

Introduction

The **Digital Access Module** is an optional hardware accessory for the **MFP-3D™** Controller that allows user access to the digital operations of the controller. The Digital Access Module enables applications such as photon counting, synchronization of user experiments to the AFM scan, and general purpose digital I/O control.

The Digital Access Module neatly plugs into the front of the controller and has four BNC connectors which behave as digital inputs and/or outputs. Currently the function of the four BNCs are pre-defined as follows:

- BNC1: Pixel sync (output)
- BNC2: Line sync (output)
- BNC3: Frame sync (output)
- BNC4: Photon counter (input)

The pixel, line, and frame syncs go high for about 10 microseconds every time a pixel is drawn on the screen, the beginning or end of a line occurs, or the beginning or end of a frame occurs. These are useful for experiments for synchronizing a measurement with the AFM scan. The outputs are TTL-compatible. The functions of the four BNCs are user-programmable.

The photon counter input is a TTL-compatible input which accumulates pulses for the duration of each pixel. When it is time to draw the pixel on the screen, the output of the pulse accumulator (the number of pulses that were input for the duration of the pixel) gets output to the screen, and is displayed as with any other channel. After the pixel is drawn, the counter is set to zero so that it can count the pulses for the duration of the next pixel.



The Digital Access Module easily plugs into the expansion slot in the front of the ARC2™ Controller.



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