# EVO-BASIC & BASIC+ Tx’s

Thank you for purchasing this Deltang based DSM2 Tx. They can be used with any DSM2 Receiver. When bonding, keep the Tx & Rx at least 1 x metre apart. All Tx’s can be used by Live Steam or Battery R/C Locos. Please read instructions thoroughly before use.

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BOTH HANDPIECES CAN BE USED WITH LIVE STEAM & BATTERY R/C LOCOS.

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**RCS EVO TX HANDPIECES ARE GUARANTEED FOR 1 YEAR.**

**BASIC OPERATING INSTRUCTIONS ON PAGES 2, 3, & 4 APPLY TO BOTH BASIC HANDPIECES.**

IF THE TX IS ACCIDENTALLY LEFT ON THE 9 VOLT BATTERY WILL GO FLAT, PLUS, WHEN REPLACING THE BATTERY, PLEASE PAY SPECIAL ATTENTION TO RE-CENTERING INSTRUCTIONS ON PAGE # 5.

WHEN BEING USED FOR BATTERY R/C, CH # 1 IS SET UP FOR CENTRE OFF ESC USE. IT MAY BE NECESSARY TO ADJUST THE CENTERING SO CH #1 CAN BE USED WITH A LOW OFF ESC SUCH AS AN # OMEGA-10. SEE PAGE # 5.

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**CAUTION**

DO NOT ATTEMPT TO ALTER THE TUNING OF THE RADIO EQUIPMENT. DO NOT USE RADIO CONTROL EQUIPMENT IN THUNDERSTORMS.

CHILDREN UNDER 12: ADULT SUPERVISION RECOMMENDED DURING USE. RCS TX & RX PRODUCTS MUST NOT BE USED FOR CONTROLLING RIDE ON LOCOMOTIVES CAPABLE OF CARRYING MEMBERS OF THE GENERAL PUBLIC.
PREPARING THE # EVO-BASIC

THESE INSTRUCTIONS REFER TO THE RCS # EVO-BASIC 2.4 GHz 3 CHANNEL R/C.

The procedures on pages 2, 3 & 4 apply to both # EVO-BASIC handpieces.

The small Reverser knob is on the Right. The Large Steam Regulator knob is on the Left. Top left is the ON – OFF switch with LED. Top right is the Bind/Ch # 5 pushbutton. Use for servo whistle.

1. “BINDING”.

The first procedure is to “BIND” the receiver (Rx) to the Transmitter (Tx). “BINDING” is accomplished by following a few simple steps below.

When binding we recommend unplugging the servos from the Rx in case they are not correctly adjusted. Adjust servo parameters after binding has taken place. **KEEP THE TX HANDPIECE AT LEAST ONE METRE FROM THE LOCO.**

**HOW TO “BIND” USING AN RCS # AB-EM or # AB-RA Auto Bind receiver.**

N.B. The R/C battery pack should be connected to the designated Batt - Bind terminal. That is next to Ch # 1.

1) The Tx must be OFF. Then provide power to the Rx unit. Brief flash. Then, after 8 seconds, Rx LED flashes quickly.
2) Ensure distance separation of 1 - 2 metres from receiver.
3) Then press & hold Bind button & turn the Tx ON. Rx LED’s will go out. Let Tx buttons go. Tx will flash slowly.
4) Then, after 10 seconds, the Rx will come back on for two flashes and then go solid on after another 5 seconds.
5) Solid LED light means binding is completed.
6) Turn Rx OFF then Back ON again.

If the Auto Bind Rx has been replaced with a Manual Bind Rx. Refer to the manual Bind Rx instructions for how to wire in lighting outputs and binding.

**# EVO-BASIC Directional Constant brightness lighting. RCS # AB-EM or # AB-RA Auto Bind RX’s do not have lighting outputs.** For Live Steam you can use an # MRW-SSLS R/C switch on Ch #3 as well as the Reverser servo. The Reverser knob controls both. For both LOW-OFF and CENTRE-OFF battery R/C locos, our new 100 Watt ESC’s have directional constant lights.

**# EVO-BASIC Sound Trigger.** There are two available for use with Ch # 5 when using a Low OFF or Centre OFF ESC. The # MRW-RSS single relay & # MRW-SSSS sound triggers control for LGB & other sound equipped locos.

**# EVO-BASIC+ Sound Triggers.** See page # 5 for information regarding the extra sound triggers.

**Cruise Control.** Depending on the Rx it is quite OK to turn the TX handpiece OFF and allow the loco to continue cruising at the set speed until the Tx handpiece is turned on again.

Be aware that when turning the Tx handpiece back ON, relinking can take a few seconds.
2. PREPARING FOR USE WITH LIVE STEAM LOCOS.

The procedures on pages 2, 3 & 4 apply to both # EVO-BASIC handpieces.

Channel # 1 & Ch # 3 are both 100% (90°) servo throw. This will suit most situations.

Turn the # EVO-BASIC handpiece ON. Make sure Rx is OFF. Then re-insert the servos into the correct Rx sockets. The valve gear servo goes in Ch # 3 (Elevator) socket. The regulator servo is controlled by Channel # 1 (Big knob).

N.B. Swapping the knobs & servo connections to have Left to RH one handed operation will also change the servo throws for Regulator and Reverser functions. See above.

Be careful selecting the correct terminal. They are marked on the front of the DSM2-Mini Rx.

HOW TO ADJUST SERVOS USING REGULAR DSM2 (AB) Rx’s. (See the instructions with our AB Rx’s).

When using for the first time make sure both knobs are centered. Both knobs have a centre détente.

VALVE GEAR REVERSER SERVO.

1.1. Then turn on the Live Steam loco Rx. The two servos should immediately snap to the neutral position.

1.2. Adjust the valve gear servo connecting rod to ensure the centre position of the valve gear matches the servo.

1.3. Turn the reverser knob slowly to the right Clockwise (CW) and check that the servo moves the valve gear to the forward position.

If it goes the wrong way you will need to reverse the mechanical connection. *

If the reverser knob wants to make the servo move too far, put the connecting rod into a servo arm hole closer to the middle of the servo arm. If it does not move far enough, move the rod into a hole further out.

N.B DO NOT FORCE THE SERVO AGAINST THE STOP. DOING SO WILL DAMAGE THE SERVO.

1.4. Turn the reverser knob slowly and carefully to the left Counter Clockwise (CCW). With regards to any possible mechanical changes you made during 1.3 above, it should perform correctly.

STEAM REGULATOR SERVO.

2.1. Turn the regulator knob to the left (CCW) the servo will rotate CCW and should close the steam regulator valve.

If it goes the wrong way, you will need to reverse the mechanical connection. *

If the large knob wants to make the servo move too far, i.e. over closing the regulator, put the connecting rod into a servo armhole closer to the middle of the servo arm. If it does not move far enough move the rod to a hole further out.

N.B DO NOT FORCE THE SERVO AGAINST THE STOP. DOING SO WILL DAMAGE THE SERVO.

2.2. Turn the large knob to the right to check the servo opens the steam regulator far enough.

* IF MECHANICALLY CHANGING THE SERVO CONNECTIONS IS NOT POSSIBLE, RCS HAS THE # SIG-REV TO REVERSE THE SERVO SIGNAL. ONE FOR EACH SERVO REQUIRING REVERSING

DRIVING LIVE STEAM LOCOS.

Make sure the Tx & Rx are both OFF and the regulator knob is fully CCW. This is the same as the throttle stick on a conventional stick R/C being fully down.

Ensure the reverser knob is in the middle. Turn ON the # EVO-BASIC hand piece, and then the loco. Once steam has been raised, select the direction of valve gear with the CH # 3 Reverser knob.

Then turn the regulator knob CW. That is like raising the throttle stick on a conventional stick R/C.

Turn the big knob CCW to slow the loco. All the way CCW will bring the loco to a stop.

You can have a faster stop by centering the reverser control knob. Then make sure regulator knob is also fully CCW.

The Bind button.

For Live Steam the Ch # 5 doubles as a whistle control with a servo. It starts at one extreme & when pressed goes fully the other way. It snaps back to the start point when released. For controlling a servo operated steam whistle. OR: For Battery R/C. When the Ch # 5 button is combined with a suitable R/C switch plugged into the Rx, the button can be used as a sound trigger. For example, the latest MyLocosound features a diesel engine START – STOP feature. Also suitable for controlling Kadee® servo uncoupler’s. May require a # SIG-REV as default direction is back to front.

LOW OFF NEUTRAL

SETTING THE VALVE GEAR FOR REVERSE.

TURN BIG KNOB CW TO INCREASE STEAM i.e. SPEED

OPEN REGULATOR TO SPEED UP.
4. USING THE # EVO-BASIC WITH A “CENTRE OFF” ESC.

The procedures on pages 2, 3 & 4 apply to both # EVO-BASIC handpieces.

The # EVO-BASIC is ideal for use with RCS CENTRE OFF ESC’s such as the COBRA-160 & COBRA-260 ESC’s. Before you switch the system on, make sure the large throttle knob is in neutral, i.e. at the centre “click”. For only one loco, the direction knob will not be used. It could be used for another Centre OFF ESC on Ch #3.

CENTRE OFF CONTROL.

FORWARDS - SPEEDING UP.
To select forwards direction, twist the knob from neutral slowly clockwise (CW) to the right.

SLOWING DOWN. Turn the knob back to the left (CCW) to set desired speed.

STOPPING. Completely stop the loco by bringing the knob back to neutral.

REVERSE - SPEEDING UP.
To select reverse direction, twist the knob slowly to the left (CCW).

SLOWING DOWN. Turn the small knob back to the right (CW) to set desired speed.

STOPPING. Completely stop the loco by bringing the small knob back to neutral.

SHUTTING DOWN. When you have finished operating, turn off the loco(s) before the TX.

If the loco runs backwards, we reverse the motor wiring to correct the direction and maintain the standard. The bind button also controls Ch # 5. You can add a servo for mechanical operation. EG a Kadee servo uncoupler. If the directional lights are incorrect, swap over the wiring to them so they match the loco speed and direction. Other than the # COBRA-160 RCS ESC’s have directional lights & at least one sound trigger on Channel # 5. The # COBRA-260 has constant brightness directional lighting outputs. See page # 7.

5. USING THE # EVO-BASIC WITH AN RCS “LOW OFF” ESC.

The # EVO-BASIC can be used with RCS LOW OFF ESC’s such as the new RCS # OMEGA-10. Operation is essentially the same as for Live Steam control. See page # 3 for pics and text.

This # EVO-BASIC hand piece is a 5 channel stick R/C in a smaller case and using only three channels. Make sure the large throttle knob is fully CCW (OFF) and small knob is centered before you switch the system on. Switch on the # EVO-BASIC first & then the ESC. (Unless binding)

1. The large knob controls channel # 1, the throttle. Make sure the knob is fully CCW before switching on. This is the same as the Channel # 1 stick being fully down.

2. The small knob is the same as a Ch # 3 elevator stick.

3. From neutral, set the small knob to the direction you want. CW for forwards.

N.B. When using the # OMEGA-10 the small knob is used to set both direction & rate of inertia.

4. Twist the large throttle knob to the right (CW) to accelerate.

5. To slow down twist the large knob to the left (CCW) until desired speed is reached.

6. To stop loco turn the large knob fully to the left (CCW).

7. To select reverse direction Then twist it again CCW.

To speed up, slow down & stop in reverse, repeat steps 4, 5, 6, & 7.

The # OMEGA-10 has constant brightness directional lighting outputs. See page 7.
USING THE #EVO-BASIC+

THESE INSTRUCTIONS REFER TO THE RCS # EVO-BASIC 2.4 GHz 4 CHANNEL R/C.
LAYOUT OF THE # EVO-BASIC TRANSMITTER HAND PIECE.

The case front is the same as # EVO-BASIC shown earlier. There are two extra pushbuttons on the end plate. The LH one is for one F2 trigger on Ch # 2. The RH one is for one F4 trigger on Ch # 4.

# EVO-BASIC handpiece. Read page # 2 for information on lighting and sound trigger functions using Ch # 5.

# EVO-BASIC+ for Live steam locomotives. The two extra buttons can use R/C switches that are able to operate electric motors for water pumps etc.

# EVO-BASIC+ for battery R/C locos the two extra pushbuttons on the end plate have 1 x trigger on Ch # 2 & one trigger on Ch # 4.
For LGB sound equipped locos use 2 x of the # MRW-RSS single relay switches.
For other electronic sound systems, the two pushbuttons operate the lower half of Ch # 2 and Ch # 4.
MyLocosound or Phoenix can use the solid state electronic # MRW-SSDS. This is a dual output R/C switch using one channel. Only half of the channel is available so you will need one for each sound trigger on the Ch # 2 (or Ch # 4) function buttons.
Use 2 x # SSDS for one trigger on each channel or 1 x SSQS for two triggers.

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CENTERING CH # 1 ON THE Tx HANDPIECE.
The following applies to all five DUAL USE handpieces.
The # EVO-BASIC battery will eventually go flat if left switched on. The operating program may be disrupted. The Ch # 1 centering on the # TX-1 system will need to be reset;

1.) **A Centre OFF ESC** on the Ch # 1 knob. Set big knob at the détente (click).
2.) **B Low OFF ESC** on the Ch # 1 knob. Set big knob slightly CW past the détente (click).
3.) Press the ON – OFF button to turn the # DU-Tx1 ON. LED light will come ON.
4.) Within 60 seconds, press and hold the bind button for 20 seconds.
5.) After 20 seconds the # DU-Tx1 ON – OFF LED light will go off.
6.) Release Bind button.
7.) LED light will come back ON. Centre reset is complete.

**ALWAYS COMPLETE THE ABOVE PROCEDURE WHEN REPLACING THE 9 VOLT BATTERY.**
CONNECTING SERVOS FOR # AB-EM & # AB-RA Rx’s

Three wire cable. Ensure plugs are correctly located. Orange/White wire towards top/front of RX.

SIDE VIEW OF # AB-EM RX.

SIDE VIEW OF # AB-RA RX

RX BATTERY PACK
Min = 4.4 volts
Max = 4.8 volts

N.B. The battery feed plug can go into any RX terminal when “binding”. Use Ch # 6 if “BINDER” is employed. Observe correct polarity.
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WIRING THE OMEGA-10 ESC by FOSWORKS.

HOW TO CONNECT BASIC POWER & LIGHTS.

When adding other features such as triggering sound systems, information and wiring examples will be provided with the add on's chosen.

Use the lighting outputs to control a # RELAY-1v3 or # RELAY-5v for easy wiring of USAT® and LGB® locos.

Use the simple # PnP-BATT kit for Aristo Craft® and Bachmann® locos fitted with PnP sockets.

A suitable fuse must be used for system protection. A 5 amp fast blow fuse should be used for most locos.

RCS installation kits are fitted with Polyswitch® solid state auto reset fuses.

Do not exceed 7 amps without checking with us. # OMEGA-10 for use up to 50 watts.

JST connectors are also supplied with most RCS Installation kits.

PAY PARTICULAR ATTENTION TO WIRING THE ESC DIRECTIONAL LIGHTS.

Three wire cable. Ensure plugs are correctly located.

Orange/White wire towards top/front of RX.

Be aware that auto bind Rx’s have a different servo pin layout.

SERVO LEADS FROM ESC
THREE WIRE W/WHITE TRACE SETS DIRECTION.
SINGLE WHITE WIRE CONTROLS SPEED.

WHITE & YELLOW WIRES GO TO FRONT & REAR ON THE ESC

RED WIRE GOES TO BATTERY +

POWER OUT TO THROTTLE & ACCESSORIES.

OFF - ON

BATTERY CONNECTION

FUSES
One Orange Polyswitch mean a 3 amp version
Two orange Polyswitches means a 6 amp version.
WIRING THE COBRA-260 ESC by FOSWORKS.

HOW TO CONNECT BASIC POWER & LIGHTS.

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PAY PARTICULAR ATTENTION TO WIRING THE ESC DIRECTIONAL LIGHTS.

Three wire cable. Ensure plugs are correctly located.

Orange/White wire towards top/front of RX.

Be aware that auto bind Rx’s have a different servo pin layout.

PAY PARTICULAR ATTENTION TO WIRING THE DIRECTIONAL LIGHTS.

WHITE & YELLOW WIRES GO TO FRONT & REAR ON THE # 260

The LED’s require current limiting resistors be fitted in line.

[Diagram showing wiring connections and LED’s]

WHITE & YELLOW WIRES GO TO FRONT & REAR ON THE # 260

[Diagram showing connections and LED’s]

RED WIRE GOES TO BATTERY +

[Diagram showing battery connection]

POWER OUT TO THROTTLE & ACCESSORIES.

FUSES

One Orange Polyswitch mean 3 amp version
Two orange Polyswitches means a 6 amp version.