NAME
gpioths - driver for DHTxx and AM320x temperature and humidity sensors

SYNOPSIS
To compile this driver into the kernel, place the following line in your kernel configuration file:

device gpioths

Alternatively, to load the driver as a module at boot time, place the following line in loader.conf(5):

gpioths_load="YES"

DESCRIPTION
The **gpioths** driver supports the DHTxx and AM320x family of temperature and humidity sensors. The driver automatically reads the values from the sensor once every 5 seconds, and makes the results available via sysctl(8) variables.

HARDWARE
The **gpioths** driver provides support for the following devices:

DHT11	DHT12
DHT21	DHT22
AM3201	AM3202

The supported devices are all similar to each other, varying primarily in accuracy and resolution. The devices require a single wire for data communications, using a custom protocol which is not compatible with Maxim's 1-wire(tm). The AM320x devices also support connection to an i2c bus, but this driver supports only the single-wire connection option.

SYSCTL VARIABLES
Sysctl variables are used to access the most recent temperature and humidity measurements.

dev.gpioths.<unit>.temperature
> The current temperature in integer deciKelvins. Note that sysctl(8) will convert those units to display in decimal degrees Celsius.

dev.gpioths.<unit>.humidity
> The current relative humidity, as an integer percentage.

dev.gpioths.<unit>.fails

The number of failed attempts to communicate with the sensor since the last good access. Cleared whenever a set of measurements is successfully retrieved.

FDT CONFIGURATION

On an fdt(4) based system, a **gpioths** device node is typically defined directly under the root node, or under a simplebus node that represents a collection of devices on a board.

The following properties are required in the **gpioths** device subnode:

compatible
> Must be "dht11".

gpios   A reference to the gpio device and pin for data communications.

Example of adding a sensor with an overlay

```
/dts-v1/;
/plugin/;
#include <dt-bindings/gpio/gpio.h>

/ {
  compatible = "wand,imx6q-wandboard";
};

&{/} {
  dht0 {
    compatible = "dht11";
    gpios = <&gpio5 15 GPIO_ACTIVE_HIGH>;
  };
};
```

HINTS CONFIGURATION

On a device.hints(5) based system, such as MIPS, these values are configurable for **gpioths**:

hint.gpioths.<unit>.at
> The gpiobus(4) instance the **gpioths** instance is attached to.

hint.gpioths.pins
> A bitmask with a single bit set to indicate which gpio pin on the gpiobus(4) to use for data communications.

SEE ALSO

fdt(4), gpiobus(4), sysctl(8)

HISTORY

The **gpioths** driver first appeared in FreeBSD 11.1.