

Agata_Digitiser_Offset_and_gain_test

The Ramp test does not exercise all the adc codes.

Use cmode to diff mode converter Nim module (designed by iphc-drs, Strasburg), to drive dummy sine wave to the digitisers cards.

Set input for the above Nim module at 1V pk-pk, load terminated at 50R.

Select channel (as shown below), send it to card (“Send to Card”, make sure that box is deselected before sending to card for change to take effect) and acquire the data as shown below.

The screenshot shows the Samwise 200805300101 software interface. The main window displays the 'Channels setup' section, which includes a table of channels and various configuration options.

| Channel | ADC Bus | Gain | Offset | Synchro | Readout | Inspection Line | Selection |
|---------|---------|---------|--------|---------|----------|---|----------------|
| 1 | On | Regular | 0.0° | | Selected | <input checked="" type="checkbox"/> Input | Channel 5 |
| 2 | On | Regular | 0.0° | | - | <input type="checkbox"/> Analog 1 | Channel 1 |
| 3 | On | Regular | 0.0° | | - | <input type="checkbox"/> Analog 2 | Channel 2 |
| 4 | On | Regular | 0.0° | | - | <input type="checkbox"/> Digital 1 | TRIG Internal |
| 5 | On | Regular | 0.0° | | - | <input type="checkbox"/> Digital 2 | TRIG No Signal |
| 6 | On | Regular | 0.0° | | - | | |

Below the table, there are checkboxes for 'Ramp', 'User reset', and 'spare channel' (set to 'None').

The 'Trigger setup' section includes a table with the following data:

| Type | Threshold | Differentia... | Integration | Slope | Delay | Gain | Shift | Force Trigger |
|---------|-----------|----------------|-------------|-------|-------|------|-------|--------------------------|
| Digital | 1000 | 2 | 4 | + | 80 | 1/2 | 10 | <input type="checkbox"/> |

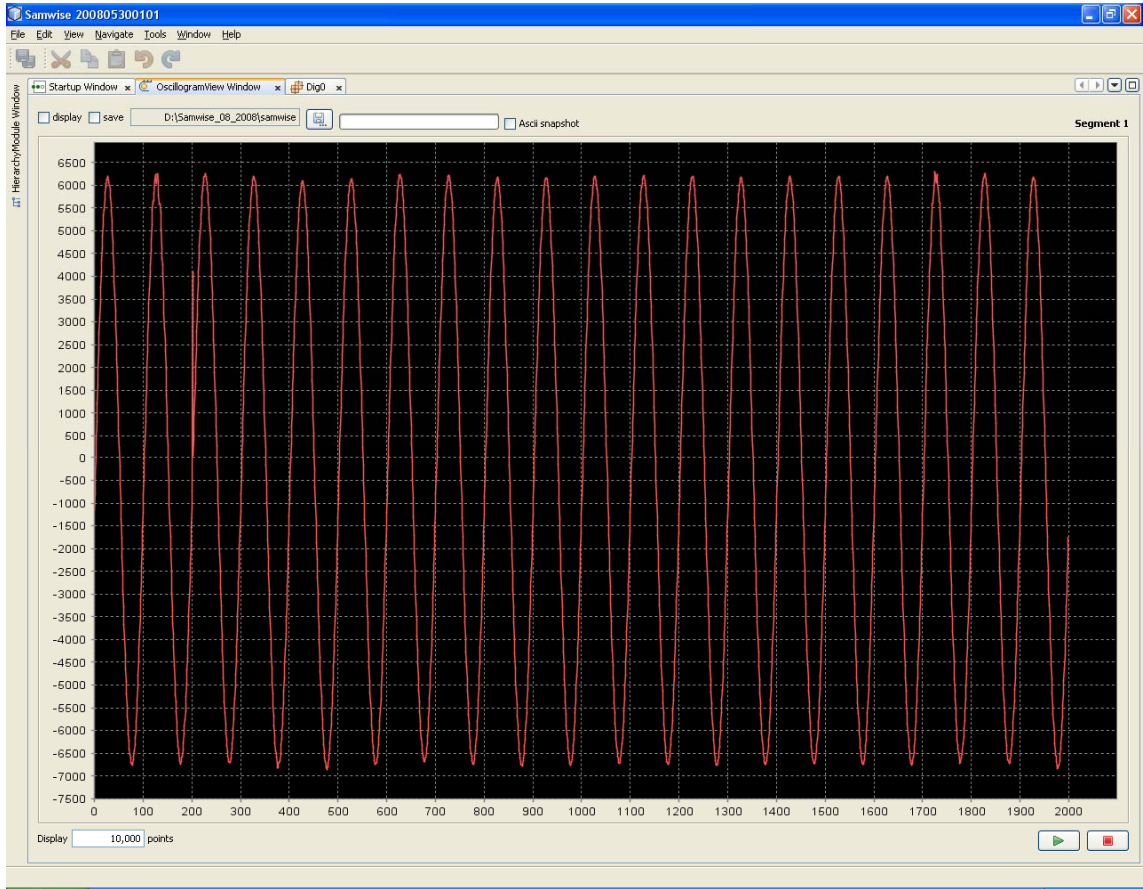
The 'Oscillogram Setup' section includes a table with the following data:

| Data | Total size | Size before Trigger |
|----------|------------|---------------------|
| Raw data | 2000 | 200 |

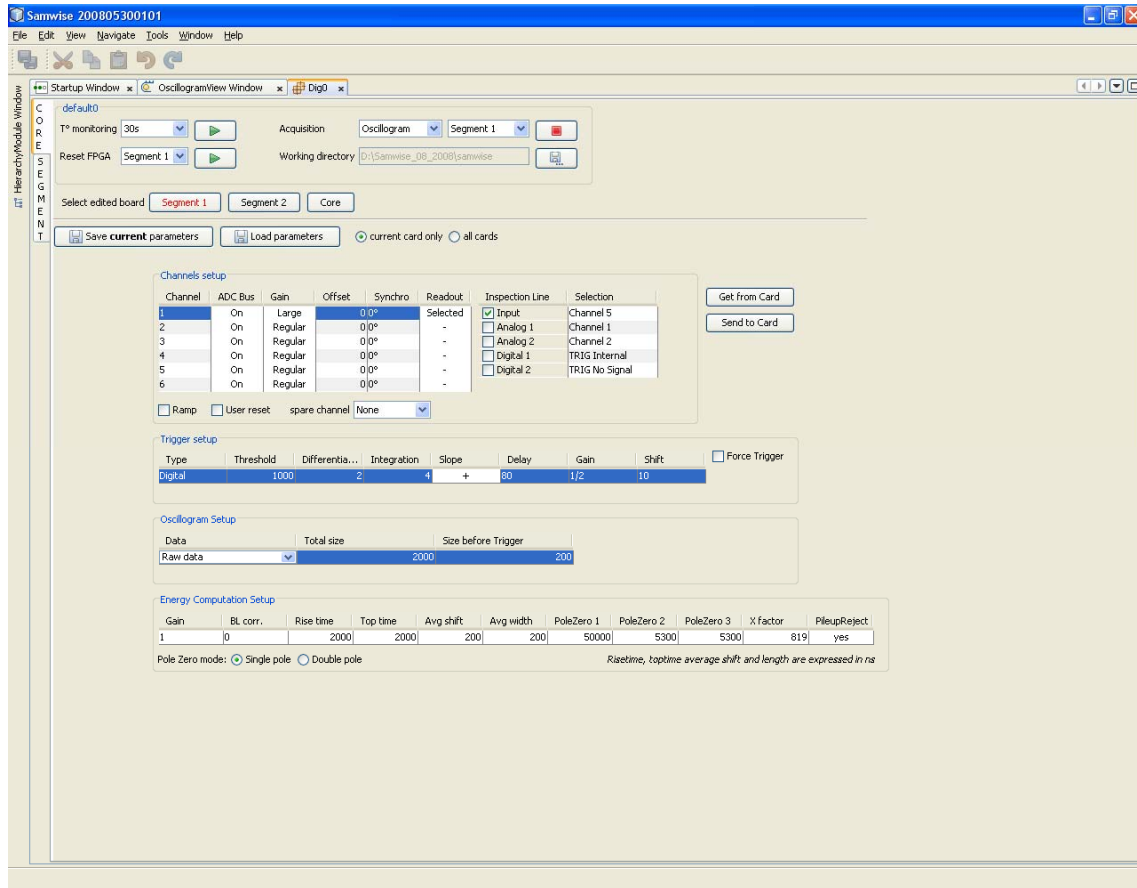
The 'Energy Computation Setup' section includes a table with the following data:

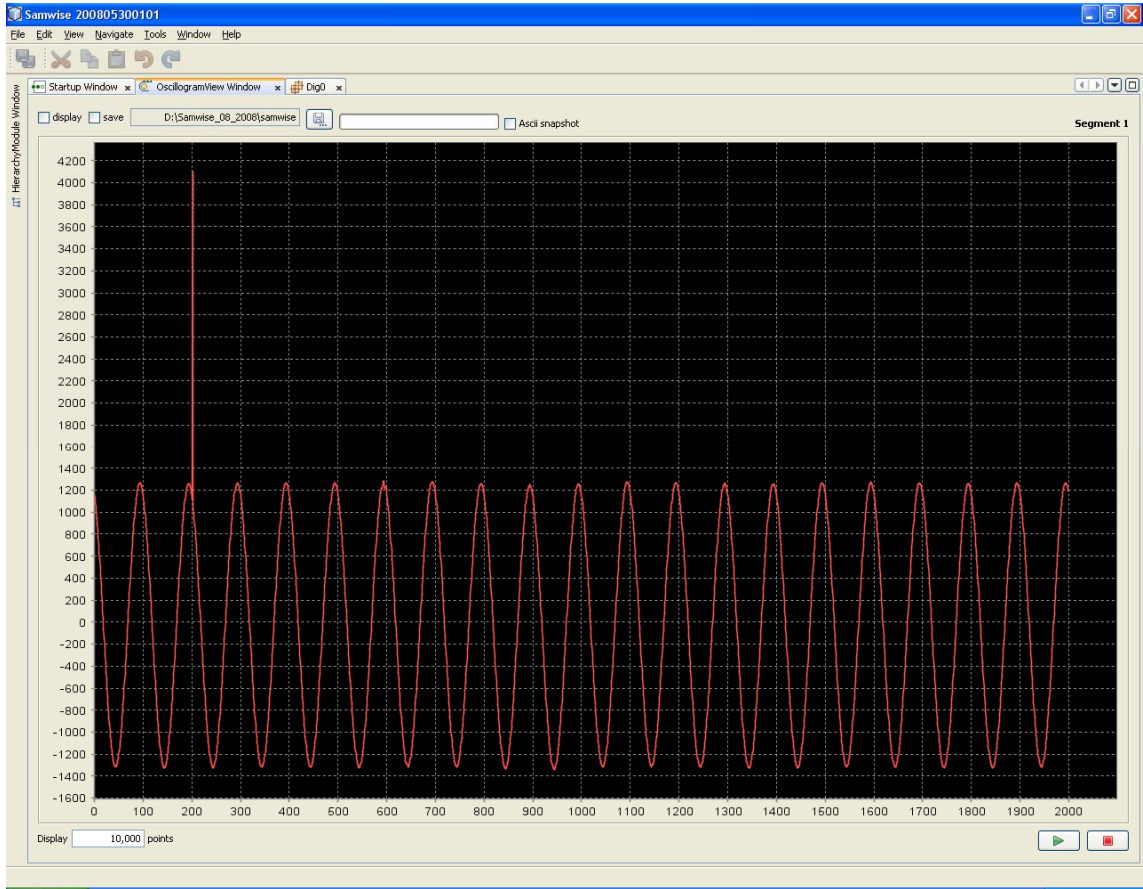
| Gain | BL corr. | Rise time | Top time | Avg shift | Avg width | PoleZero 1 | PoleZero 2 | PoleZero 3 | X factor | PileupReject |
|------|----------|-----------|----------|-----------|-----------|------------|------------|------------|----------|--------------|
| 1 | 0 | 2000 | 2000 | 200 | 200 | 50000 | 5300 | 5300 | 819 | yes |

Below the table, there are radio buttons for 'Pole Zero mode' (Single pole selected) and 'Double pole'. A note at the bottom states: 'Risetime, toptime average shift and length are expressed in ns'.



Under gain , (large, x5, refers to the preamp output, not the gain of the adc input driver) select large, send it to card and acquire the data as shown below.



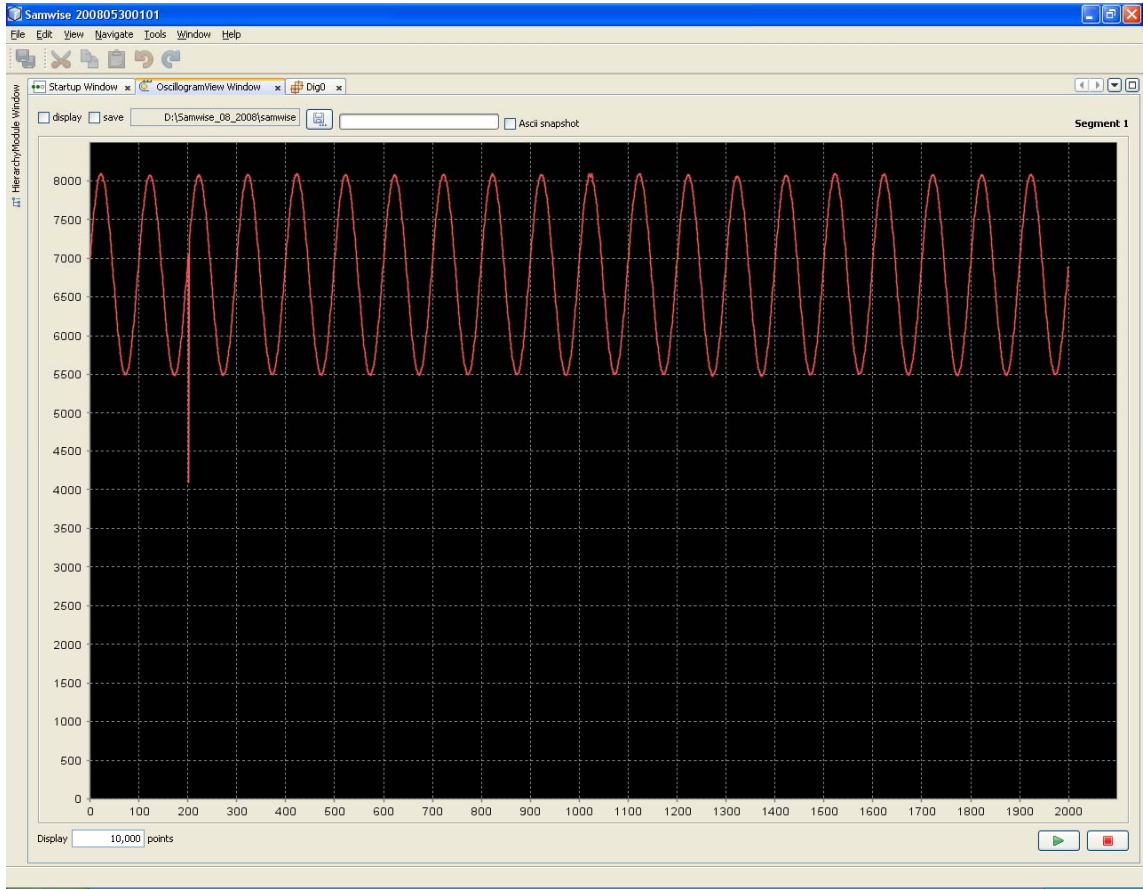


Under offset, type 32000 (max positive offset) , send it to card and acquire the data as shown below.

The screenshot shows the Samwise 200805300101 software interface. The main window displays several configuration sections:

- Channels setup:** A table with columns: Channel, ADC Bus, Gain, Offset, Synchro, Readout, Inspection Line, and Selection. Channel 1 is selected with an offset of 32000.0°. Buttons for "Get from Card" and "Send to Card" are visible.
- Trigger setup:** A table with columns: Type, Threshold, Differentia..., Integration, Slope, Delay, Gain, Shift, and Force Trigger. The "Digital" type is selected with a threshold of 1000 and a slope of 4.
- Oscillogram Setup:** A table with columns: Data, Total size, and Size before Trigger. "Raw data" is selected with a total size of 2000 and a size before trigger of 200.
- Energy Computation Setup:** A table with columns: Gain, BL corr., Rise time, Top time, Avg shift, Avg width, PoleZero 1, PoleZero 2, PoleZero 3, X factor, and PileupReject. The "Single pole" mode is selected.

At the top, there are controls for "T^o monitoring" (30s), "Acquisition" (Oscillogram), "Reset FPGA", and "Working directory" (D:\Samwise_08_2008\Samwise).



Under offset, type 32000 (max negative offset) , send it to card and acquire the data as shown below.

The screenshot shows the Samwise 200805300101 software interface. The main window displays various configuration panels for an oscilloscope or data acquisition system. The 'Channels setup' panel is the primary focus, showing a table of channel configurations. The 'Offset' column for Channel 1 is set to -32000.0°. The 'Trigger setup' panel shows a digital trigger configuration with a threshold of 1000 and a slope of 4. The 'Oscillogram Setup' panel shows a data size of 2000 and a size before trigger of 200. The 'Energy Computation Setup' panel shows a gain of 1 and a rise time of 2000.

Channels setup

| Channel | ADC Bus | Gain | Offset | Synchro | Readout | Inspection Line | Selection |
|---------|---------|---------|-----------|----------|---------|---|----------------|
| 1 | On | Large | -32000.0° | Selected | | <input checked="" type="checkbox"/> Input | Channel 5 |
| 2 | On | Regular | 0.0° | - | | <input type="checkbox"/> Analog 1 | Channel 1 |
| 3 | On | Regular | 0.0° | - | | <input type="checkbox"/> Analog 2 | Channel 2 |
| 4 | On | Regular | 0.0° | - | | <input type="checkbox"/> Digital 1 | TRIG Internal |
| 5 | On | Regular | 0.0° | - | | <input type="checkbox"/> Digital 2 | TRIG No Signal |
| 6 | On | Regular | 0.0° | - | | | |

Ramp User reset spare channel None

Trigger setup

| Type | Threshold | Differentia... | Integration | Slope | Delay | Gain | Shift | Force Trigger |
|---------|-----------|----------------|-------------|-------|-------|------|-------|--------------------------|
| Digital | 1000 | 2 | 4 | + | 80 | 1/2 | 10 | <input type="checkbox"/> |

Oscillogram Setup

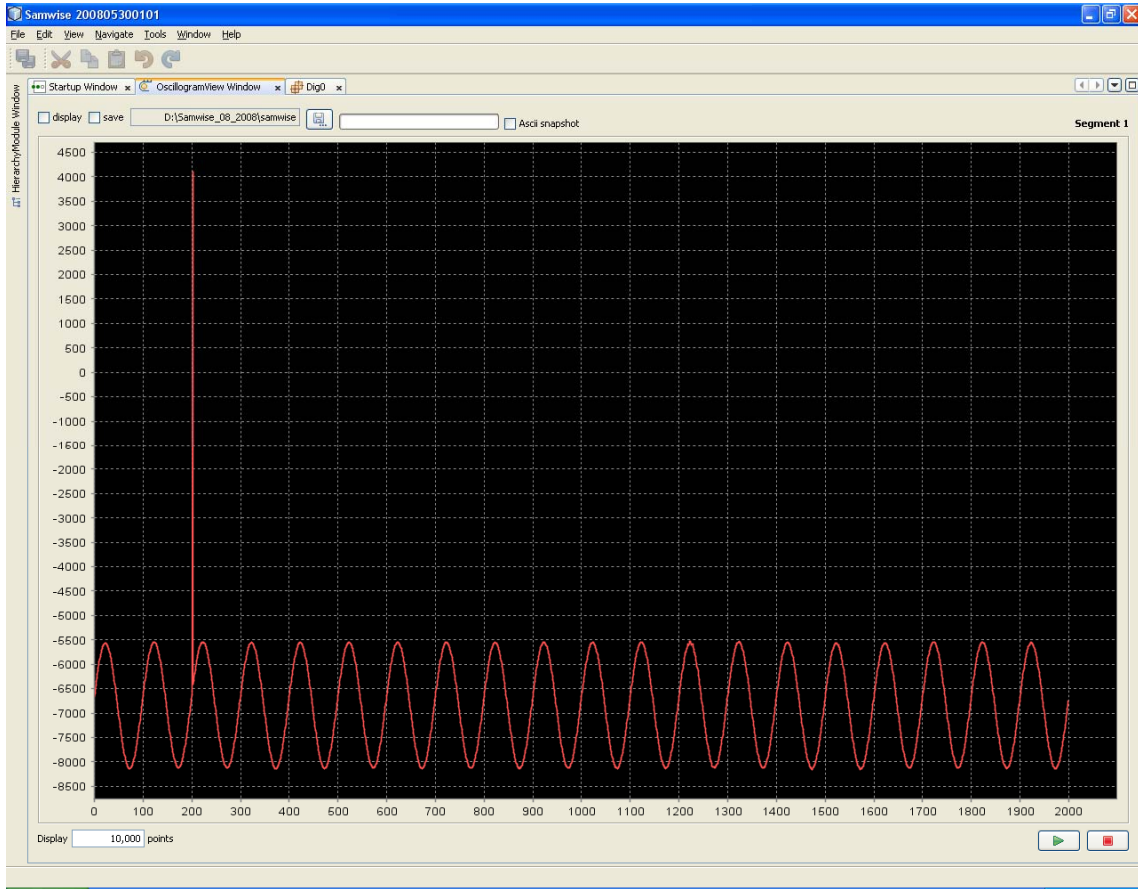
| Data | Total size | Size before Trigger |
|----------|------------|---------------------|
| Raw data | 2000 | 200 |

Energy Computation Setup

| Gain | BL corr. | Rise time | Top time | Avg shift | Avg width | PoleZero 1 | PoleZero 2 | PoleZero 3 | X factor | PileupReject |
|------|----------|-----------|----------|-----------|-----------|------------|------------|------------|----------|--------------|
| 1 | 0 | 2000 | 2000 | 200 | 200 | 50000 | 5300 | 5300 | 819 | yes |

Pole Zero mode: Single pole Double pole

Risetime, toptime average shift and length are expressed in ns



Repeat for all 6 channels and all cards in the system (6 segment, one core).