



Innovator In Spectroscopy Equipment

CFD2017



CONSTANT FRACTION DISCRIMINATOR MODEL CFD2017

www.cfp.co.ir



CATALOG



NIM MODULES



FREE DOWNLOAD

CONSTANT FRACTION DISCRIMINATOR

MODEL CFD2017

Features

- Full DC coupling
- 100MHz count rate
- Five operating modes
- 1000:1 dynamic range
- ZCT (Zero Cross Timing)
- LET (Leading Edge Timing)
- Adjustable output pulse width
- Multicolor count rate indicator
- CFT (Constant Fraction Timing)
- Walk < 30psec typically for 100:1 range
- Splash resistant design
- Wide operational temperature range
- Ultra reliable industry standard design
- ARC (amplitude and rise time compensated timing)
- Simultaneous dual positive and negative fast NIM outputs
- Being robust and suitable for use in challenging conditions
- CFRR (Constant Fraction with Slow Rise Time Rejection)
- High stability



**WALK < 30PSec TYPICALLY FOR
100: 1 RANGE
100MHZ COUNT RATE**

Description

The CFD2017 from Control Farayand Pasargad (CFP) is a fully dc-coupled unit with a dynamic range of up to 1000:1. Five operating modes provide optimum time resolution for many detector types and applications. For example; CFT-constant fraction mode for fast detectors, CFRR-slow rise time reject mode for Ge detectors, LET-leading edge mode for single photon counting in addition, internally selectable program modules provide for:

- User change of fraction from the standard 40%
- Operation of the unit as a zero crossing discriminator for bipolar inputs
- Operation of the unit as a leading edge discriminator without termination of the delay ports

The CFD2017 has a dc-coupled 50 ohm input which accepts negative pulses. The constant fraction composite signal is formed by the algebraic sum of a direct, attenuated signal path and a delayed. The delay time is user selected by cable delay. Optimum selection of this external delay provides full compensation for timing distortions due to both amplitude and rise time variations in the input signal. Four simultaneous, independent output signals are provided. The two positive outputs are adjustable in width; the width duration sets the internal dead time required to suppress spurious outputs due to input signal anomalies. The two negative outputs are fixed-width pulses keyed to the start of the dead time period. The front panel WALK ADJUST control and INSPECT OUTPUT permit the user to trim the time walk characteristics of the experimental setup for optimum timing resolution. A novel front panel LED indicates count rate by color change.

Specifications

Input(s)

Input power

CFD2017 powered from a standard NIM bin and power supply

INPUT

Accepts -5mV to -5V linear pulses: width > 1nsec, $Z_{in} = 50\Omega$, dc coupled; front panel BNC connector

DELAY

2 Front panel BNC connectors accept 50Ω , delay cable to form the internal constant fraction signal

Output(s)

WALK INSPECT

Displays signal of zero crossing discriminator for use in trimming time walk

Leading EDGE

(With fraction module inserted) displays leading edge discriminator output

OUTPUTS (-)

Two independent negative current outputs, each providing 32mA into 50Ω , rise time < 3 ns, pulse width 5 ns nominal, dc coupled

OUTPUTS (+)

Two independent positive voltage outputs providing 2V (minimum) into 50Ω , rise time < 5 ns, width adjustable by adjacent width trimming potentiometer, which also determines internal dead time

CLIP CABLE(rear panel)

2 BNC connectors accept 50Ω delay cable to adjust width of the negative output pulses: controlled by adjacent INT-EXT switch

Control(s)

THRESHOLD

Front panel 10-turn locking dial potentiometer to set acceptance threshold for input pulses: range - 5mV to -2V

ADJUST (walk inspect adjust)

Front panel trim pot to compensate walk of the internal zero crossing discriminator.

WIDTH (leading edge width)

Front panel trim pot: with fraction module inserted sets leading edge width to input pulse duration: with zero cross module inserted sets leading edge width beyond Z/C point of the input signal

CFRR-CFD-LET

Front panel three position rotary switch to select constant fraction with slow rise time reject (CFRR), basic constant fraction timing (CFD), or leading edge timing (LET) modes of operation

WIDTH (output width)

Front panel 10-turn screwdriver adjustable potentiometer to set width of slow positive output pulse, which is equal to the internal dead time of the discriminator - max. Setting: 1 μ sec.

IN-EXT (rear panel)

Toggle switch allows use of external cable to widen negative outputs

Indicator(s)

RATE

Front panel LED indicates count rate by color change

Performance

Counting rate

Up to 100 MHz, limited by dead time (Output Width setting).

Dynamic range

1000:1

CF mode walk

< ± 50 ps (typically ± 30 ps) for -30mV to -3V range with < 2nsec rise time

Pulse pair resolution

< 10ns, or as limited by dead time

Temperature coefficient

≤ 50 ppm/ $^{\circ}$ C

Application

- Spectrometry
- Radiation detection
- General laboratory usage
- driving the PMT based detectors
- driving the Semiconductor based detectors
- HPGE detector high voltage



Electrical and Mechanical

Unit: CFD2017

Electrical

Power required	Its power from a NIM bin power supply. Required dc voltages and currents are +6 V, 150mA; -6V, 420mA
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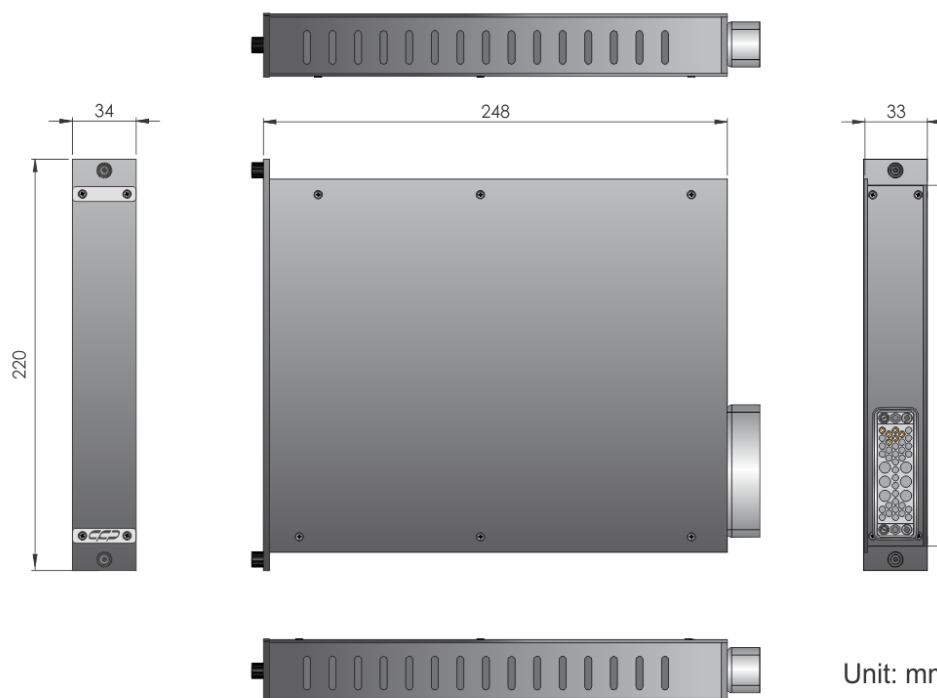
Physical

Dimensions (L x W x H)	220mm x 34mm x 248mm (L x W x H)
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Weight	1.053kg
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Box Weight	1.250kg
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Mechanical



Environmental

Storage temperature	- 10°C to + 50°C
Operating temperature	0°C to +50°C
Relative humidity	< 80%

Software and user interface

The device doesn't have any software

Ordering info

CFD2017 Standard package includes

Part #	Image	Description
CFD2017 main		Constant fraction discriminator
ACCE2017001		CD user guide (1 Pack)
ACCE2017002		Box with foam insert
ACCE2017003*		Guaranty (one year)

* =we stand behind our products. We guarantee your satisfaction in the quality of our instruments by providing a complete one-year warranty covering any defect of workmanship, material, and/or design. If our products do not perform, we will provide complete repair and/or replacement. for guaranty conditions, please refer to manual device (CFD2017 - Manual)

Optional accessories and services

Part #	Image	Description
ACCE2017004		Installation
ACCE2017005		Training
ACCE2017006**		Re-calibration (interval) services. 1year factory maintenance suggested, not required
ACCE2017011		BNC terminator 50Ω
ACCE2017012		RG58A/U, 50Ω cable with two BNC male plugs
ACCE2017013		Conn housing plug 50POS AMP connectors
ACCE2017014		Conn pin hood int 50pos panel MT
ACCE2017015		Guide pin 4-40
ACCE2017016		TE connectivity AMP connectors multimate, type II series pin
ACCE2017017		Bin guide pin

ACCE2017018



Guide socket

** = The proper maintenance & calibration of your instruments is critical to ensure proper performance & accuracy. for Re-calibration (interval) services, please call with CFP company





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