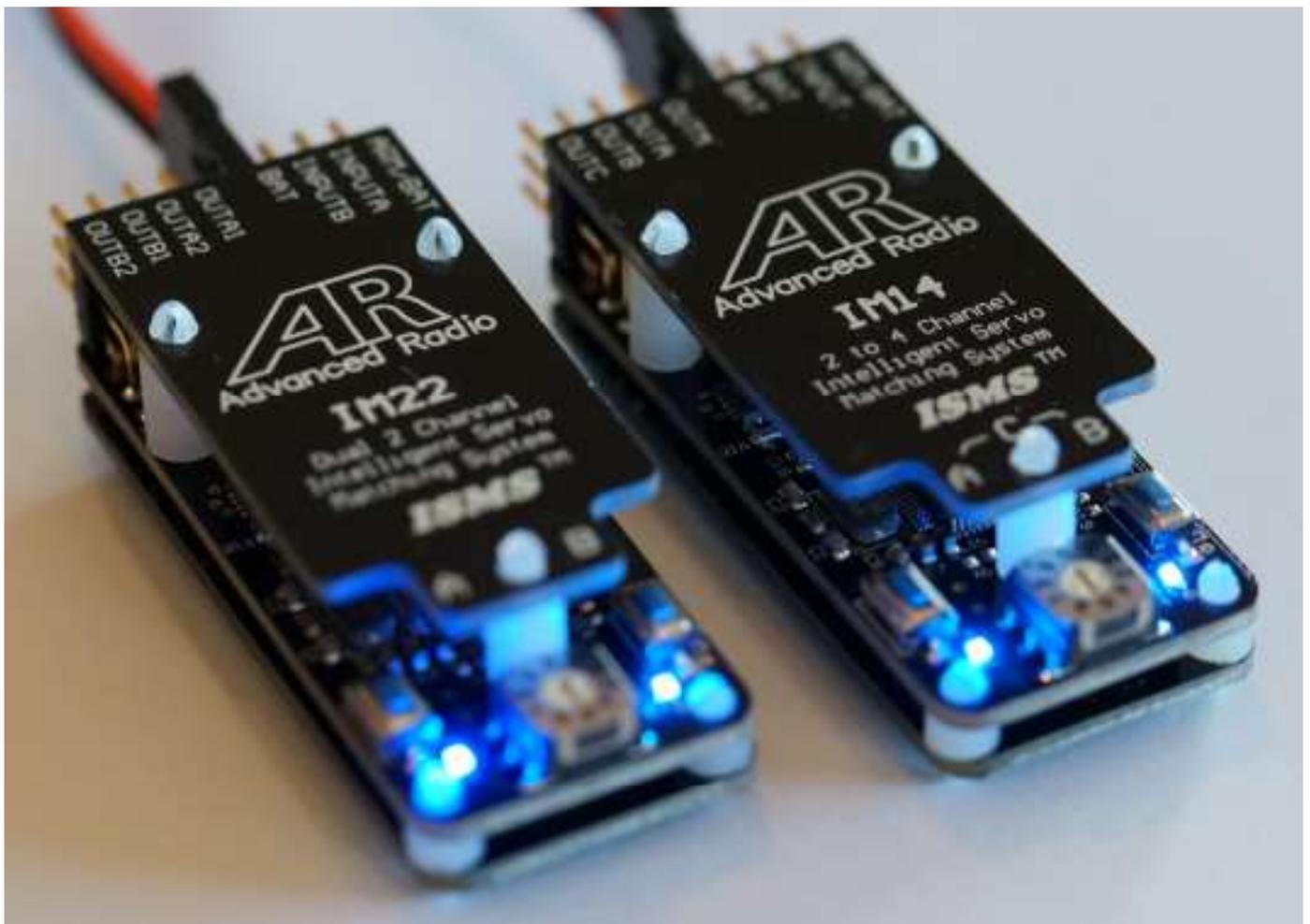


AR

Advanced Radio

*Intellimatch V2*TM



advanced-radio.com

Congratulations for choosing the Advanced Radio Intellimatch V2 Intelligent Servo Matching System (*ISMS™*). The worlds first automatic servo matching system by Advanced Radio.

Before you install Intellimatch V2 please take the time to read these instructions. A few simple steps will have you successfully using this product in no time at all.

Intellimatch V2 Features:

- **2 x 2 channels (IM22)** for matching 2 sets of dual servos.
- **1 x 4 channels (IM14)** for matching up to 4 servos on a single channel.
- **Slave servo centre and end points trimmable.**
- **Mismatched servo offsets trimmable.**
- **Realtime interpolation over 8192 steps.**
- **32 bit state-of-the-art microprocessor for ultra high resolution and frame speed.**
- **7msec resolution** - for ultra crisp professional response.
- **32 bit high speed processor** - 16 x the Pulse resolution available from any other servo system.
- **Ultra Light Weight** - Only 12grams, keeping your model ultra lite.
- **Gold plated connectors** - Highest conductivity possible and zero corrosion.
- **Compatible with all receivers and Power Distribution systems** - works with Advanced Radio AR1232 and AR824, Also compatible with all other receiver and Power Distribution systems.
- **Dimensions 53mm x 23mm (3.5 x 2.5 inches).**

DO'S and DON'TS

Your Advanced Radio Intellimatch V2 comes with a 32 bit micro-processor to give you the highest servo resolution available in RC servo resolution. Please note that to achieve the best possible resolution you will need to run Intellimatch V2 with high quality equipment. Intellimatch V2 is designed to work with high resolution digital servos.

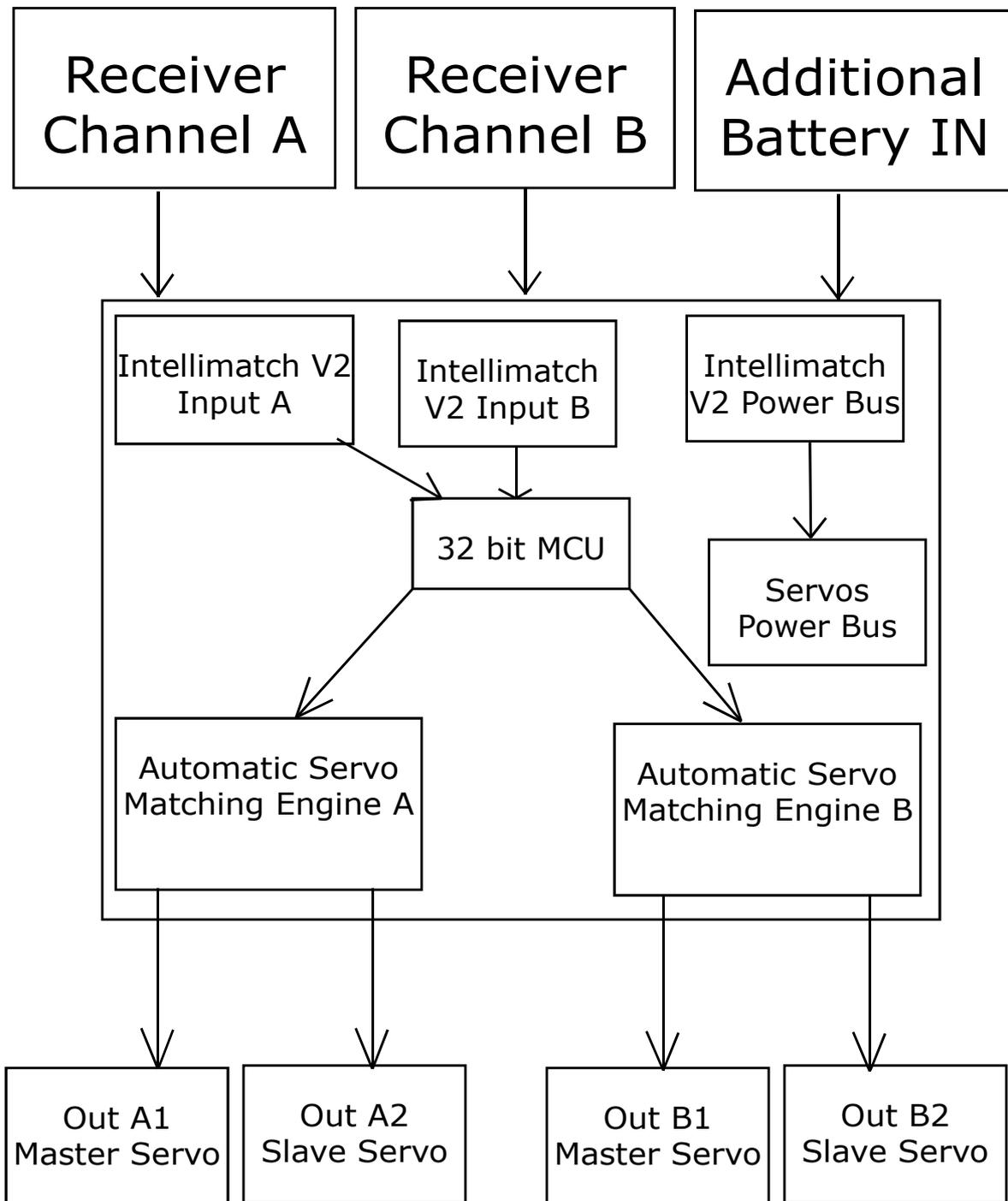
DO NOT USE Intellimatch V2 WITH LOW QUALITY DIGITAL OR ANALOG SERVOS. Servos will need to be capable of handling a frame rate of 7msec. Fortunately most modern quality servos will run happily with a 7 msec frame rate.

Intellimatch V2 comes with ability to offset slave servo center and end points so mechanical differences between servos and control surfaces can be pre adjusted prior to running the Intellimatch program. Servo can be re trimmed after Intellimatching if required for fine tuning. The subtrim feature will give you adjustment between the master and slave servos to bring servos into as close to perfect match prior to running the Intellimatch V2 automatic adjustment feature.

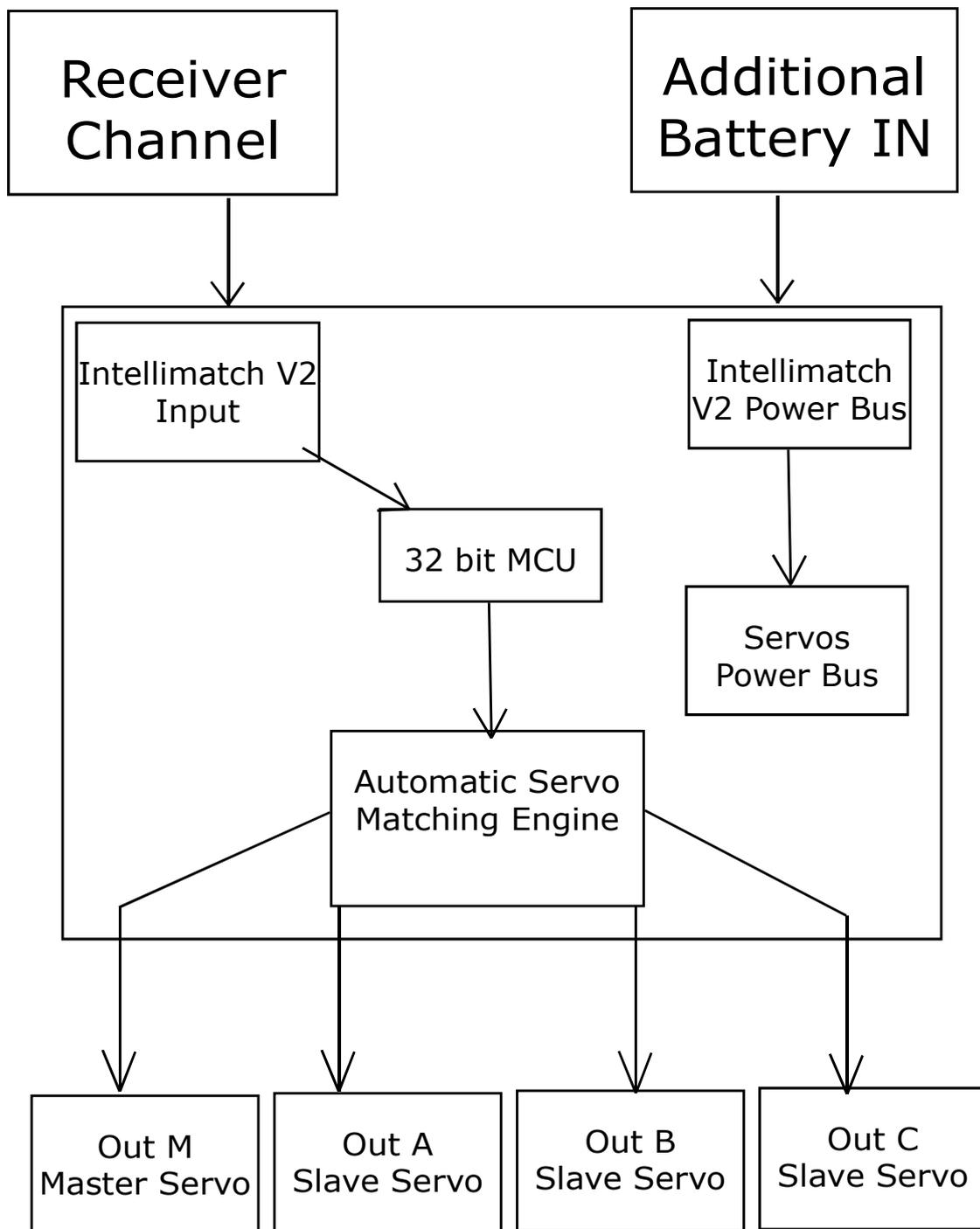
Intellimatch V2 has three modes of operation.

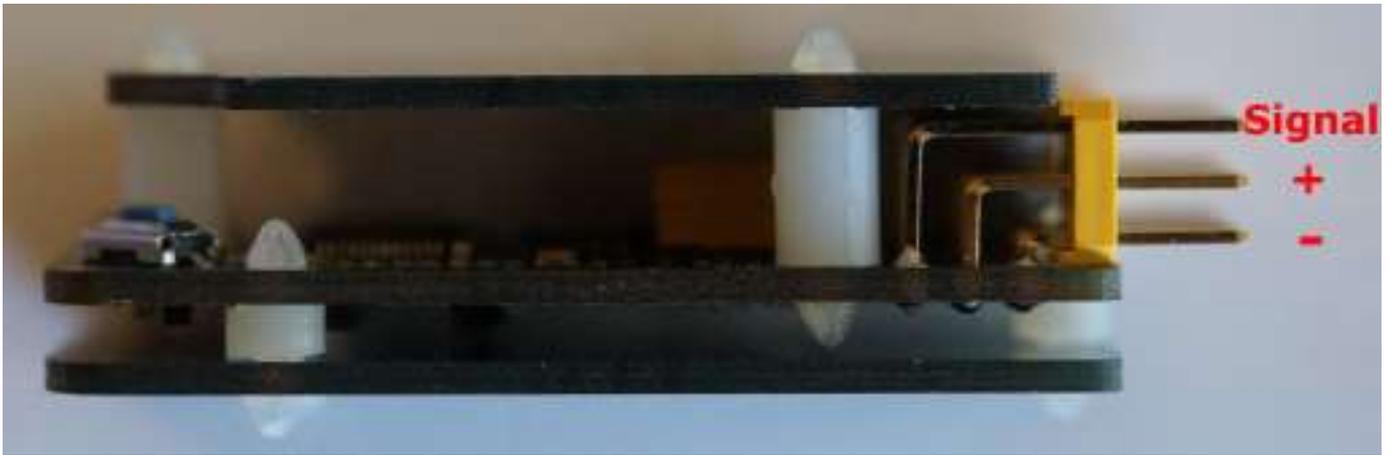
- 1) Run mode*** used for normal flying conditions.
- 2) Subtrim Mode*** - For adjusting servo and control surface differences prior to Intellimatching.
- 3) Intellimatch Mode*** - used for fine matching of servos. Intellimatch V2 is supplied with an arming plug which is used to set Intellimatch V2 into programming mode.

Typical Connection Example for IM22 dual twin servo matching system.



Typical Connection Example for IM14 quad servo matching system.





Lets get started with IM22 Servo Matching

Note: For the entire intelliimatch process, please ensure only 1 signal is connected to the intellimatch unit at any time. If both signals are connected you may see incorrect results.

Please take some time to understand how Intellimatch V2 works before mechanically ganging servos together. Doing so will give you a good experience when using this advanced technology.

We will take you through a trial run before attaching servos to the control surface so you can familiarise yourself with the Intellimatch V2 programming sequence. We will commence in normal RUN mode, SUBTRIM mode and then move to PROGRAMING mode.

Run Mode (arming plug disconnected)

1) Connect one of the single **master** servos to the “**OUTA1**” connector. The “**OUTA1**” connector will be the **master** servo in a dual servo setup. “**OUTA2**” is the slave servo for channel A. *We will only demonstrate using channel A for our example.*

2) Connect the desired receiver channel to the Intellimatch V2 “**INPUTA**” Connector.

3) Turn on your transmitter and receiver and move the appropriate transmitter stick for the receiver channel. You should see the master servo track as if it were Connected directly to the receiver on the selected channel. You will also notice the blue LEDs on the Intellimatch V2 glow on and off as you move the transmitter stick away from the centre position.

Note: if no movement is seen in the servos, please check servo connections in the system.

Programming Master Servo End Points.

All Giant Scale RC models require you to set surface maximum travel for the aileron, elevator or rudder or flaps etc.

Intellimatch V2 is pre-programmed with very small end points as a safety mechanism, so as to avoid overdriving the servos during the auto matching sequence.

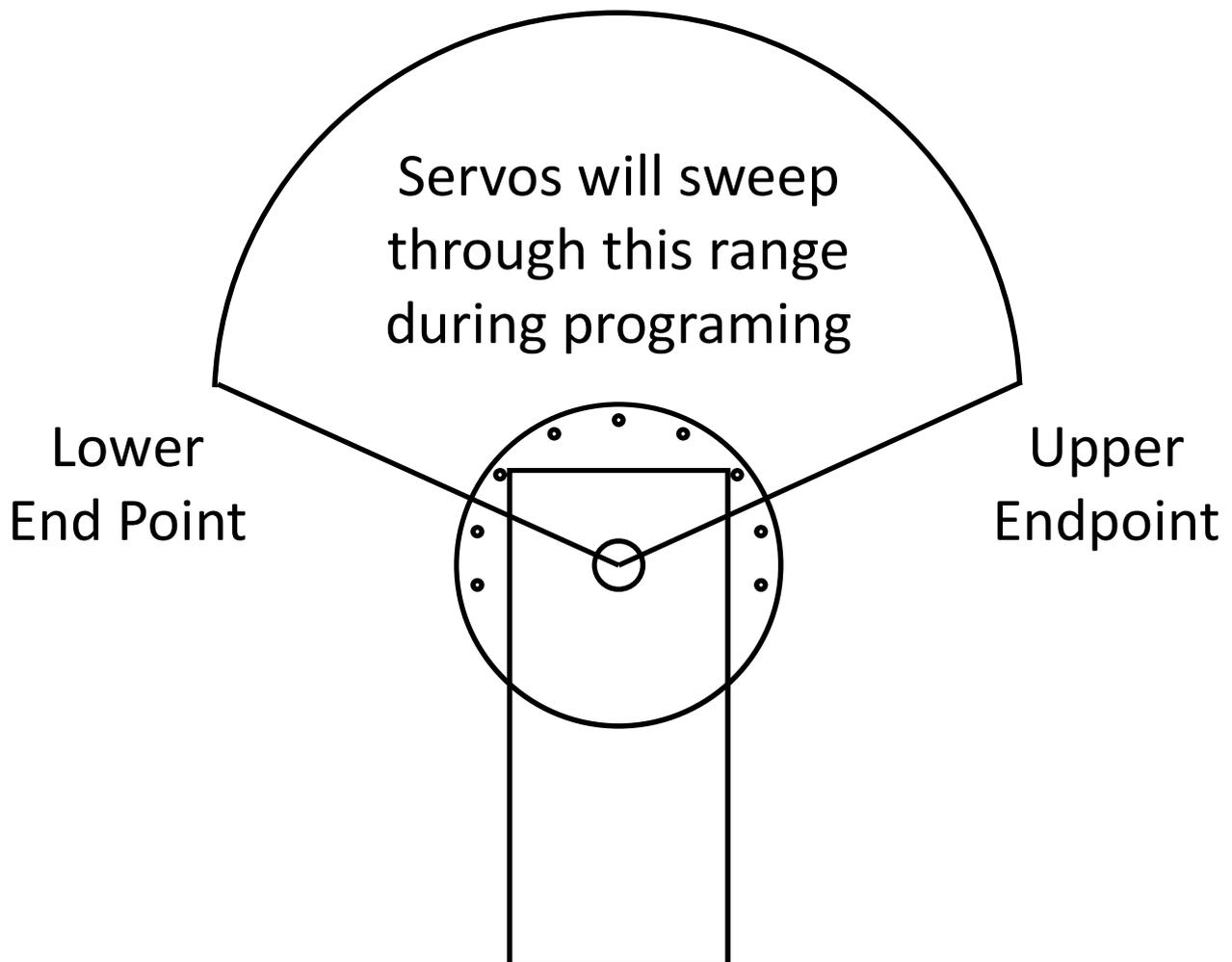
You will need to teach the Intellimatch V2 the control surface end points prior to auto matching.

Intellimatch V2 end point are only used during programming. In normal usage Intellimatch V2 uses the transmitter end points.



Setting Intellimatch V2 end points.

- 1) Set up the maximum servo travel for the master servo with your transmitter.
- 2) Move the transmitter stick to one of the maximum end points.



You should see one of the blue LEDs on the Intellimatch V2 light up. Press the corresponding button “A” or “B” associated with the lit LED. The LED will flash several times and while the LED is flashing the servo will hold the chosen position. This sequence indicates that Intellimatch V2 has stored your chosen value. You can repeat this process as many times as required to set larger or smaller values.

3) Move the control surface to the opposite maximum position. You should see the opposite LED light up. Press the corresponding “A” or “B” button associated with the glowing LED. The LED will flash several times and Intellimatch V2 will hold the chosen servo position. This sequence indicates that Intellimatch V2 has stored your chosen value.

4) Once you have set both end points Intellimatch V2 has been programmed for the maximum sweep of the servo and will only program between this sweep range.

Please note: The Intellimatch V2 end points are only used during Intelligent Servo Matching across your selected sweep range. In normal run mode Intellimatch V2 uses the transmitter end points for the servo sweep range.

IMPORTANT

Please ensure that you take time to get end points and maximum control surface travel correct. During programming Intellimatch V2 will move the master and slave servo to one end point and then cycle to the other end point. If the endpoints are incorrectly set at too large value then during Automatic matching you could over drive the servo and damage the servo and/or control surface.

Please re-read this section to make sure you understand why setting end points is important.

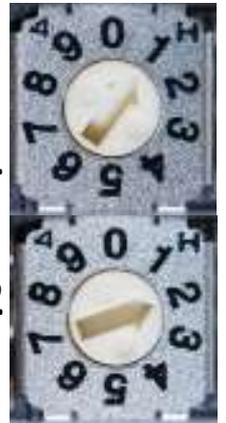
Center and Endpoint Subtrim Mode.

After setting the end point of the master servo you can connect a slave servo and check whether the slave servo requires subtrimming. Subtrimming is always done against the master servo. Intellimatch V2 comes with a 10 position rotary dial. To subtrim a slave servo you select position 1, 2 or 3 on the rotary dial. Leave the transmitter stick in the center and press button "A" or "B" to increase or decrease subtrim. Move the transmitter stick to a maximum endpoint and press button "A" or "B" to increase or decrease subtrim at this endpoint, repeat this for opposite maximum end point.

Subtrimming the IM22

Channel 1 Slave Servo Subtrim = Rotary Dial Position 1

Channel 2 Slave Servo Subtrim = Rotary Dial Position 2



Subtrimming the IM14

Slave Servo 1 Subtrim = Rotary Dial Position 1

Slave Servo 2 Subtrim = Rotary Dial Position 2

Slave Servo 3 Subtrim = Rotary Dial Position 2



IMPORTANT: After setting the subtrim of a slave servo to store the setting you must move the rotary dial back to the 0 zero position.



Intellimatch Mode.

Once you are happy with the master servo end points and subtrim we can do a trial run with programming the first slave servo. The trial run will help you get familiar with how Intellimatch V2 programmatically matches each servo.

Please Note: For first trial run, until you are familiar with the matching process, it is recommended that servos are “**not**” connected to aircraft control surfaces.

- 1) Plug the slave servo into the OUTA2 connector.
- 2) Once you have plugged in the slave servo, moving your transmitted stick should cause both the master and slave servo to travel together. If not please check connections and try again.

We are now ready to run the Intelligent Servo Matching System.

1) **Without turning off the power**, insert the arming plug into the ARM/BAT connector. This places Intellimatch V2 into Automatic Match Program mode where Intellimatch V2 will sweep between previously set master servo end points.

2) Press the “I” button under the channel “A” on the Intellimatch V2. The Blue LED associated with button “I” will light up and Intellimatch V2 will slowly sweep master and slave servos through the set end points programmed range and start intelligently matching the two servos. Sit back and enjoy the matching performance.

3) You will see the master servo move a small amount and the slave will hunt around the master position looking for the best

possible matched position. *Because this is a trial run and we do not have the master and slave mechanically connected then the optimum matching will not actually happen. For proper matching we will need to mechanically connect the master and slave servos.*

4) The matching will continue until both master and slave have swept through the 100 match points (approximately 3-5 minutes). When the matching is complete the Intellimatch V2 will return both servos to the center position between the selected endpoints and then shut the servos down.

5) The servos at this time should free wheel as if no power is applied or they may stay powered at the center position.

6) Remove the arming plug and cycle power. The servos for OUTA1 and OUTA2 are now matched and ready to use in normal flight mode.

7) Channel B is matched in exactly the same way as Channel A except you select Channel B by pressing the “B” button. You can repeat the matching of servos as many times as required.

Note: Please remove the signal wire from Input A and plug in a signal wire into Input N before repeating the above steps for channel B.

Once both input A and B have been intellimatch, please reconnect BOTH signal wires back into the intellimatch unit for RUN MODE.

Once you are familiar with how Intellimatch V2 works you can then connect the master and slave servo mechanically and run the Intellimatch V2 program. The final outcome will be a control surface that moves with minimal servo binding and buzz providing the maximum power output from both servos.

Lets get started with IM14 Servo Matching

IM14 Servo matching

The IM14 Intellimatch V2 unit is designed to match up to 4 servos. Usage examples of IM14 might be an aileron with 3 servos or a rudder system with 3 or 4 servos.

When you power up the IM14 both LEDs will sequentially flash four times. This identifies to the user that this is an IM14 device.

The matching of the IM14 follows the same procedure as matching the IM22 except that you repeat the matching sequence once for each slave servo. Matching is achieved starting with the master and first slave servo then second slave and if necessary third slave.

PLEASE READ “Programming Master Servo End Points” ON PAGE 7 AND “Subtrim Mode” on page 10 BEFORE USING THE IM14.

IM14 - Lets match the master and first slave servo.

- 1) Connect the master servo to Intellimatch V2 “OUTM” and set the desired endpoints for maximum control surface travel.
- 2) Teach Intellimatch V2 the travel range (see page 7). The master servo should track your stick movements.
- 3) Sub trim the slave servo (Page 10) if necessary.
- 4) Without powering down the Intellimatch V2, connect the first slave servo to “OUTA”.
- 5) Insert the arming plug into the “ARM/BAT” connector.
- 6) Press button “A” or “I”. Intellimatch V2 goes to work by sweeping the two servos to one of the end points and then tracks

through the servo range to the other end point.

7) After matching is complete Intellimatch V2 returns the servos to the center of the sweep range.

8) Disconnect the arming plug and cycle the power of the receiver and the Intellimatch V2.

IM14 - Lets match the master and second slave servo.

You should have the master and first slave servo matched before matching the second slave servo. The matching of each additional slave servo is performed as follows:

1) The master and first slave servo are already matched.

2) Connect the second slave servo to Intellimatch V2 "OUTB".

Power up the receiver and Teach Intellimatch V2 the travel range (see page 7). Sub trim the slave servo (Page 10) if necessary.

All three servos should track your stick movements.

3) Insert the arming plug into the "ARM/BAT" connector.

4) This time press button "B". Intellimatch V2 goes to work by sweeping all servos to one of the end points and then tracks though the servo range to the other end point. The second slave will hunt around the position of the master and first slave servo.

5) After matching is complete Intellimatch V2 returns the servos to the center of the sweep range.

6) Disconnect the arming plug and cycle the power of the receiver and the Intellimatch V2. Your triple servo setup is now matched.

IM14 - Lets match the master and third slave servo.

Matching the third slave servo is done exactly the same way as matching the second slave servo except you connect the third slave to the "OUTC" connector and start the Intelligent matching of the third slave by pressing buttons "A" and "B" together.

Additional Rotary Switch Reset features

For ultimate in flexibility the Intellimatch V2 comes with additional factory reset features so you can move IM22 and IM14 between different models or redo the Intellimatch algorithm.

Please Note: Reset features can only be activated with the Arming Plug Inserted and button "A" and "B" simultaneously pressed.

Reset Intellimatch and subtrim data for the IM22

Channel 1 Slave Servo Reset = Rotary set to Dial 4.
Arming Plug Inserted. Press button "A" and "B".

Channel 2 Slave Servo Reset = Rotary set to Dial 6.
Arming Plug Inserted. Press button "A" and "B".



Reset Intellimatch and subtrim for the IM14

Slave Servo 1 Reset = Rotary set to Dial 4.
Arming Plug Inserted. Press button "A" and "B".

Slave Servo 1 Reset = Rotary set to Dial 5.
Arming Plug Inserted. Press button "A" and "B".

Slave Servo 1 Reset = Rotary set to Dial 6.
Arming Plug Inserted. Press button "A" and "B".



Reset ALL Intellimatch and subtrim data to Factory

WARNING: this will reset all subtrim and Intellimatch data = Rotary set to Dial 7.
Arming Plug Inserted. Press button "A" and "B".



Intellimatch V2 IM22 and IM14

Specifications

- 2 x 2 automatic servo matching (IM22).
- 1 x 4 automatic servo matching (IM14).
- Subtrim on center and endpoints.
- 100 matched point across the servo sweep range with 8192 position real time interpolation across sweep range.
- PWM resolution of up to 8192 steps.
- Dual LED indication for programming feedback.
- Recommended battery chemistry - Life (2 cells), LiPo (2 cells), Lion (2 cells), NiCd(5cells),Nimh(5 cells).
- Maximum input voltage 8.9 volts.
- Minimum input voltage 5 volts.
- Compatible with all receivers and Power Distribution systems - works with Advanced Radio AR1232 and AR824, Also compaitble with all other receiver and Power Distribution systems.
- Dual internal fail safe program arming.
- Weight 12 grams.
- Dimensions 53mm x 23mm (3.6 x 2.5 inches).

12 Month Replacement Warranty

Advanced Radio will replace this product within 12 months if found to be defective in material and/or workmanship when used in the intended purpose. The warranty does not cover - Shipping charges related to any warranty claim. An over voltage or over current usage beyond stated specification. Damage due to system failure, negligence, abuse, accident, improper installation or freezing. Loss of time, inconvenience, loss of model, or other incidental or consequential damages.