

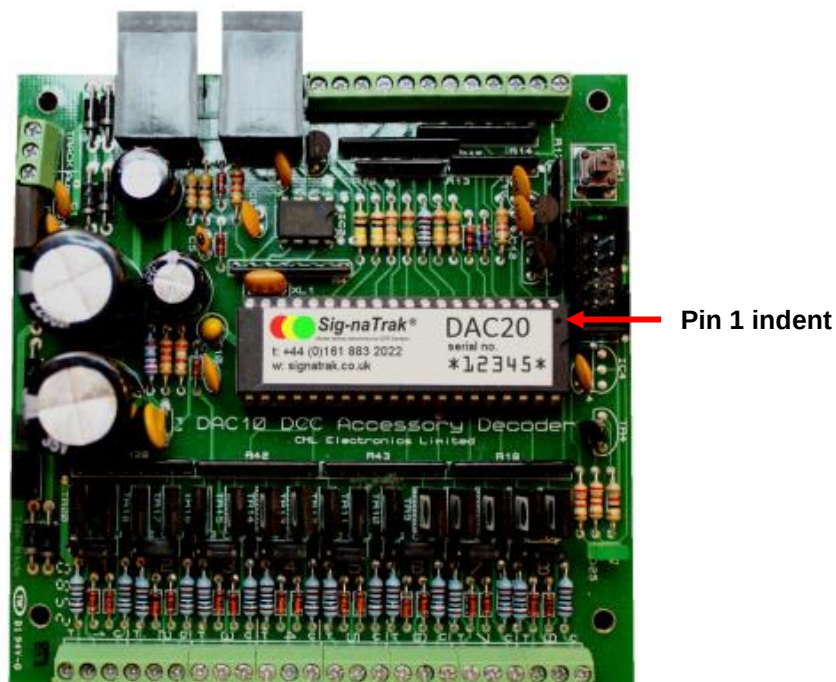
DAC10 to DAC20 Processor Upgrade

These instructions describe how to install & configure an upgraded processor for a DAC20 board. Please read carefully before proceeding!

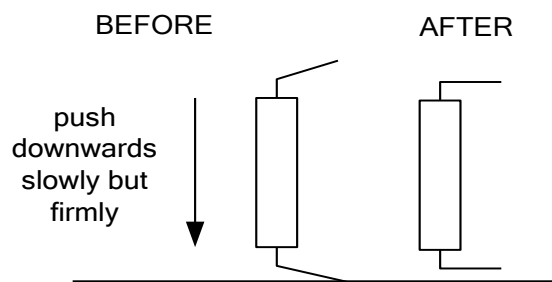
Inserting the Processor

This is simply the case of removing the old processor, and reinserting the new one the right way round.... Being careful to get all of the pins aligned to the socket. To remove the old processor, insert a lever (e.g. a thin screwdriver) between the processor and the socket and lever gently. Levering a little alternately at each end is better than levering one end out completely first.

The “pin 1” end of the processor is marked with a bump in the end of the plastic package: it is installed with the pin 1 end nearest to the edge of the board.



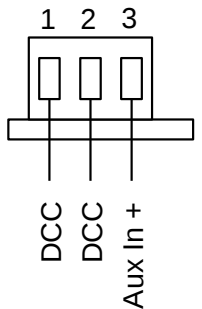
If the pins do not align well with the socket (they commonly point outwards a little), rest the processor on a flat solid surface so that its legs are touching onto the surface, and gently bend all 20 leads on each side until they all point downwards.



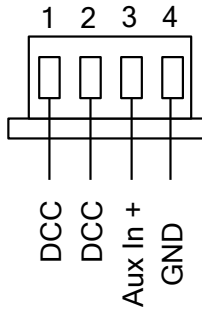
Wiring Instructions

The board will need its power wiring to be undertaken depending on the vintage of board being upgraded. This depends on whether SK1 has 3 connections or 4 connections

SK1 with 3 connections

 View looking into SK1 from board edge	SK1: Power connection. 3 pin screw terminal		
	Pin	Function	Signal Level
	pin 1	DCC track power	Connects to DCC booster output. 12-20v max. It doesn't matter which rail signal goes to pin 1 or 2.
	pin 2	DCC track power	
	pin 3	Aux_in_+	Auxiliary power to output stages; usually needed for solenoid point motors. - DC: connect +15-18v to pin3; -ve to SK3 pin 1. Do not exceed 25v DC - AC: connect 15-18v AC to pin 3 & pin 1 of SK3. Do not exceed 18v AC Note the board ground is on SK3 pin 1 (the 12 terminal connector).

SK1 with 4 connections

 View looking into SK1 from board edge	SK1: Power connection. 3 pin screw terminal		
	Pin	Function	Signal Level
	pin 1	DCC track power	Connects to DCC booster output. 12-20v max. It doesn't matter which rail signal goes to pin 1 or 2.
	pin 2	DCC track power	
	pin 3	Aux_in_+	Auxiliary power to output stages; usually needed for solenoid point motors. - DC: connect +15-18v to pin3; -ve to pin 4. Do not exceed 25v DC - AC: connect 15-18v AC to pin 3 & pin 4. Do not exceed 18v AC
	pin 4	GND	Board ground.

Mixing old and New Boards

You can mix the "old" and "new" style boards with a common aux power connection to them both. However you must make sure that the boards are properly connected: failure to do so will result in damage. It's important that the "aux" supply is not swapped in polarity.

ALWAYS Connect SK1 pin 3 to SK1 pin 3.

ALWAYS Connect SK1 pin 4 to SK3 pin 1.

Programming the Serial Number

The serial number is used to identify the board when programming through LocoNet. It needs to be unique on your railway. It has nothing to do with point numbering when you operate your railway: this is only used for programming.

If you receive a new processor chip from GFB Designs, it will **not** have a serial number programmed into it. It is necessary to configure the serial number before the board can be programmed. This is simply done by following these instructions.

The serial number for a new processor can be simply programmed by setting a switch number (equal to the serial number you want to program) to **THROWN**¹. It doesn't matter if there is a point or other accessory at that number: the DAC20 simply memorises the number of the first point it sees being set to THROWN.

If you are upgrading several boards with new processors, it is important that this procedure is followed one at a time for each board.

Simply disconnect all of the boards to be upgraded, then connect track power one at a time and go through this procedure **one board at a time**.

1. Make a note of the serial number required (this will be marked on the older processor removed from the board).
2. Connect track power to the board, making sure that only one upgraded processor is connected to track power.
3. Turn track power on, if it is not already on.
4. The green LED on the board should now be blinking approximately once per second.
5. Take a handheld throttle and put it into "switch" mode.
6. Select the switch number equal to the serial number you want to program, and set it to THROWN
7. The DAC20 will set its serial number to the number thrown. The green LED on the board should now be lit constantly, and the board will behave normally.
8. Write the number onto the processor label for future reference.
9. The chip as supplied has no programming. Reprogram your board as normal using LocoAnalyse.

For example, to program a new board to serial number 37:

- Power up the board;
- Select switch number 37 on the throttle, and set it to THROWN.

(If you should inadvertently set the serial number of several boards because several new processors were connected, then simply follow the instructions for renumbering boards using the "LocoAnalyse" PC software).

¹ THROWN may also be referred to as OPEN, REVERSED or ON depending on your DCC system.