

# I2C Library

A software defined, industry-standard, I<sup>2</sup>C library that allows you to control an I<sup>2</sup>C bus via xCORE ports. I<sup>2</sup>C is a two-wire hardware serial interface, first developed by Philips. The components in the library are controlled via C using the XMOS multicore extensions (xC) and can either act as I<sup>2</sup>C master or slave.

The library is compatible with multiple slave devices existing on the same bus. The I<sup>2</sup>C master component can be used by multiple tasks within the xCORE device (each addressing the same or different slave devices).

The library can also be used to implement multiple I<sup>2</sup>C physical interfaces on a single xCORE device simultaneously.

## Features

- I<sup>2</sup>C master and I<sup>2</sup>C slave modes.
- Supports speed up to 400 Kb/s (I<sup>2</sup>C Fast-mode).
- Clock stretching support.
- Synchronous and asynchronous APIs for efficient usage of processing cores.

## Typical Resource Usage

This following table shows typical resource usage in some different configurations. Exact resource usage will depend on the particular use of the library by the application.

Configuration	Pins	Ports	Clocks	Ram	Logical cores
Master	2	2 (1-bit)	0	~1.4K	0
Master (single port)	2	1 (multi-bit)	0	~1.5K	1
Master (asynchronous)	2	2 (1-bit)	0	~3.4K	1
Master (asynchronous, combinable)	2	2 (1-bit)	0	~3.3K	≤ 1
Slave	2	2 (1-bit)	0	~1.3K	≤ 1

## Software version and dependencies

This document pertains to version 5.0.0 of this library. It is known to work on version 14.3.3 of the xTIMEcomposer tools suite, it may work on other versions.

This library depends on the following other libraries:

- lib\_xassert (>=3.0.0)
- lib\_logging (>=2.1.0)

## Related application notes

The following application notes use this library:

- AN00156: How to use the I2C master library
- AN00157: How to use the I2C slave library
- AN00181: xCORE-200 explorer accelerometer demo

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