



I2C – What's That?

I2C-Bus: What's that?

The I2C bus was designed by Philips in the early '80s to allow easy communication between components which reside on the same circuit board. Philips Semiconductors migrated to NXP (<http://www.nxp.com/>) in 2006.

The name I2C translates into “Inter IC”. Sometimes the bus is called IIC or I²C bus.

The original communication speed was defined with a maximum of 100 kbit per second and many applications don't require faster transmissions. For those that do there is a 400 kbit fastmode (<https://www.i2c-bus.org/fastmode/>) and – since 1998 – a high speed 3.4 Mbit (<https://www.i2c-bus.org/highspeed/>) option available. Recently, *fast mode plus* (<https://www.i2c-bus.org/fast-mode-plus/>) a transfer rate between this has been specified. Beyond this, there is the ultra fast mode UFM (<https://ultra-fast-mode-ufm/>), but it frankly is no real I2C bus.

I2C is not only used on single boards but also to connect components which are linked via cable. Simplicity and flexibility are key characteristics that make this bus attractive to many applications.

Most significant features include:

- Only two bus lines are required
- No strict baud rate requirements like for instance with RS232, the master generates a bus clock
- Simple master/slave relationships exist between all components
Each device connected to the bus is software-addressable by a unique address
- I2C is a true multi-master (<https://www.i2c-bus.org/MultiMaster/>) bus providing arbitration and collision detection

Want to learn more?

- Check our I2C Primer (<https://www.i2c-bus.org/i2c-primer/>).
- The latest I2C specification (<https://specification/>) is available directly from NXP. Currently, it is the revision 6 dated 4th of April 2014

- Have a look at NXP's overview of I2C devices (http://www.nxp.com/products/interface_and_connectivity/i2c/)
- There are a number of I2C-like buses, see Definitions and Differences Between I2C, ACCESS.bus and SMBus (<http://ww1.microchip.com/downloads/en/AppNotes/an617.pdf>).

Looking for I2C tools and software?

Whether you need a high speed I2C (<http://www.telos.info/p/hw/traciixl20/>) solution or a USB I2C interface (<http://www.telos.info/p/hw/conniimm20/>), whether you want to monitor the bus (<http://www.telos.info/p/hw/traciixl20/>) or need a software platform (<http://www.telos.info/p/sw/i2cfw/>) for your own application, we can help you! (<http://www.telos.info/details/contact/>).
