

STOPPED-FLOW CD, FURTHER SUGGESTIONS

As said in previous memos the interfacing of the Bio-Logic stopped-flow cell to Jasco CD spectrometers doesn't require any electronics or software modifications.

However some users would be interested in purchasing also Bio-Logic A/D board (currently 083-11 PCI-6052E), connection box (083-21) and Bio-Kine™ software (083-02).

Good reasons behind:

-faster acquisition process. With standard Jasco software you cannot start a second shot until previous data is transferred to Spectra Manager™, this may be a drawbacks when averaging many shots with many data points

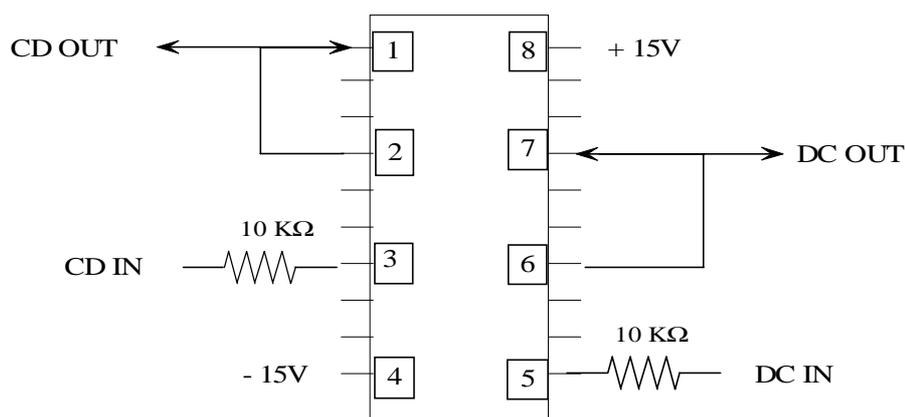
-far more elaborate post run data processing

The Jasco spectrometers have no analog output of the signals, so a small modification is necessary. Data to be outputted are typically two¹:

-the CD analog signal itself

-the DC signal

A small buffer circuit should be arranged using a common dual FET operational amplifier (for example OP2131P) mounted on a socket



The two outputs should be welded to BNC connectors to be fixed drilling two holes in the back panel, while +/- 15V should be wired from the electronics.

CD IN and DC IN should be wired from:

	<i>J-800</i>	<i>J-700</i>
CD IN	at TP6 DC of CT/HTPS board before filtering stage, 2mV/m°	at test point DC1 of CD AMPLIFIER board before filtering stage 2 mV/m°
DC IN	at pin 6 of IC1 of CD/HTPS board	at test point DC of CD AMPLIFIER board

Other optional modifications for J-715 and J-710/720:

1. the operation at constant HT is very easy to activate (switch HT Auto/Manual in the sub-panel of amplifier unit)².
Keeping the Meter Mode switch in the DC position you can easily monitor on the meter the DC component and adjust carefully the HT knob in order to keep the signal around mid scale (it's important not to go over scale in order not to damage the PM tube) with the stopped flow cell filled with blank. HT knob is a ¾ turn potentiometer, so fine adjustment may be difficult, we recommend to replace it with a 10 turns pot (2 KΩ)
2. with J-715 software you cannot collect DC simultaneously with CD, so if you want to use the standard Jasco software you can select Data Mode CD/EXT and you can wire a cable between test point DC on CD AMPLIFIER board and Ext1 BNC. If you have a J-710/720 (no facility to accept external signal) you may collect DC in place of HT modifying further the electronics with a switch which selects either HT (as in normal set-up) or DC before R7 in A/D D/A board..

And what about previous models?

1. for J-600 basically same procedures as for J-710/720, detailed instructions may be prepared when necessary
2. for J-500 Bio-Logic data acquisition board and Bio-Kine software is a must, unless you have the IF-500II PC interface and related software. However the IF-500II will not allow collection of a second channel, so only CD (or DC after some wiring modifications) can be collected.

As you see there are different possibilities, while all modifications are simple, if you are not 100% confident, we recommend to have them performed by a qualified Jasco service engineer

¹ corrected CD values should be calculated as the ratio between the AC (at modulator frequency) and DC component on the detector. In normal operation this is performed by dynode feedback, i.e. changing automatically the high voltage applied to the photomultiplier tube to keep constant the DC component, regardless the absorption of the sample. In fast kinetics experiments this may not be the proper solution, since the time response of the feedback circuit will not be fast enough or sometime will be too fast causing oscillations. This phenomena takes place during the fast mixing, in a part of the experiment where data have usually no interest, but these changes may induce artifacts in the measurement even after the stop valve/trigger is actuated. So best procedure is typically to measure CD at fixed high voltage on PM tube and to collect simultaneously CD and DC component. Corrected CD data can be calculated later on (only J-810 allows to collect directly CD/DC) by data processing. At the same time the DC will show the kinetic in transmission, so another important information

² with J-800 series switching to manual HT mode is possible only by software, from Control – CD Detector – Setting HT Voltage in Manual ... here you have to digit manually the proper high voltage, we suggest to start with an HT value similar to the one you get in Auto position...