



Mastering the I2C Bus

By Vincent Himpe

Elektor Electronics Publishing, United Kingdom, 2011. Paperback. Book Condition: New. 232 x 170 mm. Language: English . Brand New Book. Mastering the I²C Bus is the first book in the brand new LabWorX collection. It takes you on an exploratory journey of the I²C Bus and its applications. Besides the Bus protocol plenty of attention is given to the practical applications and designing a solid system. The most common I²C compatible chip classes are covered in detail. Two experimentation boards are available that allow for rapid prototype development. These boards are completed by a USB to I²C probe and a software framework to control I²C devices from your computer. All samples programs can be downloaded from the LabWorX support page. About LabWorX LabWorX is a collection of books, each handling a particular topic in the field of electronics. Each volume condenses all the information, applications and notes collected during hands-on work with the covered technology, all into one book. Besides the basics of the technology, in-depth examples and applications are given as well as troubleshooting tips on how to proceed if the initial implementation fails. The books provide a centralised repository of knowledge, each handling...

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Single master in the bus is responsible for all communications taking place in the bus. It will be providing necessary clock required for the communication with slave devices. The master device will specify the address of the particular slave device to which it needs to write data or from which it needs to read data.Â Multi-Master I2C Bus. In this case there will be more than one master device. Any master device is allowed to start communication or use the bus whenever it is required. If a master in a multi-master bus transmits a HIGH, bus seeâ€™s that the line is LOW (means another device is pulling down), it has to halt the communication because another device is using the bus. Pros and Cons. The clock bus is controlled by the master but in some situations slave is also able to suppress the clock signal, but we will discuss it later. Additionally, an I2C bus is used in the various control architecture, for example, SMBus (System Management Bus), PMBus (Power Management Bus), IPMI (Intelligent Platform Management Interface) etc. Why use I2C. Unlike the serial com port I2c is the synchronous communication, in I2C both master and slave use the shared clock which is produced by the master.Â In I2C, Alwaysâ€™ communication is started by the master. The I2C bus provides the ability of the arbitration and collision detection. I2C is the 8-bit oriented serial bidirectional communication, there are following speed mode in I2C. MODE. Even though multiple masters may be present on the I2C bus the arbitration is handled in such a way that there is no corruption of data on bus in case when more than 2 masters try to transmit data at the same time. Since the transmission, synchronization and arbitration is done using only 2 wires on the bus, the communication protocol might be a bit uneasy to understand for beginners .. but its actually easy to understand â€™ just stick with me ðŸ™. A general I2C/TWI bus topology with multiple masters and multiple slaves connected to the bus at the same time is shown below: Let us go through I2C The master chosen here is a ST72324 and the slave is an EEPROM (M24C08). The program described in this application note is in C language, a program in assembly lan-guage is also available in the software library (see ST7 CD ROM on Internet).Â 2.4 RECEIVING A DATA BYTE ON THE I2C BUS To receive a new data byte, the previous data byte to receive has to be completed correctly. This byte reception check is done with the sending of an acknowledge condition by the master. An AF canâ€™t occur on the master side because itâ€™s the master that sends the acknowl-edge condition.