

# ZTC 550 Power Booster with RealFeel™ Operations Manual

for Model Railways operating in  
DCC Digital Mode.

Rev 3.2 March 2005

**WARNING:**

If you fail to read the installation instructions properly it is possible that you could accidentally damage your ZTC unit. Such damage is **NOT** covered by our guarantee. So to prevent avoidable and potentially expensive mistakes, please take the time to read these instructions before attempting to install your equipment

The ZTC System is only intended for controlling model railways by experienced modellers over the age of 14 .  
It should only ever be operated by young persons under competent adult supervision.

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ZTC reserve the right to change any specification

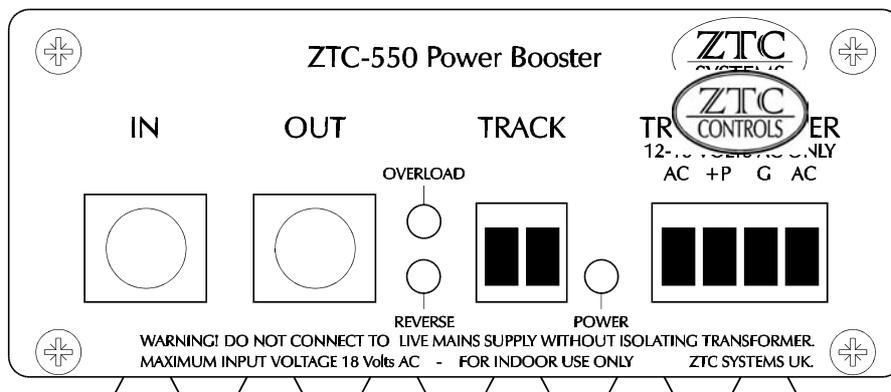
- Suitable for model railways in any gauge
- Up to 5 amps of extra track power
- Auto-switch polarity for loop or triangle track configurations
- Can be paralleled together for even more power
- Electronic trip short circuit protection
- Three way power input options
- Plug-in terminal blocks for convenient connections

### Function

The purpose of the booster is either to provide extra track power to supplement an existing controller or alternatively to automatically deal with the track reversal polarity when connected to a reverse loop or triangle.

### Power Boosting

The power booster operates like an amplifier taking the digital signal from a master controller or another booster. It has a separate power output feed. This is connected to additional (remote) parts of the railway system and can provide up to another 5 Amps of power. This will then supplement the requirements to power additional locomotives above the existing track power limitations.



SPECIFICATION	ZTC 550
SIZE width x depth x height	100 x 60 x 38 mm
Max Output Current	5.0 amps
Min External Supply AC Terminals 1 & 4	10 VAC rms.
Max External Supply AC Terminals 1 & 4	18 VAC rms.
Max External Supply DC Terminals 2 & 3	25 volts peak DC
TRANSFORMER SOCKET	

### Powering the ZTC 550

In order to provide the extra power it is essential that a separate transformer or power supply should be plugged in and connected to the ZTC 550 Booster. If more than one booster is used in a combination they should either have a separate ZTC 560 Mains Transformer or alternatively be used with a single mains transformer of sufficient power rating to handle all the boosters used, hence for two boosters one would need a transformer of at least 10 Amps continuous rating; for three boosters 15 Amps and so on.

Please note that when another makers transformer is used it should be adequately protected with a fuse of a suitable rating in the secondary circuit.

The ZTC 550 Booster can also be powered from an external DC supply using terminals 2 and 3 on the power socket as indicated. This has the advantage of reducing the internal dissipation of the unit and allowing it run cooler.

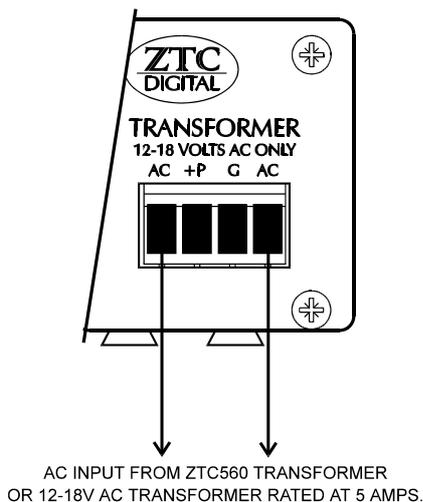


Fig.1

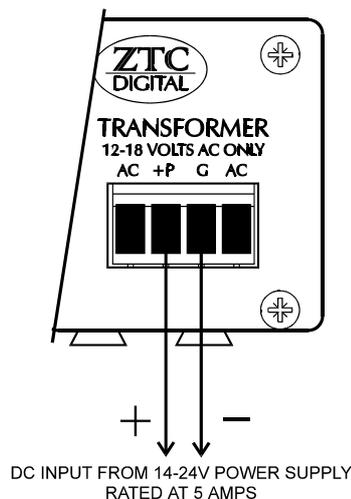


Fig.2

### Summary of Power Options

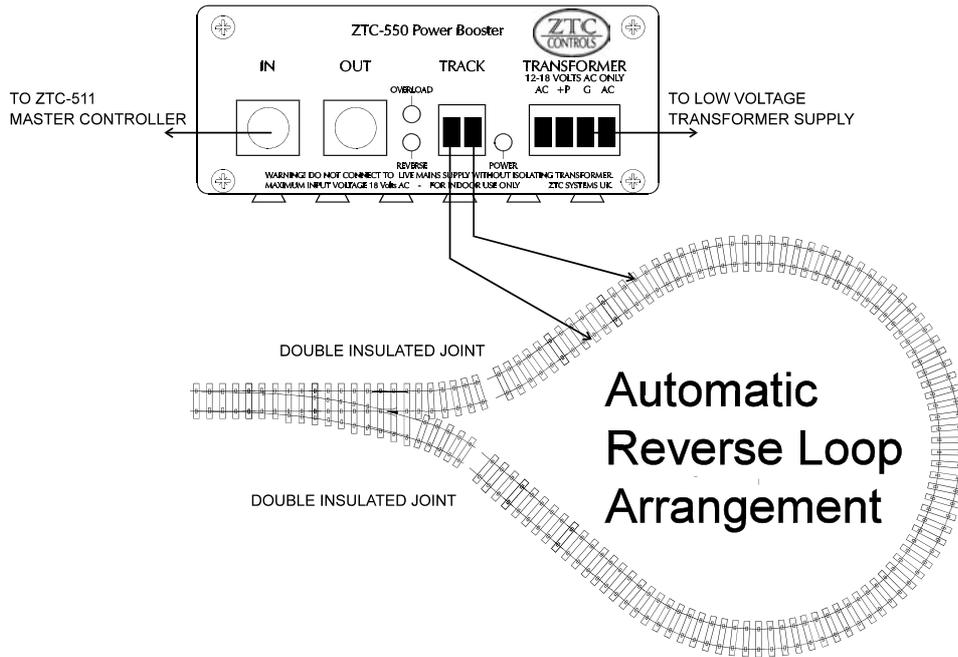
1.	Plug in the optional ZTC 560 15 volt AC transformer.	Fig.1
2.	Use external 12 - 18 volt transformer with at least 5 Amps power rating wired with a fuse.	Fig.1
3.	Use DC power supply, 14 - 24 volts at least 5 Amps rating. (See table 1)	Fig.2

Table.1

Gauge	DC Supply Voltage	Gauge	DC Supply Voltage
N.	12 - 14	1	14 - 25
00/H0	14 - 18	G	16 - 25
0	14 - 20		

## Using the Booster for Reverse Loops

The main problem with a reverse loop is the fact that the left loop sweeps round to join the right rail and vice versa. To prevent short circuits, insulated joints must be placed at the entry and the exit of the loop. The power feed to the isolated section inside the loop is taken to the booster and then this allows continuous running of a train through the loop. This is possible as the booster senses which way round the track signal is needed and automatically switches itself at either the entry or the exit to the loop as the train passes over the insulated joint. One booster may serve several loops all connected together provided it is not anticipated that any two trains would be passing in or out of their respective loops exactly at the same time.



## Powering the Booster for Reverse Loop

Note that less power is probably required in this mode as only one or a few locos would be within the loop at any one time.

1. Use a ZTC 560 series transformer or an external other type of transformer as for power boosting.  
Note: For N gauge layouts this method is not recommended unless a 12 volt AC transformer is used such as the ZTC 562 or 563.
2. The power can be extracted from the master controller by connecting the booster's AC power input to the master controller track output. This is the recommended method for N gauge layouts but should not be used where powerful locomotives over 2 Amps could reverse the reverse loop section.

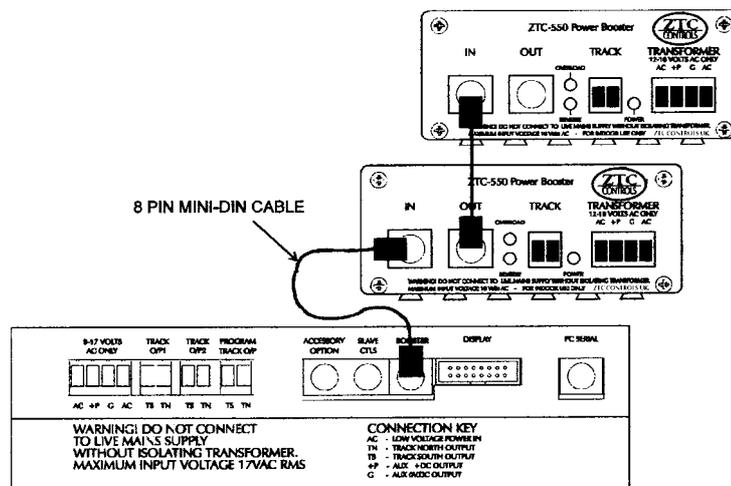
As with power boosting an external DC power supply may be connected provided the voltage used accords with the table 1.

## Track Connections

The track connections are made to the terminals plugged into booster's Track sockets. Because of the booster's automatic polarity switching it does not make any difference which way round these are. If these are connected in parallel with the track connections from another booster, it is essential that the connecting wire used is of sufficient capacity for the combined power output going to the track. Alternatively the booster power can be distributed to a separate area of the track work with a separate connection pair which need only be capable of the 5 Amps output rating of the booster.

## Operation of Power Booster

For correct operation of the unit it must be plugged in to a master controller using an 8 pin mini din lead, part number ZTC 309. This plugs in to the socket marked "IN" and attaches to the master controller at its BOOSTER socket. If a second booster is used it is "daisy-chained" to



the first one from its OUT socket. Note: The mini din connecting cable only provides a signal to the booster and does not provide any power supply which must be done through the transformer socket.

When powered up the booster's power lamp will come on (green). The reverse lamp (yellow) may also be illuminated depending which polarity the booster decides to switch to. In the event of a short circuit occurring to the track output of the booster, the red overload lamp will be illuminated. Note: The power output from the booster is not indicated on the master controller in any way.

If the booster is providing significant amounts of power to the track it is normal for it to get hot due to the internal power dissipation. The unit should therefore be mounted such that it has free ventilation and cannot come into contact with any materials that might be heat sensitive such as polystyrene, etc. The booster should not be exposed to excessive heat and must be protected from exposure to damp conditions or to wetness at all times. Since all its connections will plug in it can be easily detached and moved if being used on a garden layout.

When a train enters a section being powered separately by the booster unit you may notice a tiny flash as the leading wheels bridge the insulated joint. This is due to a momentary short circuit. At this point the booster will switch polarity to the same as the incoming train so that it can pass smoothly into the booster section. You will then notice that the reverse lamp either comes on or goes out depending which polarity the booster decided to use.