

CFD - Constant Fraction Discriminator Module



A constant fraction discriminator (CFD) is an electronic device that generates digital exact time stamps for input signals having changing amplitudes but a constant rise time.

KEY SPECS

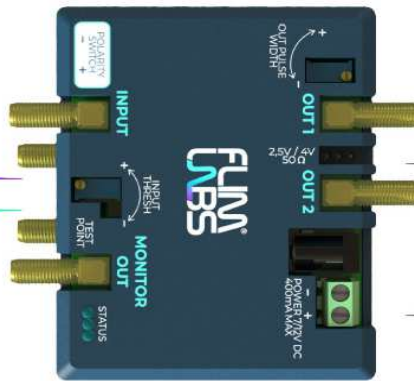
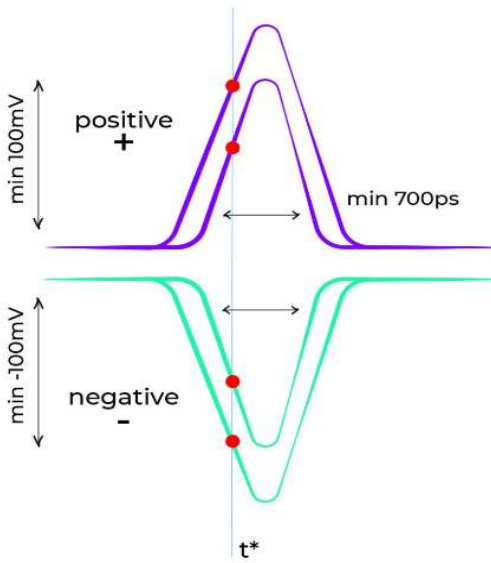
- Compact (85×70×30 mm) and light-weight (100g)
- Single channel dual-output module
- Discrimination for positive and negative input signals
- Rise time: <500ps
- Jitter: <15ps
- Max repetition rate: 140MHz
- Min input detectable signal: +/- 100mV
- Max output signal: 4V@50 Ohm load
- B2C or B2B selling options

Included in the price

- CFD Module
- Wall-mount DC converter
- Physical delay line SMA coaxial cable

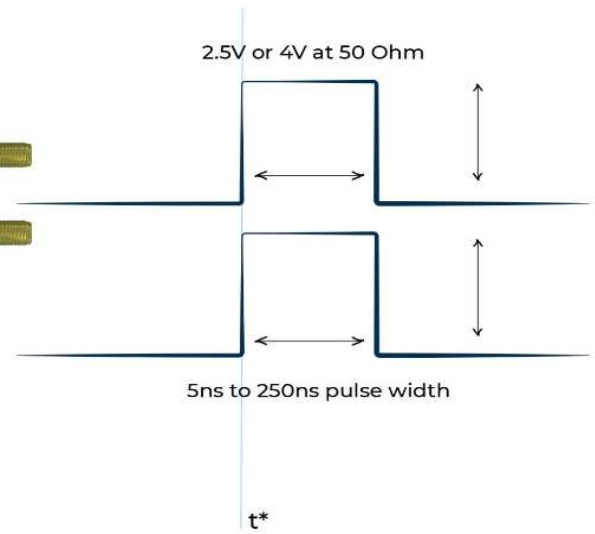
Main Function

SINGLE INPUT



DUAL DIGITAL OUTPUT

500ps rising time with 15ps jitter

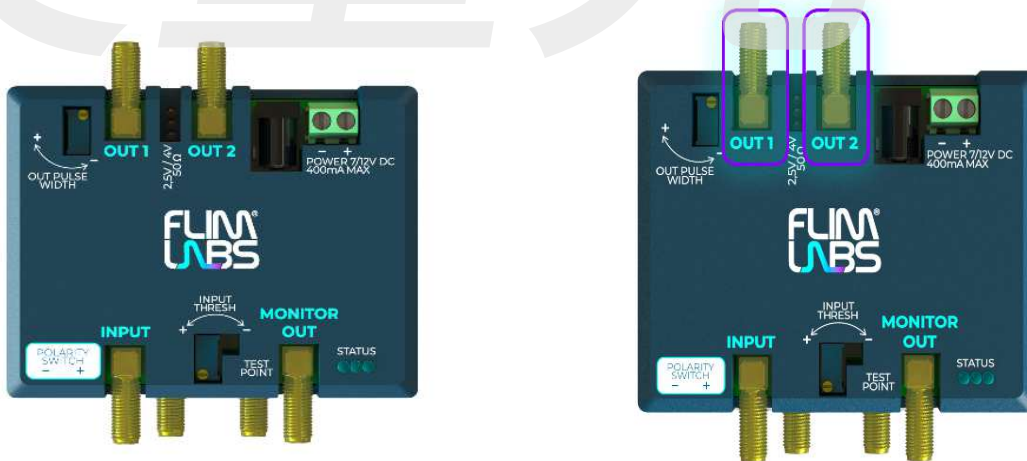


MAIN FEATURES

Our constant fraction discriminator (CFD) is compact and high-performance. It allows the user to convert an analog signal (e.g. the signal coming from a PMT, the sync out of a pulsed laser source, etc.) into a digital one. The CFD module is extremely easy to use and it can be coupled with different microscopy or spectroscopy setups.

Compactness

The size of our CFD module (85×70×30 mm) makes it simple to handle. Furthermore, its reduced size allows the user to easily implement it even on a desk or on bench setups.



Single channel module

FLIM LABS produces CFD modules with a flexible single-channel format; this feature is key for overcoming the inconvenience of other bulky modules that fit on lab-racks only.

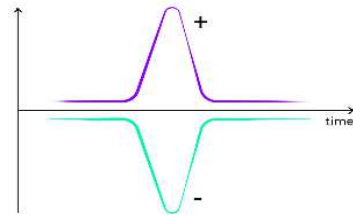
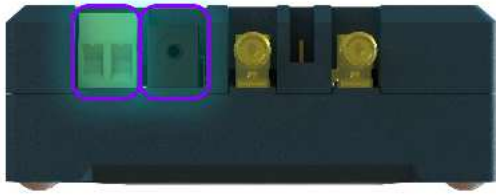
Dual twin output

A dual output with selectable voltages of 2.5V and 4V over a 50 Ohm load allows an extra copy of the discriminated signal. Having an additional output could prove useful in everyday laboratory circumstances.

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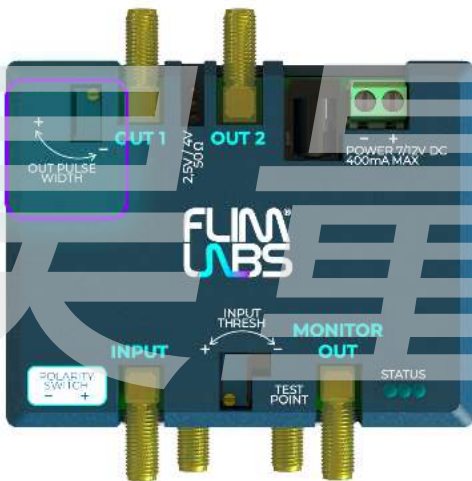


Power supply

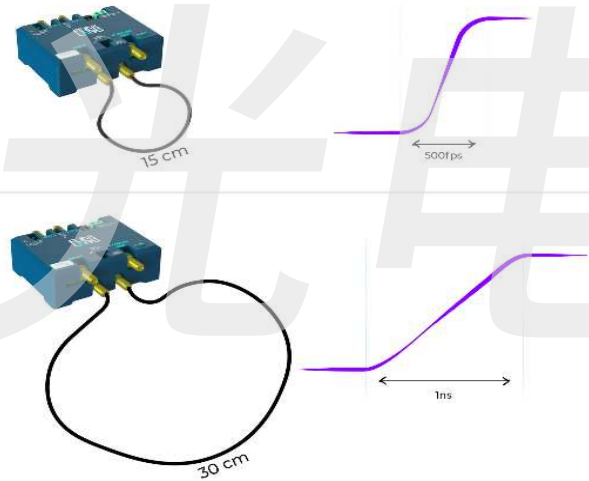
The 2 options available for the power supply allow for flexible powering via jumper cables or via a 2.1/5.5 mm coaxial connector using a wall-mount DC converter (recommended values are 7 ÷ 12 VDC – 400 mA max).

Signal polarity

Our CFD can handle both positive or negative input signals thanks to the polarity switch present on the module.



INPUT SIGNAL



Output pulse width

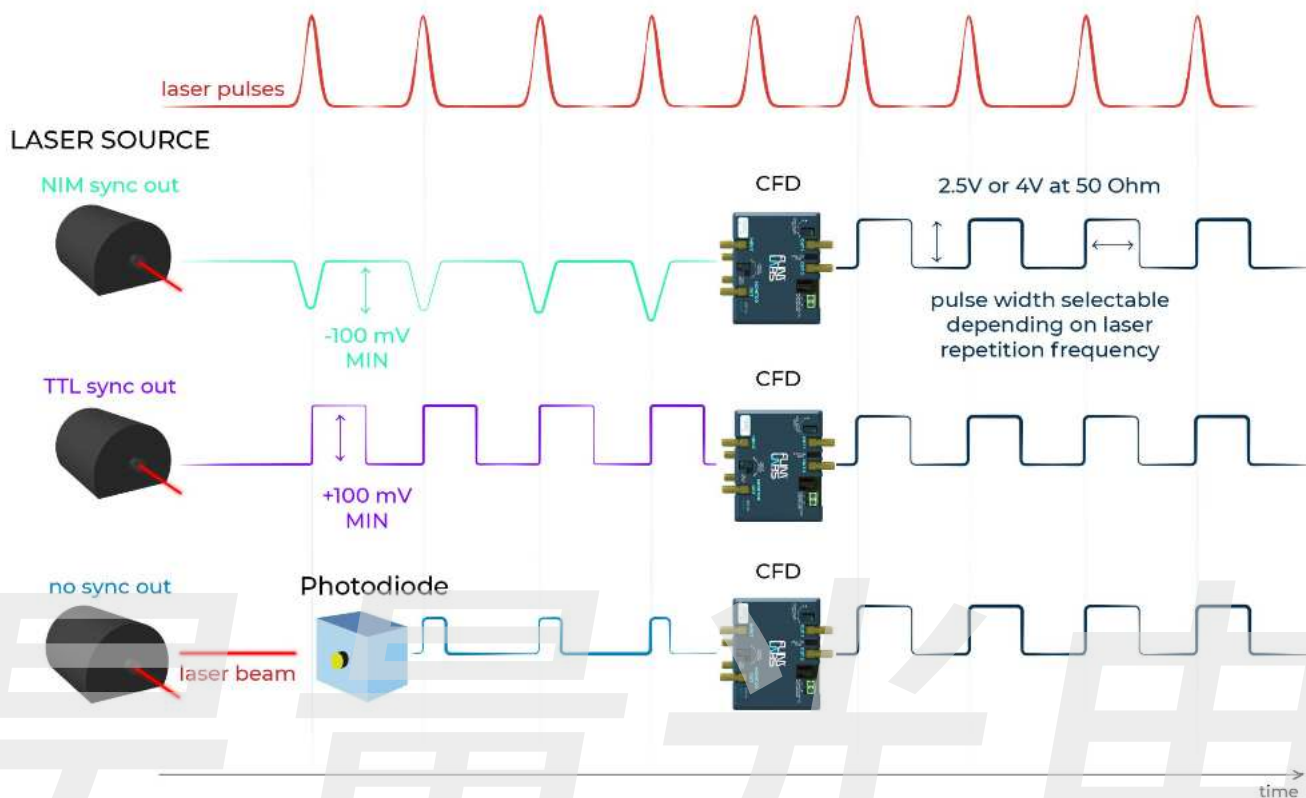
The output pulse duration can be shaped by simply twisting the dedicated potentiometer level. Values range from a minimum of 5ns to a maximum of 250ns.

Physical delay line

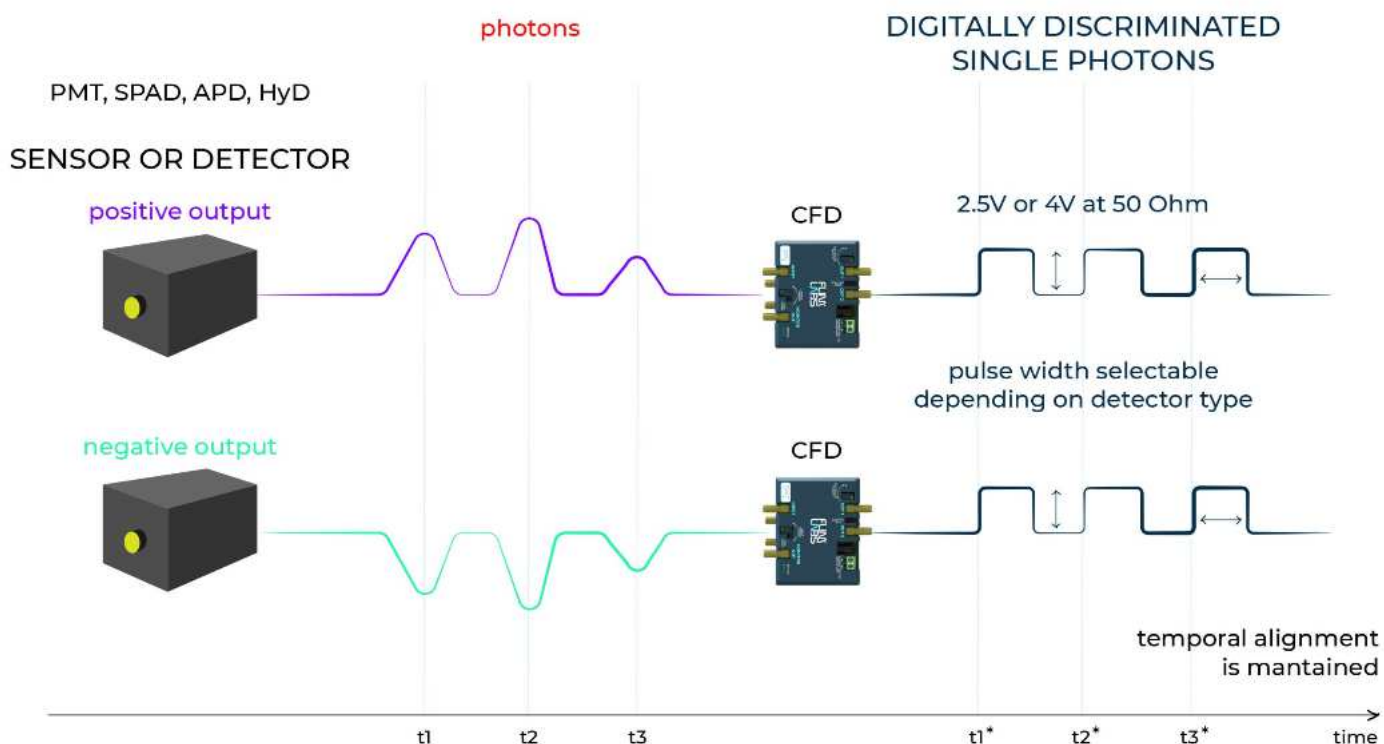
The presence of a physical delay line allows for improved flexibility in matching the delay line length with the rising time of the input signal. This ensures an optimal digital discrimination.

USE CASES

Laser Sync Out shaping: digitalization of the laser sync out signal



Digital discrimination of single photon detector signals



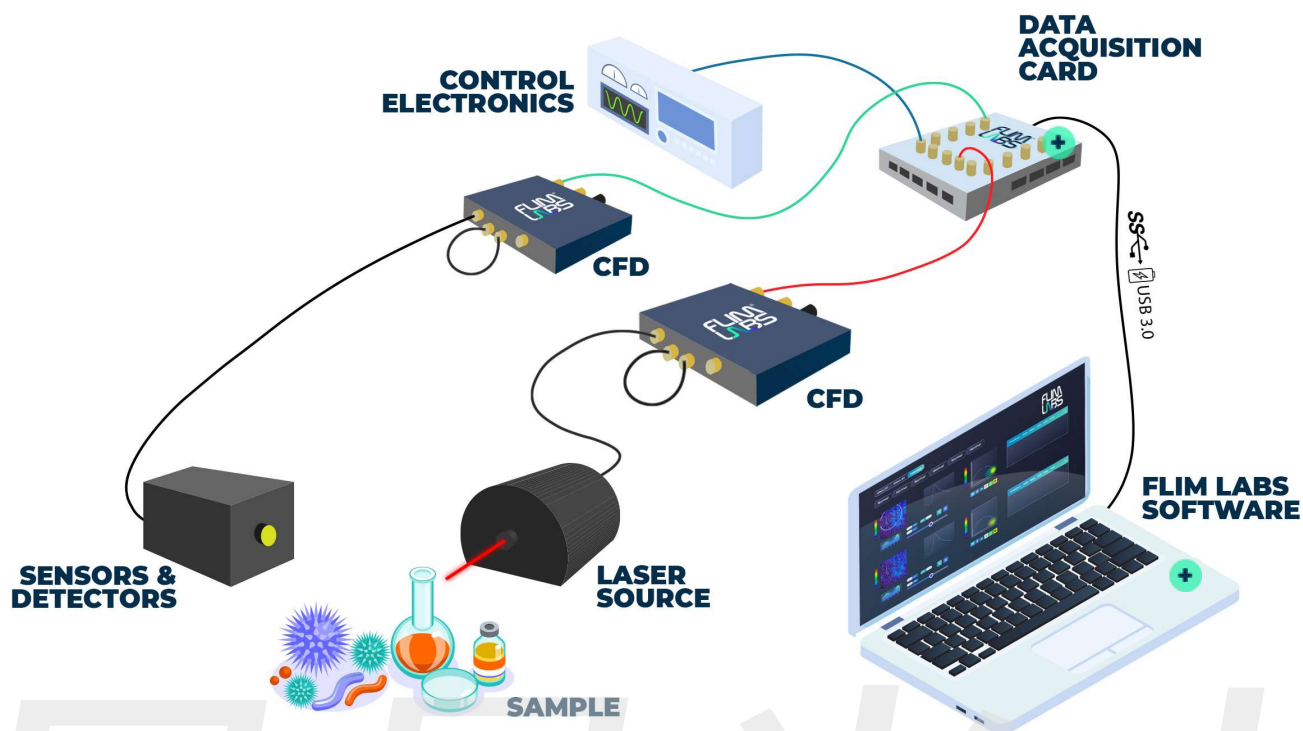
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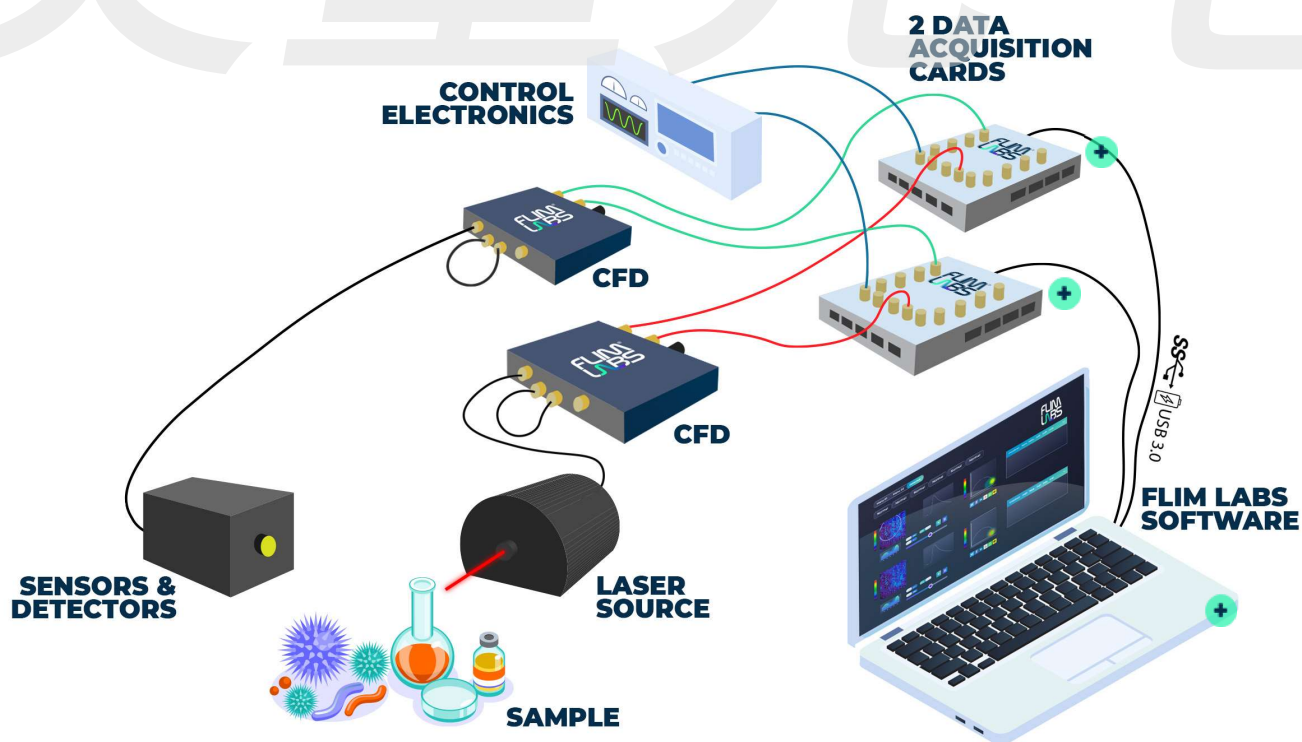
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CFDs in a microscopy or spectroscopy setup:

Typical configuration



Embedding FLIM LABS kits into pre-existent setups: dual output allows for 'transparent' integration of the FLIM Upgrade kit



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FULL SPECS

N. of input signals	1
N. of output signals	2
Connector type	SMA or SMB (customizable)
Input polarity	Positive or negative signals
Min input pulse width	700ps
Rise time	<500ps
Jitter	<15ps
Output pulse width	from 5ns to 250ns
Max repetition rate	140MHz
Min input detectable signal	+/- 100mV
Max input amplitude	5Vpp limited
Outputs amplitude	2.5V or 4V @ 50Ohm load
Impedance	50 Ohm
Delay line length	selectable with an external cable having a length based on input signal's rising-edge timing (1ns ~ 30 cm)
Power supply	8-12V DC (suggested 9 V DC wallmount) max 400mA
Power supply connector	2.1/5.5 mm coaxial connector or jumper cables
Dimensions	85*70*30 mm
Weight	100g