

De-multiplex Data Words

Data Access Table Type

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This note describes the implementation of a new data access table type that is designed to de-multiplex a series of data words and assign them to readings of successive analog channels. Besides the hardware data word address, there is a hardware multiplex select byte that is used to present the word address to the external hardware. The demultiplexed data values are numeric values that will be assigned to successive analog channel readings.

RDATA table entry layout in usual 8-word pattern

```
3100  chan  dataWordAddress
offs  delay  mask/mpx0  count
```

The \$31 byte value is the new type# whose behavior is herein described. The 00 byte specifies the ADATA table number, which receives the demultiplexed data values.

The `chan` field is the initial target analog channel#. The `count` word specifies the number of channels in sequence whose readings will be assigned the values of the demultiplexed data words.

The `dataWordAddress` is the 32-bit address of the data word to be read after setting the multiplex selection value. The `delay`, if nonzero, is the number of microseconds delay to be inserted after setting the multiplex selection before reading the data word.

The `offs` field is the (signed) offset to the multiplex select byte from the data word address. The multiplex select address is therefore (`dataAddress + offs`).

The `mask` byte allows specifying the mask used for the multiplex select. This mask must specify a set of contiguous bits whose least significant bit is bit #0 of the byte. It must therefore be \$01, \$03, \$07, \$0F, \$1F, \$3F, \$7F, or \$FF. (If it is 00, it will be interpreted as if \$FF had been specified.) The mask specification allows preservation of those bits in the selection byte not used for demultiplexing. The `mpx0` byte specifies in the same field as indicated by the `mask` field the initial value of the multiplex selection.

Example

```
3100  0200  FFF5  8100
0003  0005  0F00  0010
```

This entry demultiplexes 16 data words read from \$FFF58100, depositing the values into successive analog channels starting with 0200. The multiplex selection byte address is \$FFF58103. Only the low 4 bits are used for demultiplexing, so the high order bits can be used for anything else. A 5 μ s setup delay is imposed after setting the multiplex value before reading each data word.