



Configuration for single-click  
and double-click detection using the FC30

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## **Introduction**

This document is intended to provide application information for the click and double-click detection functions of the FC30.

When a single or double mechanical tap is detected, the FC30 provides an interrupt signal, enabling a “mouse button-like” function for intuitive man-machine interface solutions.

A power-down mode selectable through a dedicated command ensures very low current consumption in battery-operated devices.

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## 1 Theory of operation

The click recognition function featured in the FC30 helps to create a man-machine interface with little software loading. The device can be configured to output an interrupt signal on a dedicated pin when tapped in any direction.

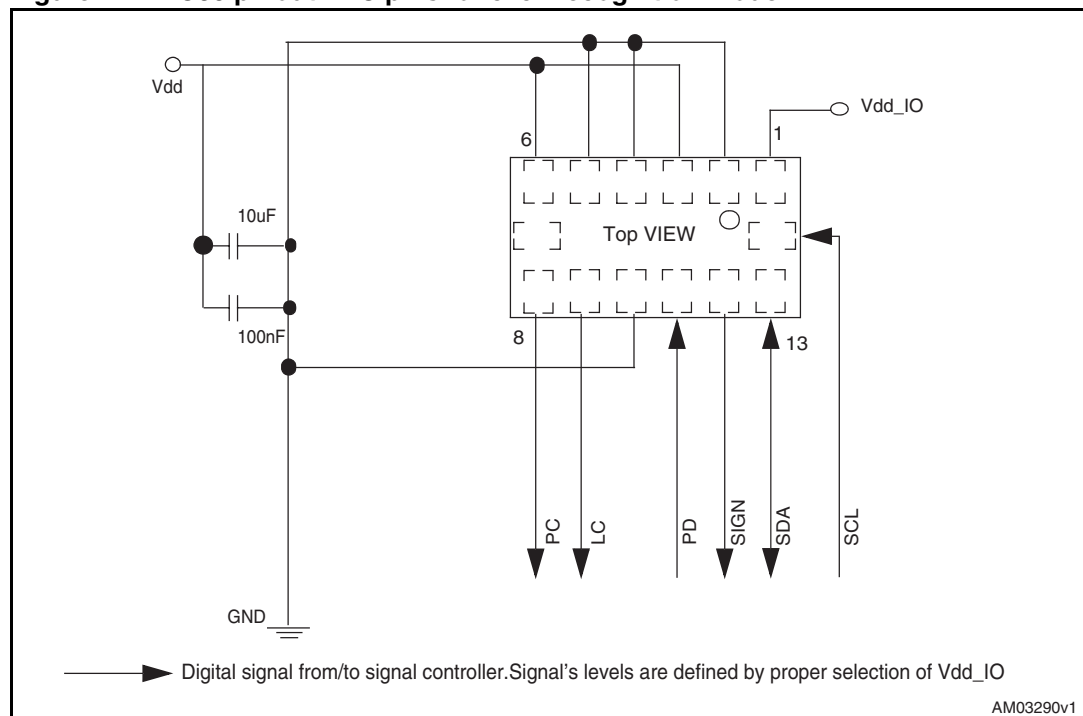
If the sensor is exposed to a single input stimulus, it generates an interrupt request on inertial interrupt pin PC. A more advanced feature allows the generation of an interrupt request when a double input stimulus with fixed time between the two events is recognized, enabling a mouse button-like functionality.

**Note:** While the device is operating in click/double-click recognition mode, the orientation detection function is not available.

## 1.1 Device pinout for click recognition mode

Click recognition mode is enabled through specific commands sent to the device over the I<sup>2</sup>C bus that is available through dedicated pins (*Figure 1*).

**Figure 1. FC30 pinout - I<sup>2</sup>C pins for click recognition mode**



## 1.2 Entering single click recognition mode

To enable the single-click recognition function, the device must first be configured for power-down mode driving PD pin to GND. Then the following sequence of commands must be sent to the device through I<sup>2</sup>C bus:

```
I2C_Read(0x5D, 0x16, Value_1);
I2C_Write(0x5D, 0x16, Value_1 & 0x1F);
I2C_Write(0x1D, 0x3Bh, 0x77h);
I2C_Write(0x1D, 0x3Ch, 0x07h);
I2C_Write(0x1D, 0x3Dh, 0xFEh);
I2C_Write(0x1D, 0x3Eh, 0x10h);
I2C_Write(0x1D, 0x3Fh, 0xFFh);
I2C_Write(0x1D, 0x38h, 0x15h);
I2C_Write(0x1D, 0x20h, 0x47h);
I2C_Write(0x1D, 0x22h, 0x07h);
```

where I2C\_Read and I2C\_Write have the following syntax:

```
I2C_Read(SlaveAddress, SubAddress, DestinationValue);
I2C_Write(SlaveAddress, SubAddress, SourceValue);
```

At the end of the sequence the device will be in a power on state, ready to operate in single-click recognition mode and orientation detection is no longer active.

## 1.3 Entering double-click recognition mode

As with single-click recognition, to enable the double-click recognition function the device must be first configured for power-down mode driving PD pin to GND. Then the following sequence of commands must be sent to the device through I<sup>2</sup>C bus:

```
I2C_Read(0x5D, 0x16, Value_1);
I2C_Write(0x5D, 0x16, Value_1 & 0x1F);
I2C_Write(0x1D, 0x3Bh, 0x77h);
I2C_Write(0x1D, 0x3Ch, 0x07h);
I2C_Write(0x1D, 0x3Dh, 0xFEh);
I2C_Write(0x1D, 0x3Eh, 0x10h);
I2C_Write(0x1D, 0x3Fh, 0xFFh);
I2C_Write(0x1D, 0x38h, 0x2Ah);
I2C_Write(0x1D, 0x20h, 0x47h);
I2C_Write(0x1D, 0x22h, 0x07h);
```

At the end of the sequence, the device will be in a power on state, ready to operate in double-click recognition mode and orientation detection is no longer active.

## **1.4 Exiting click recognition mode**

To exit from the click recognition function and restore the orientation detection, the device must be first be turned off by switching off the power supply, then turned on.

## 2 Power-down mode

When the FC30 is operating in click or double-click recognition mode, the PD pin must be tied to GND and no longer enabling the power-down mode. Power-down mode is still available through dedicated I<sup>2</sup>C commands.

### 2.1 Entering power-down mode

To enter the power-down mode, send the following I<sup>2</sup>C command to the device:

```
I2C_Write(0x1D, 0x20h, 0x00h);
```

### 2.2 Exiting power-down mode

To exit the power-down mode, send the following I<sup>2</sup>C command to the device:

```
I2C_Write(0x1D, 0x20h, 0x47h);
```

### 3 Revision history

**Table 1. Document revision history**

Date	Revision	Changes
17-Feb-2009	1	Initial release.

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