

Tam Valley Depot DRS-1 Mark 4

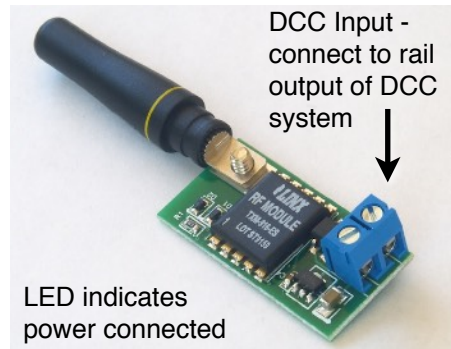
DCC Transmitter and Battery Powered Receiver

Dead Rails - Never Clean Track Again!

New version of receiver - Works on 916MHz and 868 MHz Bands by automatically scanning channels for DCC source.

Small enough for N scale.

The DRS-1 allows you to power your DCC decoder equipped locomotive from an onboard battery. It sends the DCC signal from your DCC command station by radio signals to an onboard receiver so that it is no longer necessary to power the track. The system piggybacks on your existing DCC system - you keep your existing throttles and DCC decoders.



Transmitter

Connect the transmitter to the rail outputs of your DCC command station. It will work with ALL brands of DCC command stations.

Place the transmitter so that its antenna points vertically and above the scenery. Double-stick tape can be used on the back to attach it. The connecting wires do not need to be large as the transmitter draws only a few milliamps of power. If the run is to

be longer than about 10 feet, it is best to use twisted pair.

Receiver The receiver takes the wireless DCC signal transmitted by the transmitter and recreates DCC onboard the locomotive using power from a battery. Power Input: DC voltage from a battery or other source. DO NOT EXCEED 20 Volts. If you use a non-battery source (say for bench-testing) it must be a clean, well-regulated source of DC (DC "power packs" will not work well). The receiver can tune to any of 18 channels - both Tam Valley depot transmitter frequencies - 869 and 916 MHz as well as CVP channels 0-16 if you own a CVP T5000 radio throttle.

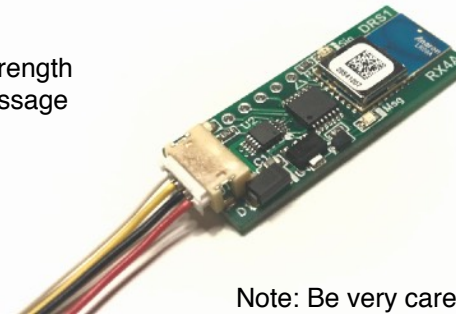
Handshaking Turn on the transmitter first. With the receiver close to the transmitter, turn it on. The receiver will then go through a handshaking procedure searching for the transmitter frequency. The Msg LED will flash slowly on and off during this procedure. When the transmitter is found, the Sig LED will become steady and the Msg LED will briefly flash every time a DCC message is received. If the signal is lost for more than 30 sec the handshaking will repeat. Always turn the transmitter on first. The second time the receive starts it will try the last channel it used first and scan only if there is no signal found.

Power Output: DCC at the same voltage as the input up to 2 Amps max. Connect the DCC output to your decoder in place of the wires to the wheels.

Green LED - Power
Red LED - Signal Strength
Blue LED - DCC Message

RX Connections

1. White - DCC A
2. Yellow - DCC B
3. Red - Battery +
4. Black - Battery (-)



Antenna - should be located as close to end of locomotive and as far from metal frame as reasonable.

Battery

LiPo batteries work well. For most locomotives an 11.1V 3-cell LiPo battery works well. We have used 2-cell 7.2V with a Tsunami sound system with good results also; although pulling power will be reduced relative to 11.1V. A 4-cell 14.8V can also be used. **Do not exceed 18.5V** (5 cells). Get the appropriate charger for your battery and read the caveats that come with the battery.

If you mis-charge LiPo batteries they may explode!!!

Use the largest battery you can fit in the available space.

A problem with the so-called flight batteries is that they will be ruined if they are discharged too far. To prevent this it is best to use LiPo batteries with a PCB. The PCB prevents this problem and also limits the discharge rate if you make an accidental short.

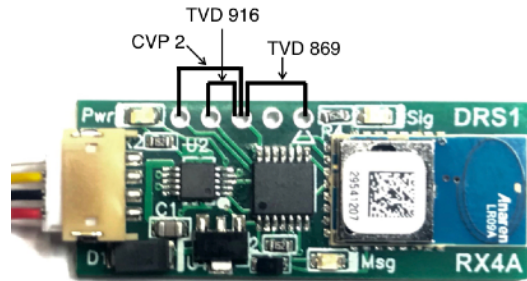
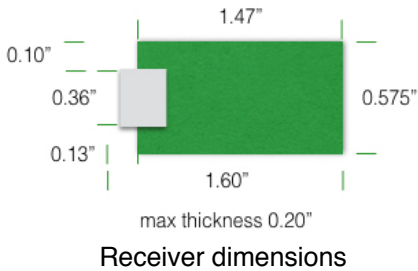
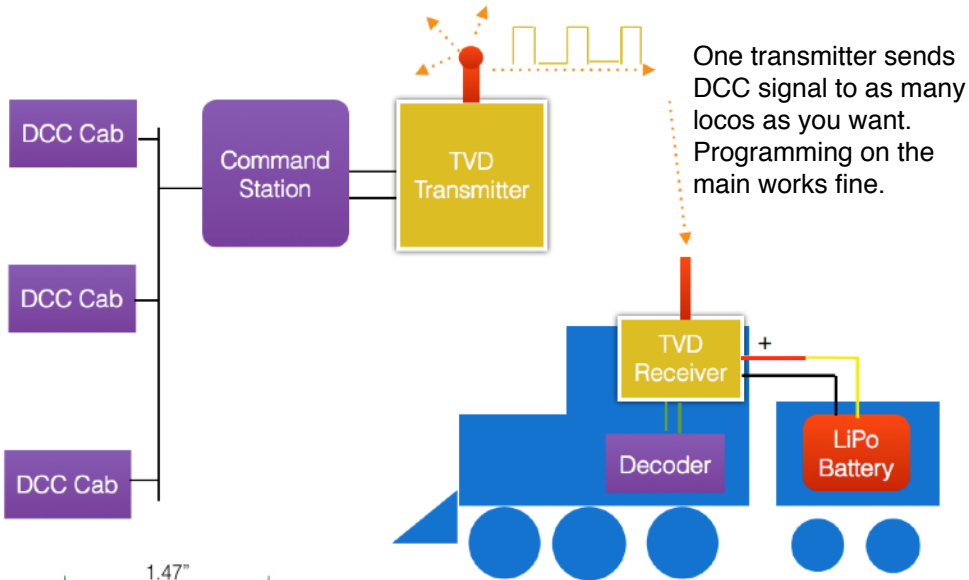
Power Switch - It essential that the batteries be disconnected when the locomotive is not being used. Most LiPos become useless if they are allowed to discharge after they have stopped running the locomotive. You can use a wire jumper as a switch or you can simply disconnect the battery when not being used.

Recharging - you will need to recharge your batteries. We think you will be surprised how long the LiPo batteries will last. One strategy is to make the battery removable and recharge it. We place our batteries in a coffee mug while they charge so that if there is an unfortunate accident the mug will absorb the flames and heat. The other recharging strategy is to arrange access to the recharging connector through a hatch, or a removable shell.

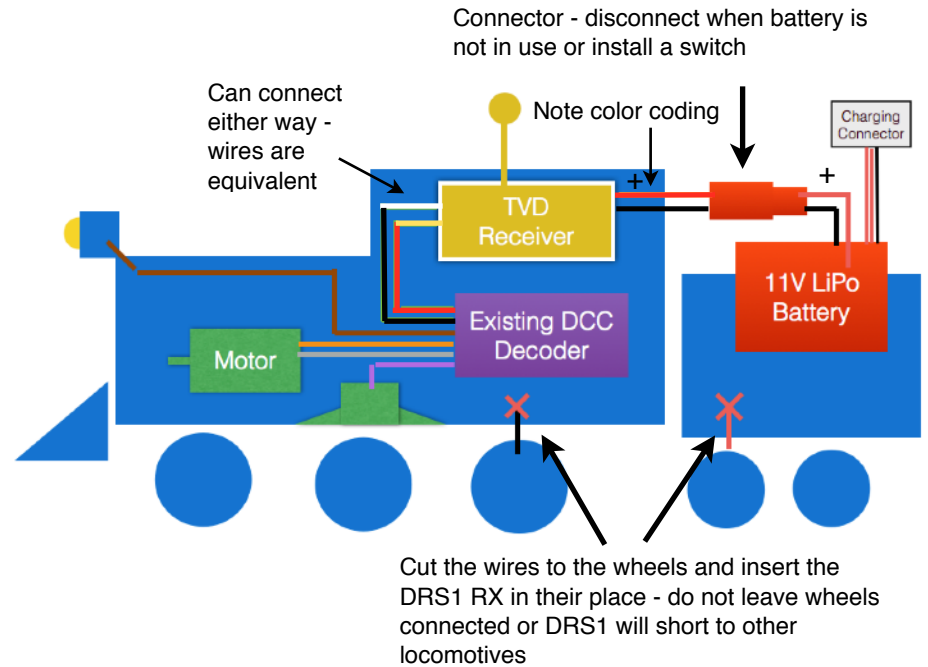
Programming - Programming on the main works with the system as is. You can also connect the transmitter to the programming track to use service mode programming - *just be sure that only the locomotive you want to program is turned on* as any locomotive turned on in range of the transmitter will be programmed as if it was on the programming track. The decoder will not be able to be read back but writes will work. If you want to read the decoder you will need to connect the RX's DCC wires directly to the programming track.

Note: Be very careful if you should need to remove the 4-pin connector - use a pair of sharp nippers/ tweezers to pull on the plastic housing - do not pull on the wires.

Integrates in to your existing DCC System



To fix the frequency and prevent handshaking, solder a wire jumper in one of the 3 positions as shown above. This will be useful in environments where several transmitters are operating or to make the receiver start up faster. Three frequencies are available - Tam Valley Depot 916 and 869 bands as well as CVP 2 if using a T5000 throttle.



Troubleshooting - Per LED not lit on RX - try reversing power leads. Charge battery.

Sig LED not lit or intermittent on RX - No signal - transmitter not connected or DCC not on, too far from transmitter.

Msg LED not flashing on RX - No DCC messages - radio on wrong channel or no signal.

Locomotive not responding - output wires not connected to decoder, wrong DCC address, try service mode programming (all other locomotives OFF!) and reprogramming address.

Locomotive hesitating after running fine - Charge battery IMMEDIATELY. **DISCLAIMERS (the fine print)**

Tam Valley Depot fully warrants the transmitter and receiver for one year for one year from purchase against manufacturing defects and failure from normal use. This does not include damage from mishandling or exploding or leaking batteries. We do not warrant your equipment against damage from mis-wiring or exceeding power limits. We do not warrant the units against interference with other devices including cell-phones and radio throttles.

FCC Notice and Liability Disclaimer

These modules have been tested to comply with FCC Part 15 Rules and Regulations. They are not in a finished product form. They are strictly intended for experimental purposes only. If you wish to use these modules in an actual product (a non-experimental capacity), the module must first be designed into the product then the whole product must be approved by the FCC.



Designed in California for the Dead Rail Society