

Tx22v2 Transmitter

User Information

Tx22v2 is a hand-held wireless transmitter intended to control up to 12 model railway trains. It has controls for Speed, Direction, Inertia, Lights and Loco selection. Tx22v2 is available in 2 versions: with and without a detent on the throttle control:

- the detent version has a mechanical 'click' at the centre of the travel and is intended for use with DT receivers configured for fwd/rev control on the throttle channel,
- the no-detent version is for use with receivers configured for full-range throttle and separate direction switch. When the Tx22v2 toggle switch is not used for direction, it is available for controlling auxiliary functions such as LED lights and sound modules.



Technology

- Tx22v2 uses the 2.4GHz band which requires no frequency channel control and is very resilient against interference. All radio frequency components are contained on the internal Tx2 module. There are no user adjustable parts on this module and it should not be modified.
- Tx22v2 is compatible with all DSM2 receivers. This includes all Deltang receivers.
- Any number of receivers can be bound to your Tx22v2 but only up to twelve, bound to different Selecta positions, should normally be switched on at a time to operate them independently. An exception to this rule is multi-headed trains – Deltang receivers support features (which required programming setup) to match the speed of separate locos in a multi-headed consist.
- Range is suitable for indoors and small outdoor sites; the outdoor free-air range to a Deltang receiver is at least 50m. Range indoors is affected by building construction materials, furniture, people and receiver installation.
- Knob and switch positions are transmitted as separate 'channels' (1-7) which must match the receiver configuration:
 - throttle: channel 1
 - selecta: channel 2
 - toggle switch: channel 3 (up or forward = channel high, down or reverse= channel low)
 - inertia: internal use or channel 4 or channel 5 (configurable)
 - bind button: channel 5 (none if inertia configured as channel 5) (up = channel high, down = channel low)

Battery

- Tx22v2 uses a PP3 9V battery, Alkaline, LiIon or NiMH. The maximum working voltage of the internal Tx2 module is 10V and there is a protection diode wired in series with the battery negative lead. This allows the battery voltage to be up to 10.7V. If the battery voltage is above this value, the internal regulator will shut down and the transmitter will not operate.
- Remove the sliding lid at the bottom rear of the case to insert or replace the battery. The image shows the orientation. The battery is held in place with a piece of foam tape attached to the battery compartment lid.
- Make sure that the power on/off button is off (up) before adding or removing a battery.
- The connector will only clip onto the battery one way. TAKE CARE, if force is needed, the connector is probably the wrong way round.



On / Off Push Button

- Tx22v2 has an illuminated push-button on/off switch. It is best to switch the transmitter on before the receiver.
- The LED flickers slightly while an Inertia transition is in progress.
- The LED flashes more boldly when Binding.

Speed / Throttle Knob

- 300° rotary control with 'centre click' (optionally available with no click)
- Full rotation is either 'low off' 0-100% motor control or 'centre off' (depends on receiver setup).
 - Use the program 1, 1, 2, 1, 3 to configure a Deltang receiver for full range throttle on channel 1 and direction control on channel 3 (the Tx22v2 toggle switch)
- The Throttle knob controls transmitter channel 1 and channel 6.

Direction Switch

- The Direction switch is used to select forward/reverse with receivers that have 'low off' motor control.
- The switch can control lights instead of direction with receivers that have 'centre off' motor control.
- The switch has a centre off position which is not used for Direction control, but useful when controlling lights.
- The Direction switch controls transmitter channel 3.

Inertia / Momentum / Brake Knob

- Inertia 'dampens' or slows down changes to Throttle (channel 1 and channel 6).
- The Throttle knob sets a 'target' and Inertia changes throttle slowly until it reaches that target. The LED flickers while a change is in progress.
- **To stop quickly Throttle and Inertia must be in the 'off' position.** Inertia is off when turned fully to the left.

Selecta

- This is a 12-way rotary switch with positions matching those of a clock.
- Allows 12 locos to be brought in and out of service without touching them (requires **Selecta** enabled receivers eg: Rx41d-22-v5, Rx6x-22 and Rx102). Receivers have a short delay when being brought into or out of control, this to avoid transient selection as the Selecta knob is moved; do not move any controls for 1-2 seconds after changing the Selecta switch position.
- The Selecta knob controls channel 2.

Bind Button

If a receiver has not previously been bound, it has to be 'paired' with the transmitter. Binding is only required once per receiver.

1. Choose the Tx22v2 Selecta switch position for the loco but don't switch the Tx22v2 on yet.
2. Put your receiver into Bind mode (if a Deltang receiver, switch it on and wait 20s for the LED to flash fast).
3. Press and hold the Bind push-button.
4. Switch the Tx22v2 on by pushing the Power button and then release the Bind button, the power LED will flash.
5. Binding is complete when the receiver LED stops flashing.

Once the transmitter is switched on, the Bind button, if pressed for less than 20s, acts as a simple switch controlling transmit channel 5. If the Bind button is pressed for more than 20s, it alters how the Inertia knob is used:

- if the Bind button is pressed for 20s or more within the first 60s of switching on, it will perform calibration of the throttle knob centre position
- if the Bind button is pressed for 20s or more **after** the first 60s of switching on, it will toggle what the Inertia pot is used for – Inertia or control of channel 5.

The default behaviour of the Inertia knob is to control throttle / brake inertia as described above. To toggle the Inertia knob function:

1. switch the Tx on and wait 90s without touching the Bind button
2. press and hold the Bind button
3. after 20s the power LED will go off for 2s and then come on for 3s; release the Bind button in this 3s to **toggle** the Inertia knob between controlling Inertia or controlling channel 4.
4. after a total of 25s (i.e. after the 3s of LED on) the power LED will go off and stay off until you release the Bind button; this causes the Inertia knob to control channel 5

5. repeat steps 1 to 3 to revert to the Inertia knob controlling throttle inertia.
- If the Inertia knob is being used for Inertia or channel 4, the Bind button controls channel 5 if pressed for less than 20s
 - If the Inertia knob is being used for channel 5, the Bind button has no effect on channel 5 but is still used for binding and toggling what the Inertia pot is used for.

Receiver Programming with Tx22v2

Deltang receivers may be programmed using Tx22v2. The receivers have a rich set of functionality which is not possible to describe here, refer to the Deltang web site at www.deltang.co.uk for details on programming sequences for a specific receiver. Please contact Micron if this table looks too daunting and we will send you specific programming instructions for the function you want to change.

The receiver must first be put into programming mode and then the Tx22v2 toggle switch is used to enter a programming sequence. There are 2 methods of getting a receiver into programming mode:

1. place the controls for R/C channels 2 and 4 at the extreme positions and then switch receiver on, or
2. switch receiver on and enter the morse code SOS using the bind button (R/C channel 5)

Method 1 works for all Deltang receivers, method 2 works only for Rx6 types and Rx47.

Method 1 (chan 2 and 4)

1. switch Tx22v2 on, receiver off
2. set the Inertia knob to control channel 4 (described above).
3. rotate the channel 2 (Selecta) and channel 4 (Inertia) knobs fully left or right (not centred).
4. centre the channel 3 (Direction) toggle switch.
5. put channel 1 (Throttle) in the 'off' position.
6. switch the receiver on.
7. the receiver LED will flash rapidly
8. centre the Selecta and Inertia knobs
9. the receiver LED will flash once, pause and repeat

Method 2 (SOS)

1. switch the Tx22v2 on and then the receiver, receiver LED must be lit
2. centre the toggle switch
3. wait at least 5 seconds without touching any transmitter control
4. tap out the morse SOS (... --- ...) on the bind button where:
 - a dot is a short press of less than 0.7 second
 - a dash is a long press of about 2 seconds
 - pauses between dots or dashes is about 1 second
5. if the SOS is accepted, the receiver LED will flash once, pause and repeat
6. if the SOS was not accepted go back to step 3

To enter a receiver program sequence

The Tx22v2 toggle switch is used to enter the value for each level of the sequence, the receiver LED flashes to show the digit value. For example, the sequence to set Rx60 output P3 to on/off latching and operated by the bind button is 3 3 2 5 1.

Decoding this sequence gives:

Level	Value	Explanation
1	3	Programming table menu 3
2	3	Rx60 output P3
3	2	on/off latching
4	5	channel 5 = bind button

5	1	start at 0V, toggle between 0V and 3.3V each time the bind button is pressed (channel 5 goes low)
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As each programming level is entered, the receiver flashes to show the value, pauses and then repeats the flash count. The initial 1-flash after entering programming mode is for menu 1 which is the motor speed control.

- press the toggle switch down (position B) and back to centre to increment the number of LED flashes for the current program level
 - each level has a maximum value, the flash count wraps to 1
 - if the current flash count is 4 and you need 2, you have to increment to the max, increment again to get to 1 and then again to get to 2
- press the toggle switch up (position A) and back to centre to save the LED flash count for the current level and move on to the next program level
 - when all programming levels have been entered, the receiver LED will light solid and the receiver will exit programming mode

The receiver LED will flash rapidly as the toggle switch is pressed down or up and will return to slow flashing (or solid if at the end of a sequence) when the toggle switch is returned to centre.

If at any point in the sequence, you think you have made a mistake – switch the receiver off and start again.

To enter multiple programming sequences, each one requires the receiver to first be put into programming mode.