

## Piezo Etalon Driver Card Check Procedure

**Remember to switch off the electronics box and to disconnect line voltage whenever you work on the electronics! There is high voltage delivered to the piezos, and there is a risk of electric shock! Please use due caution! Also protect the Matisse electronics from electrostatic discharge.**

Switch off the electronics box. Disconnect the SMA connector of the Piezo Etalon inside the laser!

Remove the driver card for the Slow Piezo from the electronics box. The card is located next to the Piezo Etalon driver card, on the right side (see picture). Note that your unit may not have exactly the same appearance of the panels. To remove it, loosen the four Philips fixing screws of the card's front panel. Then gently pull on the Internal/External switch to unplug the card from the backplane socket and pull it out. If the switch is too slippery, attach some piece of adhesive tape around the pin.





When the card has been removed you can see the circuit board of the mounted Piezo Etalon card. There is a cable with an SMA connector labelled 'P-TKE' going to a socket labelled 'Input'. Note how the cable is placed to allow the Slow Piezo card to slide in completely. Disconnect the SMA cable from the socket. This will be easier if you also loosen the four Philips screws from the panel and pull out the card, but not completely.





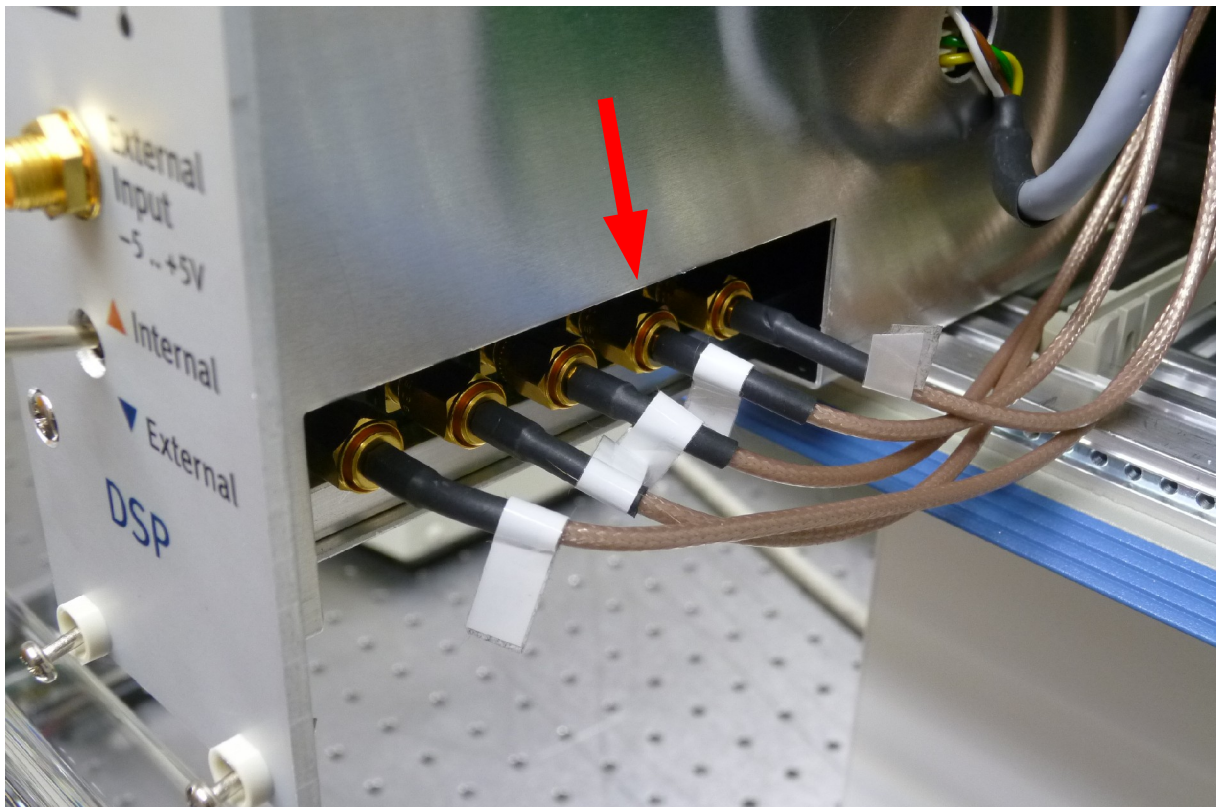
Now connect a function generator to the SMA connector on the Piezo Etalon card. Set the generator to produce a sine signal, range 0-5 Volts, about 10 Hz frequency. On the output side (the SMA cable in the laser), connect an oscilloscope and use a trigger signal from the function generator. **Caution, at the output side there is high voltage up to 170 Volts!** Depending on your oscilloscope model, you may have to use a probe tip with a 10x option.

Slide the card back until the front panel is at the same level as the other front panels. This ensures that the plug on the backside is properly connected to the backplane. Switch on the electronics box. You should now see on the oscilloscope an amplified sine signal which corresponds to the signal from the function generator. Don't worry, the signal may be cut off at top or bottom if the range limit is exceeded. The signal will also look noisy, because for normal operation the piezo's capacity is a part of the circuit. If there is no sine signal, the driver card is broken.

In case you see the amplified sine signal coming through, the Piezo Etalon card is not broken. Switch off the electronics and disconnect the function generator from the card. Remove the card completely.



You can now see the silver coloured housing of the DSP card, with five SMA connectors. Also note how the cables are placed to allow the Piezo Etalon card to slide in completely. Remove the front panel screws and slide out the card partly.



Locate an SMA connector labelled 'AIC', which is connected to a socket 'AIC\_OUT' on the card. If you start counting from the front panel, it is the fourth connector. This socket delivers the control voltage for the Piezo Etalon, which is fed to the Piezo Etalon driver card where it is amplified to go to the piezo. Disconnect the SMA connector and do a resistance measurement between this connector and the one going to the driver card 'P-TKE'. This ensures that the cable gives proper connection.

If the cable is good, proceed to measure the output from the DSP itself: Connect a voltmeter to the SMA socket labelled 'AIC\_OUT' on the DSP card. Slide the card back in completely, then switch on the electronics box (Piezo Etalon and Slow Piezo card can be left outside for this test). Start Matisse Commander and move the baseline slider of the Piezo Etalon. There may be error messages due to the missing cards, but they can be skipped by clicking on 'Continue'. There has to be a change in voltage as the slider is moved. The range is approx. 0-4 Volts. If there is no voltage change, the signal is not properly delivered by the DSP card.