

READ THE MANUAL - Wrong connection is NOT Warranty!

We really want to make it clear....

Electronics needs careful connection because "wrong wiring" is NOT warranty, and often you don't get a second chance!

When we design products, we label clearly AND create detailed manuals with clear diagrams in them.

We make them work on voltages well beyond reasonable levels because we understand that you may not understand electricity, we build in features to make them easy to use and we try our best in all sorts of ways to generally inform the user...

However, no matter WHAT we do, there are still those who think its OK to use old DC controllers or power supplies or any old thing to power accessory products (it's NOT) and of course, there are those who work by trial and error, connecting first and reading manuals later!

When it fails, it is NOT warranty if you work this way. Carelessness is YOUR fault, not ours!

Yes, we DO understand you did probably did not break it on purpose...

But I have bad news for those of you who wire carelessly. We are very generous with warranty but we have NO budget for careless damage. It will never be covered by warranty!

Electronics is power wiring sensitive, no matter what it is.... And we DO show you the right way.

So PLEASE read manuals before you try to connect it, please do not connect it with the power already turned on and please... do not try to tell us "it was like that when we bought it", because we do deep testing on 100% of the items we sell before we sell them. We KNOW it was not broken when it was sold!

We also know HOW it failed, because each wiring error has a unique "signature"!

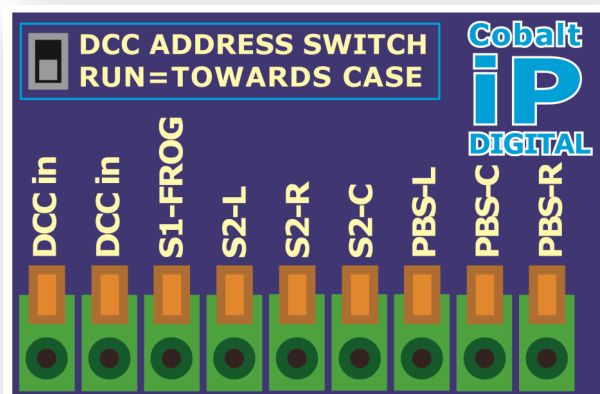
Just like the popular TV shows that feature the use of science to solve crimes, we look at every item that is returned to find out why... because we genuinely care about quality.

We trace the faults and see what really happened... and just like in those crime shows, EVERY cause of failure causes specific damage. So - just by looking at the product's PCB, we can tell why it died!

We'd like to show you one simple example of how careless wiring causes faults! These are REAL images of REAL faults that we created on purpose to reproduce a failure in Cobalt, because the customer returned two units that he claimed had failed "ex the box".

We KNEW that wiring them properly to ANY DCC SYSTEM could not create the failures we saw, so we damaged several more to reproduce exactly what was done to kill the Cobalt iP Digitals he had returned.

This is the "Connection Side" label on the Cobalt iP Digital. It's clearly marked so... how can anybody get it wrong?



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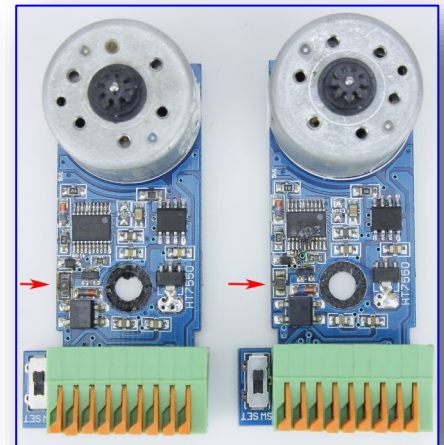
The scenario.... 2 x Cobalt iP Digitals, returned as faulty...

Here is an image of their PCBs. Identical "heat marking" in both cases.

One PCB also has a hole in the main microprocessor... because it was left connected longer. How could this damage have happened?

We tried out many things to reproduce it and we also engaged our electronic engineers in the discussion... as you can see from the photo below, it could not be ANY form of power tolerance problem, because Cobalt iP Digital is amazingly rugged and tolerant of over-voltage.

(Customer has an ESU ECoS by the way, track voltage @ about 18V).



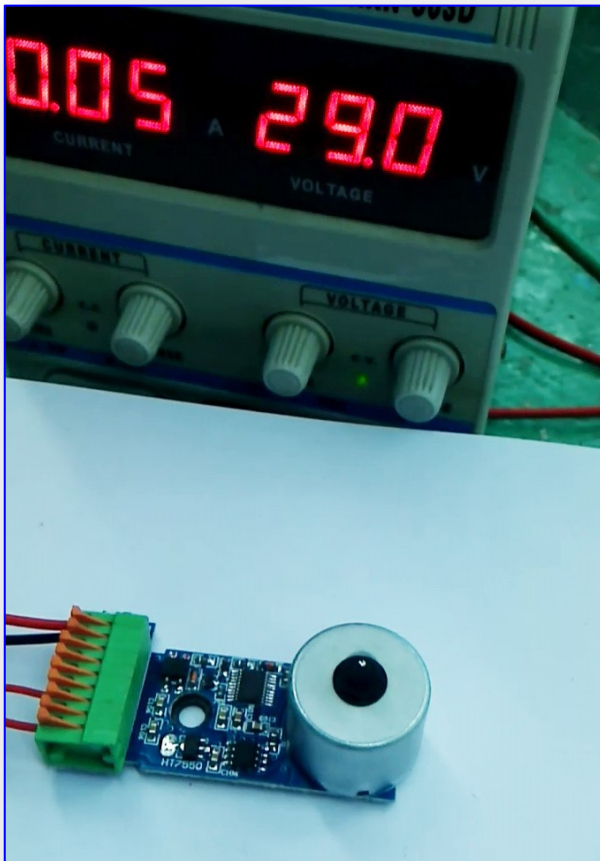
As you can see, this test has Cobalt iP Digital sitting happily at nearly 30 volts

(we rate them at 9~23v to be conservative in manuals)

We tried MANY things including VERY high DCC track voltage from one DCC brand that has a terribly destructive waveform (no, we will not tell you which one it is) and still Cobalt iP Digital was happy... so what caused it?

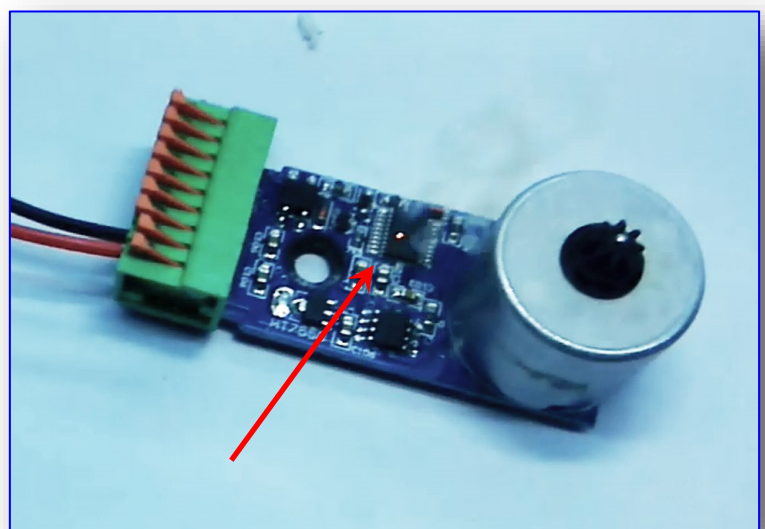
After several hours, we at last found how to reproduce the fault! We put the two power wires into the RIGHT hand pair of sockets instead of the correct LEFT hand pair. Eureka!

Here is what happened in a photo sequence.



(1) We connected power to the RHS sockets>

These are the Common and Right hand switch positions in reality. They ARE able to take the low level voltage of a detector so you can do some neat things with automatic control...



BUT - 18V DCC track power directly to the switch/control connections is going to do serious harm to the microprocessor! Can you see the burn spot happening... and the smoke?

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The photo sequence... continued

(This part all occurred within 0.5 seconds)

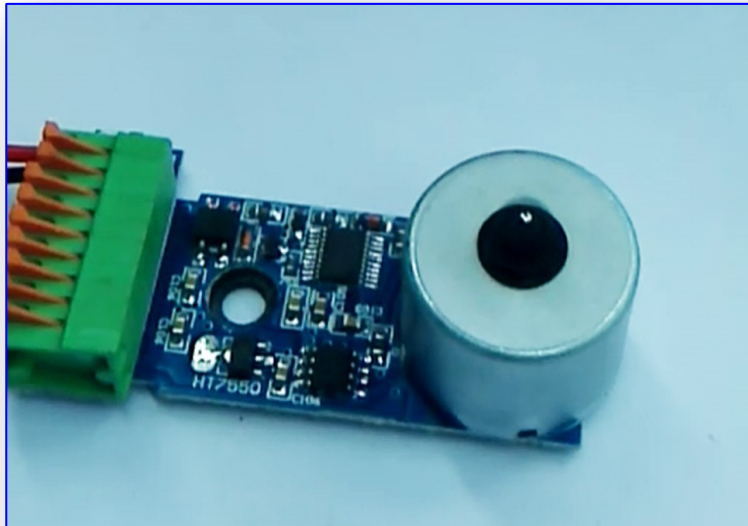
Connect wrongly and turn the power on before checking and it's already too late.

The microprocessor is already dead...

But because its so fast, you may NEVER see it (the smoke will NOT escape a closed up case).

SO... now, we "correct the error" connecting the power to the LH terminals as it should be.

But its already too late!



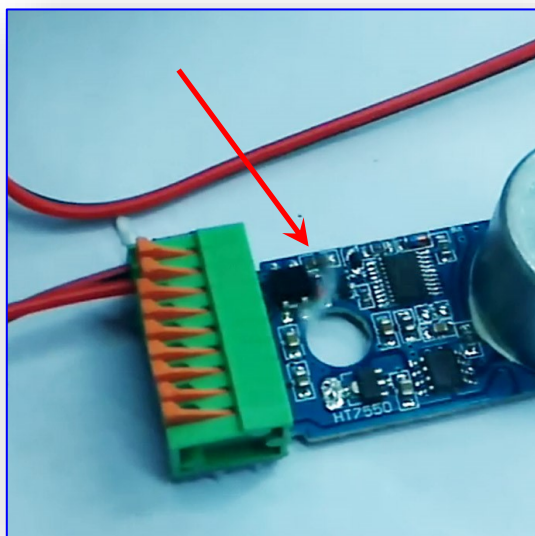
So... we have already damaged the microprocessor.

The microprocessor manages how the power is applied within the product, but its now damaged and it's "brain dead".

So... look closely at the image. Connect it again and there is smoke once more. This time it comes from a component close to the power supply filtering and rectification.

One mistake, resulting in one dead Cobalt iP Digital.

Totally avoidable if even basic care is taken & the manuals and very clear product labelling are looked at and followed.



Was it warranty? - of course it wasn't!

There is a happy ending though: we value all of our customers.... and I guess it was an accident.

We were also able to learn how a specific customers errors / mistakes affected an important product and we were able to both identify the cause AND identify the symptom for future reference.

It cost us ten Cobalt iP Digitals to prove the problem accurately so it wasn't a cheap process, but he'd been as helpful as he could too, eventually conceding that he just might have done that...

So we replaced them, warranty or not. But - PLEASE be careful, because we will not do it every time!

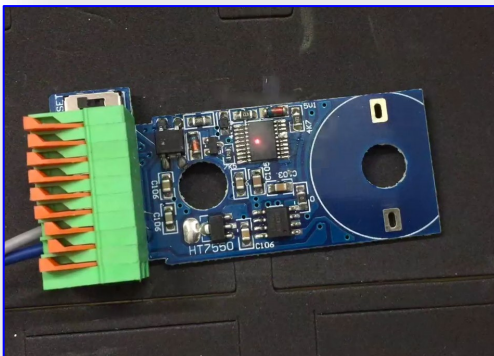
For those interested, we took some development PCBs and repeated the problem again, this time with higher voltages - leading to some "flashy" results!

See the next page, and feel sorry for the electronics!

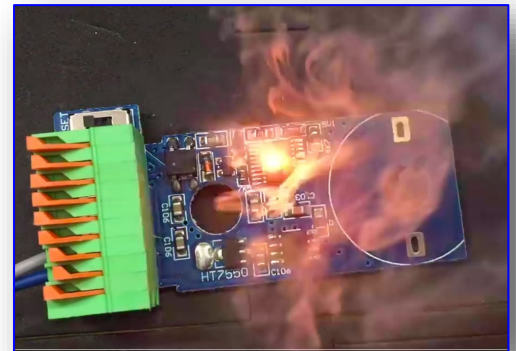
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The 2nd photo sequence - same sort of failures - created at higher power for effect (30VDC). Damage all occurs within 0.5 seconds. Overall it is "flare up and back to cold" in less than 1.5 secs. The reality is, you might never know that you did it, except for the smell when you let the smoke out!

0.2 seconds



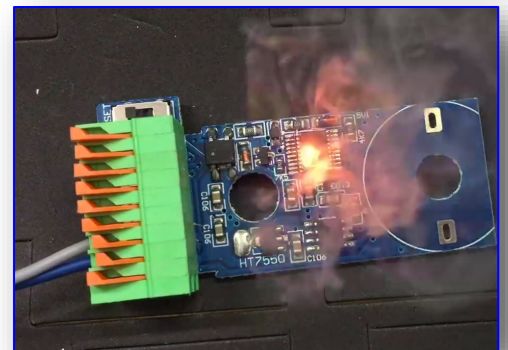
0.42 seconds



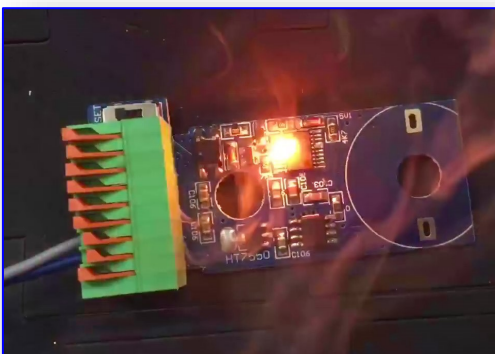
0.31 seconds



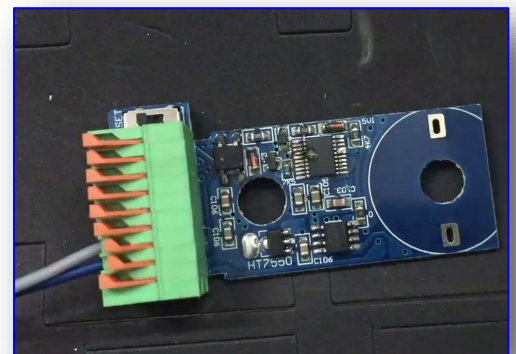
0.56 seconds



0.38 seconds



1.03 seconds



Please.....

Read the instructions, look at labelling, get it right!