



**kYLia**

# **KYLIA mint: DLI // DPSK demodulator**



**日本デバイス株式会社**

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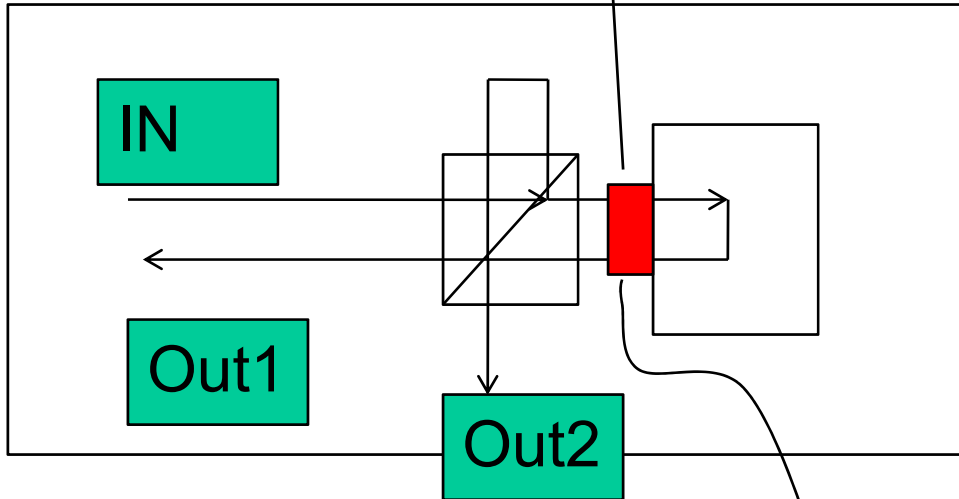
〒104-0028  
東京都中央区八重洲2-10-8 八重洲ビル3F  
営業部 [sales@j-device.com](mailto:sales@j-device.com)  
代表:03-6262-3424 営業:03-5542-1667

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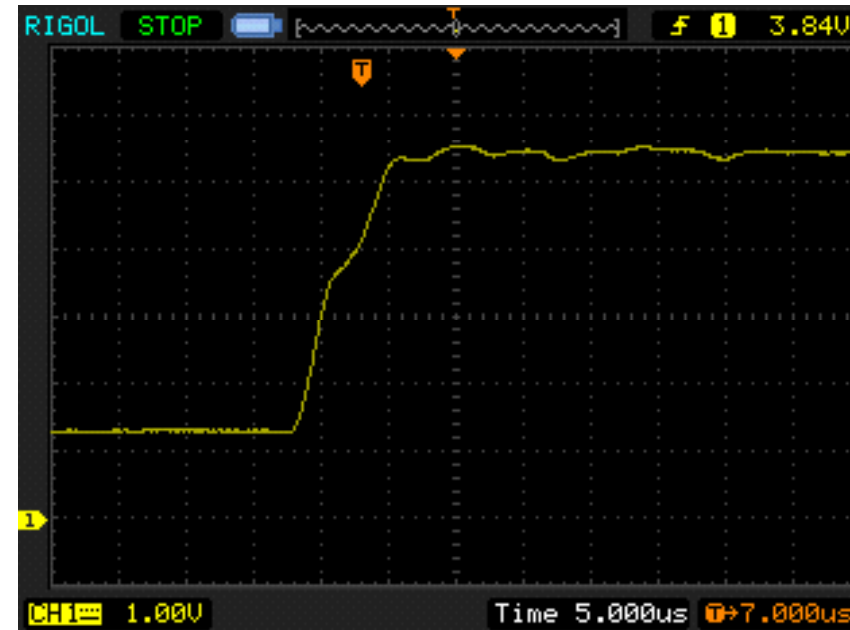
# Optical layout

Phase tuning element  
U-version: piezo actuator  
L-version: resitor



# Phase tuning: U-version piezo electric element

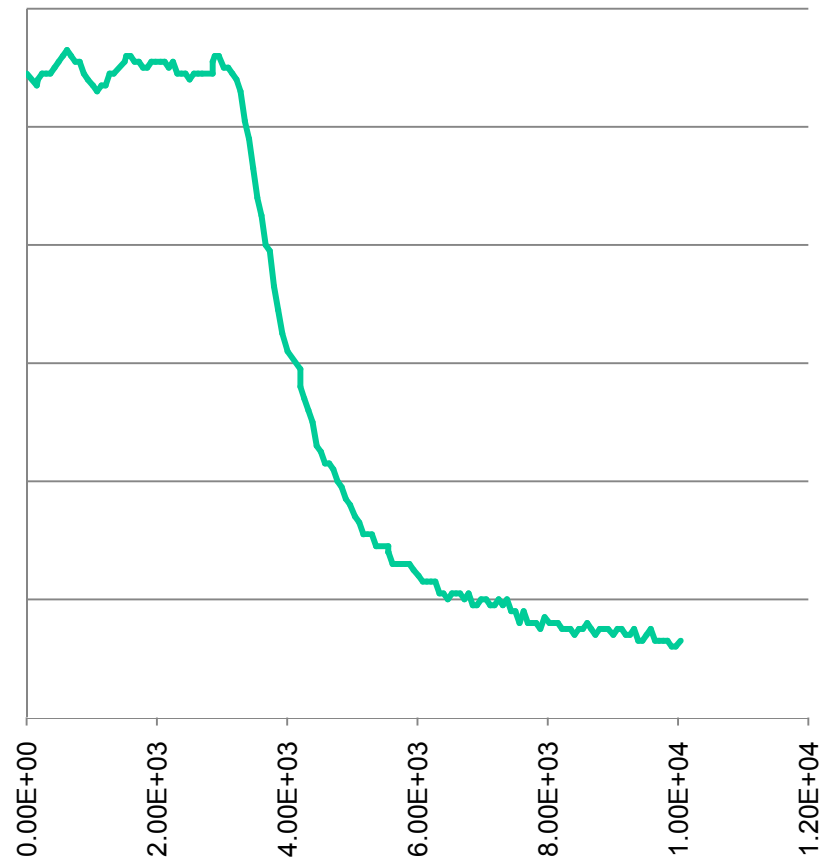
- U :ultrafast response, piezo based.
  - » Helpful for fast shifting systems ( instability of the laser for instance).
    - The dli can adapt itself instantaneously to the environment, if a closed loop between BER and phase shifting (for instance) is set up. This solution is mainly used in labs.
  - » Tuning  $0.03\mu\text{m}/\text{V}$  ; 1FSR for 52 V
  - » Tuning speed 0->100%  $20\mu\text{s}$



Example of tuning speed of U-version

# Phase tuning:L-versions (thermoelectrical)

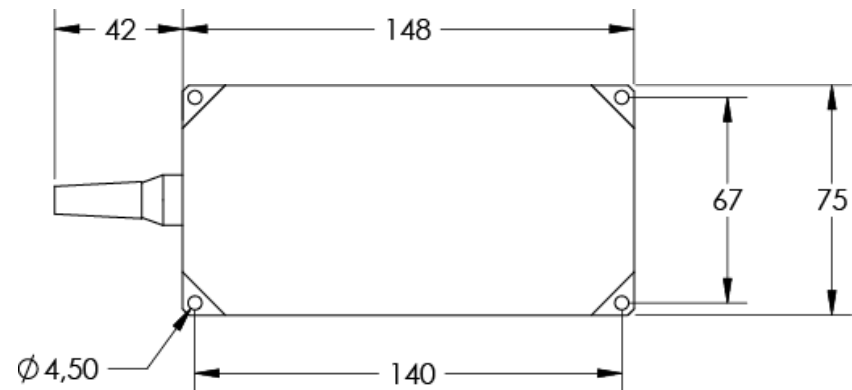
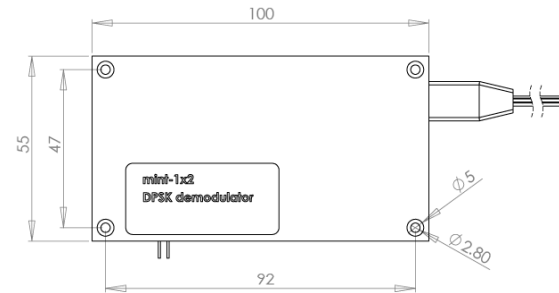
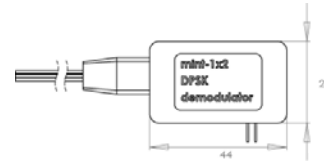
- Phase shift is obtained with a resistive heater placed on an optical piece. Changing the voltage changes the local temperature and thus changes the index, which changes the delay, that gives a shift.
  - »  $\text{SHIFT}(\text{degrees}) = 50 \cdot V^2$ 
    - Where V is applied voltage
  - » Stability :  $\text{Dshift} = 100 \cdot V \cdot dV$ 
    - Example :
      - › 5V over 8 bits = precision of  $5/256 = 20\text{mV}$
      - › Pour un shift de  $180^\circ = 2\text{V}$
      - › Precision of  $4^\circ$
  - » Power consumption
    - $P(\text{mW}) = 30 \cdot V^2$ .
    - $P_{\text{max}} = 0.5\text{W}$  ( $V = 4\text{Volts}$ )
  - » Speed
    - Tuning time (for 0 to 50% of the aimed shift) = 1s



Shift (a.u.) vs time (ms)

# Packaging

- FSR > 20 GHz
- 10 GHz < FSR < 20 GHz
- 2.5 GHz < FSR



# Available options

- PM option
- Variable attenuator
  - » Minimum step available: 1.0 dB@-20 dB ER  
0.5 dB@-10 dB ER
  - » Readable precision: 2.0 dB@-20 dB ER  
1.0 dB@-10 dB ER
- Non balanced outputs for monitoring



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