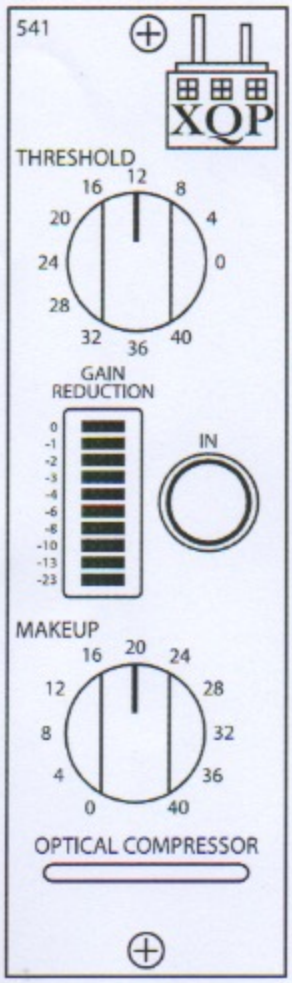
XQP 541 Optical Compressor

Owner's Guide



INTRODUCTION

Thank you for purchasing the XQP 541 Optical Compressor. The 541 is a feedback style compressor that uses a Silonex opto-coupler for its gain reduction element. Intentionally simple to operate, it utilizes only the most basic control set for absolutely no-fuss compression.

We trust that you already know that the 541 is a module designed to fit into the API 500-series format. It comforms to the standard pinout, including stereo linking on pin 6.

As of this writing, the 541 is pending API's VPR Alliance certification.

PINOUT

1. Chassis
2. + Output
3.
4. - Output
5. Audio Common
6. Stereo Link
7.
8. - Input
9.
10. + Input
11.
12. + 16 VDC
13. Power Ground
14. - 16 VDC
15.

OPERATION

This is easy. After installing the 541 into your Lunchbox or other 500-series rack or console and patching it in as desired, there are only three steps to follow:

1. Push the IN button. This is a relay bypass when out. It will light up yellow when the unit is engaged.
2. Rotate the THRESHOLD pot counter-clockwise until the gain reduction suits your fancy.*
3. Rotate the MAKEUP pot clockwise (in the time-honored fashion) to restore the output level.

METER

The 541 employs a 10-segment LED meter to display gain reduction. Its operation is like many of the old school mechanical meters used for this function, and 0dB is at the very top of the scale in this case. Like the mechanical counterpart, a DC voltage feeds the meter driver and causes it to display 0dB when no compression is taking place. One of the three internal trimmers adjusts this voltage and can be tweaked if needed (see page 2 for diagram). As the opto-coupler responsible for causing gain reduction does its thing, a second one reduces the DC voltage feeding the meter, causing it to register down from 0dB. The driver chip used to operate the meter is designed for VU applications, and if you look at the markings beside it, you will see that each of the top five segments represents a 1dB change, whereas the scale becomes rather logarithmic after that. This gives you accuracy in the beginning stages of compression (0 to 6dB or so), and becomes pretty general once you get to the point that you are smashing the daylights out of things. If your input signal is loud enough and you decide to crank the Threshold control to 40, you may just witness the disapperance of the -23 dB LED. This is an indication that you have gone off the scale and are really cooking. Don't be disturbed. Incidentally, when the unit is bypassed, the meter continues to function.

LINKING

If you wish to link two 541's for stereo operation, there is a single DIP switch on the PC board that can be turned to the ON position (see page 2 for diagram). Do this for both units. There may or may not be action to take in making your rack ready for linking. Some now have all pin 6's already wired in parallel, some have the option but must be soldered. Consult the manual for your particular rack or console. No resistors are needed between 541's; only a wire between the pin 6 connections of the two slots.

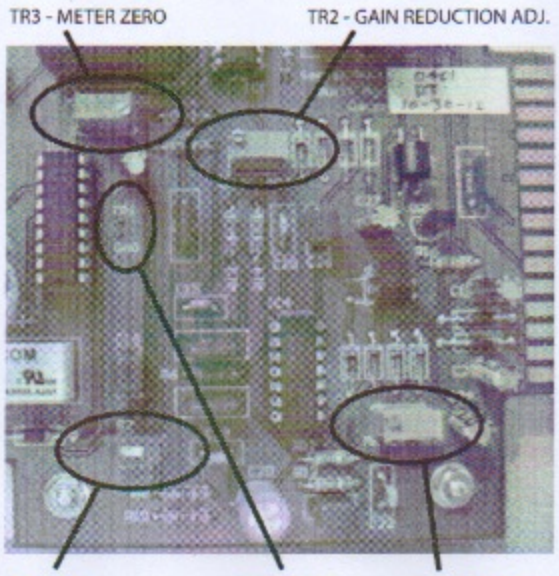
When using two 541's in link mode, both sets of controls are still active. However, the sidechains of both units mix together equally, so any combination of THRESHOLD settings will cause each unit to react the same. typically, equal amounts would be applied from each module. However,

SPECIFICATIONS

Input impedance:	43kΩ balanced
Ouput impedance:	50Ω balanced
Frequency responce:	4 - 85kHz (-3dB)
Max. output level:	22dBu
THD (no gain reduction):	<0.002% @ 1kHz
Noise:	-80dBm, unweighted
Attack time:	30mSec.
Release time:	200mSec.
Compression ratio:	3:1
Current requirement:	100mA @ +/- 16v

Specifications subject to change without our knowledge.

INTERNAL TRIMMERS & DIP SWITCH



The three trimmers pictured above can be adjusted by the user if necessary. However, care should be taken, as this can really make things wacky if not done correctly. Following is the complete procedure we follow at the XQP factory:

1. With no input, set METER ZERO trimmer (TR3) to show 0dB on gain reduction meter.

2. Apply 0dB 1kHz sine wave to input. Engage compressor, set THRESHOLD to 0, and adjust MAKEUP to read 0dB on VU meter.

3. Set THRESHOLD to 20, and set G. R. ADJ. trimmer (TR2) to show -3dB on VU meter.

4. Set METER ADJ. trimmer (TR1) to show -3dB on gain reduction meter.

The DIP switch (S2) will allow for linking of multiple 541's when it is slid to the right (shown).

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one module's THRESHOLD can be left at 0 while the other controls both. Program material will determine how this affects the gain reduction.

WARRANTY

Like all XQP products, the 541 has a rather ridiculous ten-year warranty. It is an absurd length of time, but there is really no reason a well-made electronic device should not last many years longer than that. XQP is not a giant corporation who puts profit above all else. We are normal guys who like to know that a company whose products we buy will take care of us if something goes wrong and not treat us like pests. We want to treat our customers that way (not like pests - the other way). The ten-year warranty is the best way we know of to communicate that desire.

* First, a word about the 0 to 40 scale around the pots. This has nothing to do with decibels or the age of the designer. Unlike 0 to 10, which can be rather cumbersome when the pointer of the knob falls somewhere between numbers, 0 to 40 scale gives the intrepid user three invisible points between numbers with whole numbers associated with them. If you are writing down settings in a little black book, this makes it easy.

Now on to the backwardness and strange rotation of the markings of the Threshold control. At one point in the design phase, a log-taper pot was used to help overcome the tendancy of the passive-style bridge rectifier in the sidechain to sit there and do nothing then suddenly leap into action. Of course the pot had nothing to do with this tendancy, but it was thought that the log taper would get us into gain reduction quicker. It did, but it had to be wired backwards to accomplish this. It was soon determined that immediately after getting us into gain reduction, we were thrust into about 6dB of gain reduction, and the ability to fine-tune the lesser regions was tricky to say the least. That led to a move back to a linear-taper pot and ultimately to a reverse-log arrangement with the addition of an extra resistor. However, the backwards direction had quickly become popular with us, so we kept it. It references the familiar dbx® method that most of the world knows. The legend states that an upside down piece of dbx® NR was what led us to the name XQP long, long ago. So the wacky orientation of the markings is a further nod in that direction.