

# Single Event

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## 1 Single Event

Is used for collecting data from an external source. A trigger signal is sent to the Alpide. If an external source creates a charge cloud in the epitaxial layer of the Alpide this will be collected.

### 1.1 Alpide Registers

- `reg_fromu.config2` (0x5)

Strobe duration. The length of the window that a hit can be latched onto. Default: 0x14

- `reg_fromu.config3` (0x6)

Strobe gap. The gap between two strobos with the internal strobe sequencer.

- `reg_cmudmu.config` (0x10) Can be used to enable manchester encoding. For single event scan performed on the VCU118 this must be turned on, which is the default value. For PTB it must be turned off.

### 1.2 Registers to be set on board

- `reset_counters`

Found in ALPIDE CONTROL. Resets control counters.

- `enable_frame_based_offload`

Found in OFFLOAD. Forces the offload to be sorted so that data from two different frames are not entangled.

- `enable_offload`

Found in OFFLOAD. Enables the offload state machine. Register must be set to 1 in order to receive data.

- `enable_alpide_clock`

Found in GLOBAL REGS. Turns on the Alpide clock. Register must be set to 1 in order to turn on Alpide. Reset to default value of 0 at the end of the test.

- `reset_offload_fifo`

Found in OFFLOAD. Resets the offload FIFO. Is a PULSE, so the register should be set to 1 in order to empty the FIFOs.

- `run_settings`

Found in ALPIDE DATA. Register must be set to 1 in order to put the data-module into run mode.

- `trigger_source`

Found in TRIGGER MANAGER. The source of the ALPIDE trigger signal.

- `alpide_mode`

Found in TRIGGER MANAGER. For triggered mode set register to 0. For continues mode set register to 1.

- `mode`

Found in TRIGGER MANAGER. Controls whether transmitting trigger or pulse. Register must be set to 0 for single event scan.

- `num_triggers`

Found in TRIGGER MANAGER. Sets the number of triggers.

- `trigger_delay`

Found in TRIGGER MANAGER. Sets the gap between two subsequent triggers.

- `trigger_init`

Found in TRIGGER MANAGER. Initiates the command transmission process for all modes.

In addition to this, the pixels that are to be pulsed must be selected and unmasked.

Detailed information on registers can be found in `wp3/firmware/source/modules`