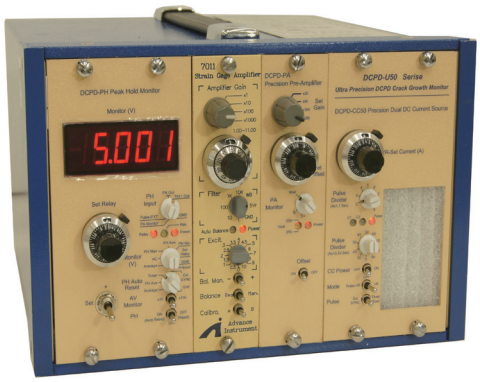
# DCPD-U50 Ultra Precision DCPD Crack Growth Monitor



## Features:

- Continuous DCPD
- Pulsed DCPD as standard
- Ultra Precision Differential signal amplifier with high bandwidth up to 10k Hz
- Gain Accuracy ± 0.1%,
- Gain : 20 ~ 50,000 by rotary switch, Accuracy 1%
- Triggering function, peak, trough, time interval and mid-point of load cycle waveform input.
- High Current O/P, up to 50A.
- Plug-in module
- Automatic bridge balance, with EEROM to preserve balance without power
- Built-in with four-pole Bessel low-pass filter with cutoff frequencies of 1 Hz, 10 Hz, 100 Hz, 1k, 10k Hz and wide-band
- Variable DC offsets and auto balance for the removal of standing voltages
- Two channels as standard, reference and specimen.

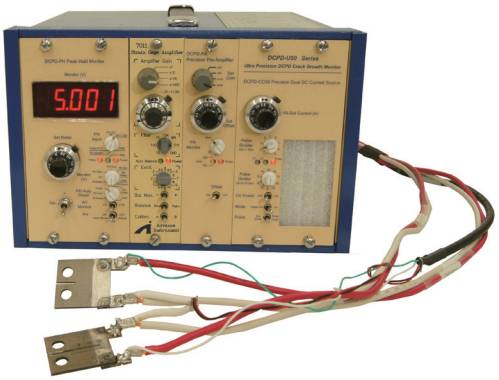
## Applications:

- Dynamic Material Test
- Strain/Stress Analysis
- Dynamic Material Elasticity Testing
- Fatigue crack initiation
- Dynamic crack growth studies
- Condition monitoring
- Crack closure studies
- Stress corrosion testing
- Slow crack growth
- Crack initiation
- Crack sizing

## Description:

The DCPD-U50 is a modern microprocessor based instrument for measuring crack depth in metals undergoing materials testing. Building on the success of the DCPD-U50 this new unit takes on board customer comments and suggestions, as shown in its impressive features list.

It utilises the pulsed direct current potential drop method (DCPD) which is an established technique covered by the ASTM 647 standard. The technique involves passing a constant current through the metal under test and measuring the resultant voltage drop that is created across the specimen. The presence of a growing defect will alter this voltage and by suitable calibration, a measure of the defect depth can be obtained.



# DCPD-U50 Ultra Precision DCPD Crack Growth Monitor

## Specification:

- Fatigue Pre Crack Initiation Measuring Performance:
  - CT Specimen, Steel, 20mm(W), 1.6mm(t)
  - Resolution < 0.02(mm)
  - Accuracy < 0.2(mm)
- Input:
  - Voltage Amplification Gains 20~ 5,000,000, Acc <1%
  - Drift 60nV/1000hrs (RTI)
  - Noise 100nV (RTI, 0.1~10Hz)
  - Stability is 0.01%
  - A/O Output, +/-5V real time
- Current Source:
  - 0~50A
  - Voltage: 2.5V max
  - Current Acc, 0.5%
  - Continuous Mode
  - Pulsed Mode, Synch with Peak Hold, duration 1~100sec
- Peak Hold:
  - Synch Input (TTL)
  - Reset : Synch Input (TTL) or Load Cycle Auto Reset ( 0.5~1kHz ) or Time Interval Reset
  - +/-5V Output: A/O Max, A/O Min, A/O Average, A/O Continuous
- SR1 RS-232 Data logger
  - Data logger
  - 24bits Sinc^3
  - Display 6 digital resolution
  - Time Interval 0.05 Sec~24 hr。
  - Data Export Format *.csv
- Balance
  - Method: Manual / Automatic
  - Ranges ( Auto ranging ): ± 7.5 mV/V Resolution 0.0012 mV/V
  - Balance time: 8 seconds
  - Manual vernier balance range: 0.1 V/Step, Max ± 5 V
- Amplifier
  - Input Impedance : 100M Ω
  - Input Common Voltage : ± 30Vpp
  - Gain Step : 1, 10, 100, 1000 by rotary switch setting, Accuracy ± 0.1% Max
  - Gain Linearity : < 0.01% Max
  - Common mode rejection: @ Gain = 1,000
  - DC to 10 kHz, >100 dB
  - Frequency response versus all gain (1~1,000), 10kHz @ -3 dB
  - Rise Time <0.1µsec
  - Stability ( gain over X 100 )
  - ± 5 µV/° C, max, RTI ( referred to input )
  - Noise (gain over X 100, all outputs)
  - 0.01 to 10 Hz: 25Vp-p RTI
- Filter
  - Characteristics
  - Low-pass active four-pole Butterworth standard
  - Frequencies ( -3 ± 1dB ): 1 Hz, 10 Hz, 100Hz, 1k, 10kHz and wide-band
- Input & Output
  - Output : Low impedance terminal analog output
  - Out contact for Crack Alarm
- Operational Environment
  - Operation temperature: -10° C ~ 60° C
  - Storage: -20° C ~ 70° C
  - Humidity: Below 95% RH, non-condensing
- Power Requirement
  - Input: 110 / 220Vac ± 10% 5 A
- Dimensions & Weight
  - Panel: 1.3” X 5.2” ( 33.4 X 133.3 mm )
  - Amplifier depth behind panel: 10.6” ( 270 mm )
  - Weight: 1.32 Lb ( 0.6 Kg )
- Optional Accessories
  - 6006C. 6- Modules enclosure with power supply.
  - 6012C. 12- Modules enclosure with power supply.