NOT** pay for, redeem, or replace any equipment that is  overvolted by a Kiwi with incorrect installation.
- The helicopter market has many different types of aftermarket support equipment like the Kiwi. All of this equipment has it's own ratings. Please, please be sure you read the specs on all of your equipment before you connect to the Kiwi's high voltage side. Failure to do so will most likely result in device failure. If that occurs please read bullet #2, and consider it a lesson learned.
- If you are confused by the installation of the Kiwi regulator you should not buy one, get an Arizona regulator instead. Kiwi's are for High performance pilots trying to eek out every last ounce of performance from their servos.
- Because Kiwi can easily be hooked up incorrectly. Please read the Fromeco Warranty at the bottom of the packaged instructions. Fromeco will stand FIRM on that WARRANTY when Kiwi regulators are involved.

SERVO WARNING!

- Fromeco Scale Avionics LLC does not recommend or condone the use of higher than specification voltage on any particular servo. Fromeco does understand that certain classes of high end servos are being used with great success at higher than specified voltages.
- Servos have specifications for a reason. A given servo may not fail when run at higher voltages, however pilots must consider basic electrical principles. Higher voltages will equal higher temperatures and increased wear on servo motors, mechanical parts, and electromechanical parts. This can  lead to decreased servo life and / or Failure.
- Pilots should not even attempt to use older class servos. Kiwi is designed to be run on the 8717 type class servos.
- On ground or in-flight failure of a servo being used in conjunction with a Kiwi should be viewed as trade off for servo performance or a lesson learned. Fromeco will **NOT** replace, redeem, or pay for any damage incurred.

RECEIVER WARNING!

- Fromeco Scale Avionics LLC does not recommend or condone the use of higher than specification voltage on any Receiver. Doing so will most likely result in instant Receiver failure. Unlike servos this is not something that should be tried to see if it works? If you do not know the rated voltage of your Receiver do **NOT** try to run it at battery voltages higher than 6 volts.
- Much of the  new spread spectrum equipment now available is rated for higher voltages. It is still up to the end user to ensure that they are using their equipment within its design specifications. Most non-spread spectrum equipment is **NOT** rated for higher voltages. Please be aware of this before you buy a Kiwi Regulator.



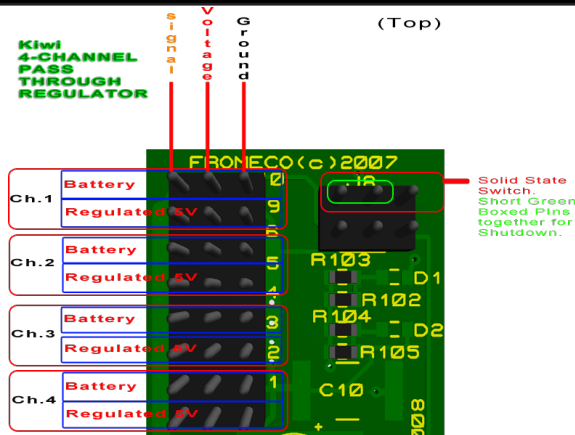
Kiwi Regulator

Warning!

Kiwi regulated channels must never be used to regulate Cyclic servos. Regulation whether it be at the RX or Kiwi is only for Gain, Rudder, Throttle, and Support Equipment.

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INSTRUCTIONS



DESCRIPTION:

A Kiwi has 4 channels. Each channel consists of 2 three-pin connections, into which a JR or Futaba male connector may be plugged in.

NOTE: Observe that the Signal (white or orange) lead for each male plug goes to the OUTSIDE (see diagram).

- The topmost connection in each channel places full battery voltage on the center (red) wire.
- The bottom-most connection in each channel places a regulated 5 volt supply on the center (red) wire.
- The signal pins of both the top and bottom-most connections in each channel are linked together. This lets the signal from the receiver "pass through", onto the connection with the regulated 5 volt supply.
- All voltages on all connections are switched OFF when the Solid State Switch pins are shorted together (see diagram). This can be done with a Fromeco Pin & Flag assembly, or a standard HD switch after its output wires are shorted together.
- A JR / Futaba Male to Male adapter jumper is provided for each channel, to link the Kiwi to its receiver.

WHAT YOU GET IN KIWI PACKAGE

- Kiwi Pass through regulator.
- Input connector to Kiwi.
- Delrin Mounting Plate
- 5 M/M JR/Z connector jumpers
- Pin & Flag does not come with Kiwi, must be purchased separately

AN EXAMPLE WIRING SETUP FOR RECEIVER LOW VOLTAGE:

A Cyclic servo plugs into the UNREGULATED (Battery) connector of KIWI CHANNEL 1.

A Male to Male (M/M) jumper plugs into the REGULATED connector of KIWI CHANNEL 1. (5 JR® M/M jumpers supplied with every Kiwi)

The other end of this M/M jumper plugs into the receiver port for that Cyclic servo.

NOTE: The receiver will be powered from the KIWI through the M/M plug, at **REGULATED 5VOLTS**. The Cyclic will be passed back from the receiver, through the M/M jumper, and out of the KIWI CHANNEL 1 UN-REGULATED connector.

The other 2 or 3 Cyclic servos would be connected in the same manner as that stated above.

AN EXAMPLE WIRING SETUP FOR RECEIVER HIGH VOLTAGE:

A gyroscope RUDDER plugs into the REGULATED connector of KIWI CHANNEL 1.

A Male to Male (M/M) jumper plugs into the UNREGULATED connector of KIWI CHANNEL 1. (5 JR® M/M jumpers supplied with every Kiwi)

The other end of this M/M jumper plugs into the receiver port for the gyro RUDDER.

NOTE: The receiver will be powered from the KIWI through the M/M plug, at **FULL BATTERY VOLTAGE**. The RUDDER SIGNAL will be passed back from the receiver, through the M/M jumper, and out of the KIWI CHANNEL 1 REGULATED connector. The 5 volt power is placed on the KIWI CHANNEL 1 REGULATED connector.

A gyro GAIN plugs into the REGULATED connector of KIWI CHANNEL 2.

A M/M jumper plugs into the UNREGULATED connector of KIWI CHANNEL 2.

The other end of this M/M jumper plugs into the receiver port for the gyro GAIN.

Fromeco Scale Avionics LLC® warrants that at the time of shipment and for a period of ninety (90) days thereafter the Product (Fromeco Scale Avionics LLC® (Kiwi)) shall conform to the functional description contained herein, and shall be free from defects in workmanship. If any defect within this warranty appears, the Purchaser shall notify FROMECO immediately. Buyer's sole and exclusive remedy in the event of a defect is expressly limited to (at Fromeco Scale Avionics LLC® sole election) correction of the defect by replacement or issuance of credit in the amount of the price of the Product, for any Product which proves defective within the above warranty. The foregoing warranties are the sole and exclusive warranties made by Fromeco Scale Avionics LLC®. THESE WARRANTIES ARE IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. In no event shall Fromeco Scale Avionics LLC® be liable to Purchaser, end user, or any other party or individual for any incidental, special or consequential damages of any nature that are or could be attributable to the product. Fromeco Scale Avionics LLC® maximum liability shall not exceed the purchase price of the Product under this agreement. Use of the Product by Purchaser shall constitute Purchaser's acceptance of these terms

If you have purchased this Kiwi from you Favorite Dealer, please visit www.fromeco.org Kiwi PDF before attempting to install this unit. Read and understand the warnings associated with using a Kiwi Regulator.