



# RX-101 Receiver

# PRODUCT MANUAL

The RX-101 Tracking Receiver is an complete 22 Hz and Acoustic (Geophone) tracking solution. No need for a separate geophone amplifier, as one is built in!

## Controls:

### Geophone Amp Output

1/8" (2.5mm) stereo

### Geophone Amp Input

1/8" (2.5mm) mono



### External Wand Antenna Input

(Disables Internal Antenna when Plugged In)

### Transmitter Signal Strength Bar

Displays Received Transmitter Signal and Noise Strength (Matches Meter)

### 22 Hz Detect Lights

Lit when Receiver Detects a 22 Hz Transmitter Signal

### Low Battery Light

Flashes when Batteries Need Replacing

### Code Detect Lights

Lit when Receiver Detects a Coded Transmitter Signal

### Transmitter Signal Meter

Displays Received Transmitter Signal and Noise Strength (Matches Bar)

### Geophone Signal Bar

Displays Geophone Signal

### Transmitter Signal Gain Knob

Use to Adjust Receiver Gain (Both Internal and Wand Antenna)

### Geophone Gain Knob

Use to Adjust Geophone Volume

### Power Button

Hold to Turn Receiver Power On or Off (Light Above Shows On or Off)

### Buzzer Button

Hold to Turn 22 Hz Signal Detect Buzzer On or Off (Light Above Shows On or Off)



### Battery Holders

Twist Caps to Replace Batteries  
Left – 2 x C Cell Alkaline  
Right – 3 x C Cell Alkaline  
Replace All at the Same Time



### Operation:

#### **Install batteries or replace if low.**

- Open the battery compartments (twist open and closed) and install 5 C Cell Alkaline batteries. Never mix old and new batteries, as this can cause batteries to leak and damage the Receiver.

#### **Turn on the Receiver.**

- Hold the Power button down until the Receiver turns on.
- The Receiver should briefly indicate a signal on all the bars and meters, and you may hear the buzzer briefly. This is normal.
- If the batteries are low, the Low Battery light will flash. If the batteries are completely discharged, the Receiver may not turn on.

#### **Connect a geophone if desired for acoustic tracking.**

- If desired, plug in a geophone for acoustic tracking. Use the Input From Geophone jack. Any geophone (with or without extension cable) with a 2.5mm (1/8") mono jack will work.
- Connect headphones to the Sound Output jack, or use a 2.5 mm 1.8" cable to connect the output of the geophone amplifier to an audio input in a vehicle, an FM transmitter, or other device.

#### **Connect an external wand antenna if desired.**

- This will disable the onboard internal antenna.
- An external wand antenna has greater range, and sensitivity to both signal and some noise. It is often used when waiting at a passage point for a pig with a transmitter to pass.
- It can also be used to detect a weak transmitter through heavy cover or thick walled pipe (for example, in a heavy walled trap).
- The internal antenna is often used when walking the pipeline to locate a stuck pig, or locating its exact position when stopped in the pipeline or in a trap.

#### **Adjust gains as needed.**

- Use the geophone and signal gain knobs to adjust the gain of both the geophone amplifier and the received transmitter signals.
- Adjusting the gains so that the background noise is just visible on the meters or audible gives good results.

#### **Turn Buzzer on and off as desired.**

- The buzzer sounds when a 22 Hz signal is detected.
- Hold the buzzer on/off button to turn it on or off. The light above the button will be lit if the buzzer is on.

### Tracking with the RX-101:

#### 22 Hz Pulse, Continuous, and Coded Transmitters

- Pulsed transmitters will show a pulsing signal on the signal meter and bar display.
- Continuous signals will show a steady signal on the meter and displays.
- Ambient noise will at times be picked up by the receiver.
- When the receiver detects a 22 Hz signal, or a coded transmitter signal, it will light up the Signal Detect light, or the corresponding Code lights (A, B or C).

#### Pig Passing by Stationary Receiver / Antenna

- If the antenna is parallel and above the pipeline, the transmitter signal should peak when it is directly below the antenna.
- A rising and then falling pulsing or continuous signal indicates the transmitter has passed.
- The peak signal indicates the exact passage time.

#### Locating a Stationary Pig

- If walking, use either the internal antenna, or if needed for more depth of cover, use the wand antenna.
- Moving the antenna can create noise. Holding the antenna by the cable and letting it hang gently can reduce this noise.
- Move along the pipeline or trap, looking for an increasing signal. This indicates the transmitter is nearby.
- At this point, make sure the receiver or antenna is perpendicular and pointing directly at the pipeline. This helps pinpoint the exact location of the pig.
- Move the antenna or receiver slowly along the pipeline.
  - The exact location of the transmitter is shown by a sharp decrease (null) in signal, with a peak on either side. This only works if the receiver or antenna is perpendicular to the transmitter.
  - If the antenna or receiver is parallel, the point when the signal is strongest (peak) is close to the exact point. Holding the antenna or receiver perpendicular and looking for the null (see above) can pinpoint the position more accurately.

#### Geophone Use

- The geophone can be used to hear the pig move through the pipeline at large distances.
- If the distance between welds is known, and the cups on the pig can be heard hitting the welds, pig speed can even be estimated.

**For more helpful tracking information, please see our website:**

### Troubleshooting:

#### **The Receiver will not turn on.**

- Check that the batteries are seated well inside, and touching each other and the battery holder contacts.
- Are the batteries fresh? Install 5 new C Cell Alkaline batteries.

#### **The Receiver turns on but displays odd signals.**

- Check batteries. With very low batteries, the Receiver won't function correctly.
- Is the gain too high? In noisy areas, it might be necessary to lower the gain.

#### **The Receiver does not show a Signal Detect light with a transmitter.**

- Check transmitter specs. Some manufacturer's transmitters use a non-standard frequency, such as 21 Hz.
- Use Comtel Systems Ltd. transmitters for best results. Contact us for more information and for custom sizes, runtimes and signal types.

#### **The buzzer sounds for a few more seconds when it is turned off.**

- This is normal. After a few seconds, the buzzer will go silent.

#### **There is no signal when an external antenna is plugged in.**

- Check the position of the Signal Gain knob. Is it off?
- Check the condition of the antenna and cables used. Are they are plugged in all the way?
- Does the receiver work when the antenna is unplugged? If so, the antenna or cable could be damaged.

#### **There is no signal when an geophone is plugged in.**

- Check the position of the Geophone Gain knob. Is it off?
- Check the condition of the cables used. Are they are plugged in all the way?
- Is this a Comtel Systems Ltd. supplied geophone? Some geophones could be wired incorrectly. Contact us for support.

#### **Headphones work when plugged in, but when the Sound Output is plugged into speakers or other devices it is silent.**

- Check the audio cable. Is it a stereo cable? Some cables (mono) can short the output.

#### **The Receiver got wet.**

- The Receiver is weather resistant. In very heavy rain, a clear plastic bag can be used to protect it.
- If it was not submerged, dry off Receiver, and check operation.
- If submerged, immediately remove batteries. Make sure Receiver is completely dry (internally as well) before using. Contact us for support, if needed.