

# Industrial IIO configs support

## 1. Overview

Configs is a filesystem-based manager of kernel objects. IIO uses some objects that could be easily configured using configs (e.g.: devices, triggers).

See Documentation/filesystems/configs.rst for more information about how configs works.

## 2. Usage

In order to use configs support in IIO we need to select it at compile time via CONFIG\_IIO\_CONFIGFS config option.

Then, mount the configs filesystem (usually under /config directory):

```
$ mkdir /config
$ mount -t configsfs none /config
```

At this point, all default IIO groups will be created and can be accessed under /config/iio. Next chapters will describe available IIO configuration objects.

## 3. Software triggers

One of the IIO default configs groups is the "triggers" group. It is automagically accessible when the configs is mounted and can be found under /config/iio/triggers.

IIO software triggers implementation offers support for creating multiple trigger types. A new trigger type is usually implemented as a separate kernel module following the interface in include/linux/iio/sw\_trigger.h:

```
/*
 * drivers/iio/trigger/iio-trig-sample.c
 * sample kernel module implementing a new trigger type
 */
#include <linux/iio/sw_trigger.h>

static struct iio_sw_trigger *iio_trig_sample_probe(const char *name)
{
    /*
     * This allocates and registers an IIO trigger plus other
     * trigger type specific initialization.
     */
}

static int iio_trig_sample_remove(struct iio_sw_trigger *swt)
{
    /*
     * This undoes the actions in iio_trig_sample_probe
     */
}

static const struct iio_sw_trigger_ops iio_trig_sample_ops = {
    .probe      = iio_trig_sample_probe,
    .remove     = iio_trig_sample_remove,
};

static struct iio_sw_trigger_type iio_trig_sample = {
    .name = "trig-sample",
    .owner = THIS_MODULE,
    .ops = &iio_trig_sample_ops,
};

module_iio_sw_trigger_driver(iio_trig_sample);
```

Each trigger type has its own directory under /config/iio/triggers. Loading iio-trig-sample module will create 'trig-sample' trigger type directory /config/iio/triggers/trig-sample.

We support the following interrupt sources (trigger types):

- Hrtimer, uses high resolution timers as interrupt source

### 3.1 Hrtimer triggers creation and destruction

Loading iio-trig-hrtimer module will register hrtimer trigger types allowing users to create hrtimer triggers under

/config/iio/triggers/hrtimer.

e.g:

```
$ mkdir /config/iio/triggers/hrtimer/instance1  
$ rmdir /config/iio/triggers/hrtimer/instance1
```

Each trigger can have one or more attributes specific to the trigger type.

### 3.2 "hrtimer" trigger types attributes

"hrtimer" trigger type doesn't have any configurable attribute from /config dir. It does introduce the `sampling_frequency` attribute to trigger directory. That attribute sets the polling frequency in Hz, with mHz precision.