

Simultaneously Inputting and Outputting Data

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To output (e.g. with the d/a converter) via the digitize routines, one must first load the instruNet data buffers for the output channels with output data before telling instruNet to start digitizing. And if you are using a DRIVER RAM buffer (i.e., you are passing 0L as the buffer address to AddToChannelList()) then you must tell instruNet to create that buffer before loading it with data.

For an example of how to simultaneously input and output, continuously, at high speeds, using the digitize system, please see HighSpeedSimultaneousInputAndOutput() in file Inet_Ex1.c . Here, GetOutputSegmentBuffer() and SubmitOutputSegment() are used to continuously feed the output buffers. In this case, the output stream can be a function of the input stream (e.g. a PID feedback loop), and one could run indefinitely with constantly updated output data.

For an example of how to preset the output buffer, and then tell the system to output that data and digitize at the same time (yet not reload the output buffer during digitization), please see the example in file iNet_Ex3.c, where Ch3 Vout, an output channel, is preloaded with data, and then output while Ch1 Vin and Ch4 Vin are digitized. In this example, the output data is not a function of the input data, and the same output data is presented at each scan.

Another technique is to use the simple scalar Read/Write channel routines (not the Digitize routines) to input and/or output data. Here, one value is transferred per subroutine call. These r/w routines can be placed into a subroutine that is driven by an interrupt that fires at a constant rate. The instruNet read/write routines consume approx 100us for each read/write (unless there is input channel integration, in which case, the return time is the time of the integration), therefore; interrupt rates of once every $\geq 10\text{ms}$ (i.e. $\leq 100\text{s/sec/ch}$ sample rate) are reasonable.

For more information on the differences between high speed digitize and single value read/write, please see Application Note #53.

For information on inputting and outputting with DasyLab, please see Application Note #109.