

# DATA SHEET

## **Application notes** **I<sup>2</sup>C Specific information**

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## I<sup>2</sup>C Specific information

## Application notes

### APPLICATION NOTES

The following abstracts are of the application notes that can be found printed in-full in Philips Semiconductor's Data Handbook IC20 *80C51-based 8-bit microcontrollers*, ordering code 9397 750 00963.

#### **AN422 - Using the 8XC751 microcontroller as an I<sup>2</sup>C-bus master**

The 83C751/87C751 combines the benefits of a high-performance microcontroller with on-board hardware supporting the I<sup>2</sup>C-bus interface, and thus allows systems to be completely software defined. This article shows how best to connect the microcontroller to an I<sup>2</sup>C-bus configuration, describes the 8XC751 I<sup>2</sup>C hardware and gives a programming example demonstrating a bus-master code.

#### **AN425 - Interfacing the PCF8584 I<sup>2</sup>C-bus controller to 80C51 family microcontrollers**

This application note describes how to use the PCF8584 I<sup>2</sup>C-bus controller with the 80C51 family of microcontrollers. A typical way of connecting the PCF8584 to an 80C31 is given, and some basic software routines are described showing how to transmit and receive bytes in a single master system. There is also an example of how to use these routines in an application that uses the I<sup>2</sup>C circuits on an I<sup>2</sup>C demonstration board.

#### **AN95068 - C routines for the PCF8584**

This application note demonstrates how to write a driver in C for the Philips PCF8584 I<sup>2</sup>C-bus controller IC and includes a set of application interface routines to quickly implement a complete PC multimaster system application.

The driver supports polled or interrupt driver message handling, slave message transfers and multimaster system applications. Furthermore, it is suitable for use in conjunction with real-time operating systems like OS-9 or pSOS+.

#### **AN430 - Using the 8XC751/752 in multimaster I<sup>2</sup>C applications**

This article discusses the most important technical features of the I<sup>2</sup>C-bus and describes the special I<sup>2</sup>C hardware interface of the 8XC751/752. The author gives an example of how the microcontroller can be programmed for a multimaster environment along with

details of the software interface for the communications routes.

#### **AN433 - I<sup>2</sup>C slave routines for the 83C751**

The 8XC751 microcontroller can be programmed as an I<sup>2</sup>C-bus master, slave, or both. This article focuses on its use as a slave and gives a programming example demonstrating the communications routes of the 8XC751 as a slave on the I<sup>2</sup>C-bus. This example complements the program given in article AN422.

#### **AN434 - Connecting a PC keyboard to the I<sup>2</sup>C-bus**

This application note illustrates the use of the 8XC751 microcontroller to interface a standard PC/AT keyboard to the I<sup>2</sup>C bus. The application software example easily fits within the 2K-bytes code and 64-bytes data memory provided on the 8XC751.

#### **AN438 - I<sup>2</sup>C routines for 8XC528**

This article presents a set of software routines to drive the I<sup>2</sup>C interface in 8XC528-type microcontrollers. A description of the I<sup>2</sup>C interface is given along with examples of how to use these routines in PL/M-51, C and assembly source code.

#### **AN444 - Using the P82B715 I<sup>2</sup>C extender on long cables**

The P82B715 I<sup>2</sup>C buffer was designed to extend the range of the logical I<sup>2</sup>C-bus out to 50 m. This application note describes the results of testing the buffer on several different types of cables to determine the maximum operating distance possible. The results are summarized in a table for easy reference.

#### **ETV/AN89004 - PLM51 I<sup>2</sup>C software interface IIC51 (version 0.5)**

This document is a user manual for the I<sup>2</sup>C software module IIC51, and is intended for Intel PLM51 users who need to control an I<sup>2</sup>C-bus. There is a general description on the IIC51 software module, although some basic knowledge about I<sup>2</sup>C and Intel PLM51 is assumed.

#### **EIE/AN91007 - I<sup>2</sup>C driver routines for 8XC751/1 microcontrollers**

This report described the I<sup>2</sup>C drivers that are written for the 8XC751/2 and explains the structure of the software and

how to use the routines. The software is written around a set of basic routines and a message handler.

The message handles contain no specific 8XC751 code so, by rewriting a set of basic routines, the software example can easily be modified for any other bit level I<sup>2</sup>C interface.

### **Programming the I<sup>2</sup>C interface**

This article is taken from Dr. Dobb's Journal and gives a good overview of I<sup>2</sup>C-bus basics. It describes hardware requirements, building a framework and how to connect to the I<sup>2</sup>C-bus.

The following application note is printed separately. The full version can be ordered from Philips Semiconductors.

### **AN94078 - P90CL301 I<sup>2</sup>C driver routines**

This application note demonstrates how to write an I<sup>2</sup>C-bus driver for the Philips P90CL301 microcontroller and includes a set of application interface software routines to quickly implement a complete I<sup>2</sup>C multimaster system application.

The driver allows you to link modules to your application software and includes a head-file into the application source programs. A programming example on how to use the driver is also listed in the article.

The driver supports polled or interrupt driven message handling, slave message transfer and multimaster system applications. Furthermore, it is suitable for use in conjunction with real-time operating systems such as pSOS+.

### **The I<sup>2</sup>C-bus from theory to practice**

This 300-page book covers the I<sup>2</sup>C-bus history, protocol, applications and development tools, and is intended both for engineering students and professional electronics engineers. The book, and its accompanying software disk, may be ordered directly from the publisher, John Wiley & Son Ltd UK, telephone number +44 (0) 1243 770216, ISDN: 0471962686.