

LAN I2C Adapter MS Manual

Rev. 2

COPTONIX



Falkentaler Steig 9

D – 13467 Berlin

Phone: +49 – (0)30 – 61 74 12 48

Fax: +49 – (0)30 – 61 74 12 47

www.coptonix.com

support@coptonix.com

1. Introduction

The *Lan I2C Adapter MS* is an universally applicable I2C-Tool with an adjustable SCL-frequency up to 400kHz. The *Lan I2C Adapter MS* is designed for applications that require a high performance/low cost 10/100 Ethernet Interface to I2C devices. This Tool is ideally for developers, who would like to develop and/or test own I2C circuits using TCP/IP and/or UDP network protocols.

The adapter offers system designer a quick easy way to add Ethernet networking functionality to any I2C-Circuits. Implementing this converter into a system can completely offload Internet connectivity and processing standard protocols from the system, thereby significantly reducing the software development.

The converter may operate as master or as slave. Switching between Master Mode and Slave Mode is done via software.

With the *Lan I2C Adapter MS* as Master numerous bus participants can be addressed purposefully via Network such as IO-Expander, sensors, LCDs, 7 segment display, stepping motors AD/DA converters, real time clocks, tone generators, RAM EEPROM, etc. The SCL-frequency is adjustable by software from 500Hz up to 400kHz. The duty cycle SCL-High/ SCL-low can be also individually adjusted.

The adapter as master has an interrupt input. Thus it is possible to react to external events e.g. when using IO-Expander like the PCF8574. This interrupt input can be activated (rising o. falling edge) or deactivated by software.

In order to send data to PC (in Slave Mode), a I2C master addresses this adapter as slave and writes the data on the I2C bus. This is the simplest way to communicate with PC using Network. The adapter has an interrupt output. Thus it is possible to inform a I2C Master that data, which was received from PC, is ready to read. The adapter's slave address may be changed any time by the software. General Call (0x00) is also available.

The adapter has an I2C level shifter on board. Thus, it is possible to connect the adapter to an I2C bus having different voltage levels between 2.5V and 15V.

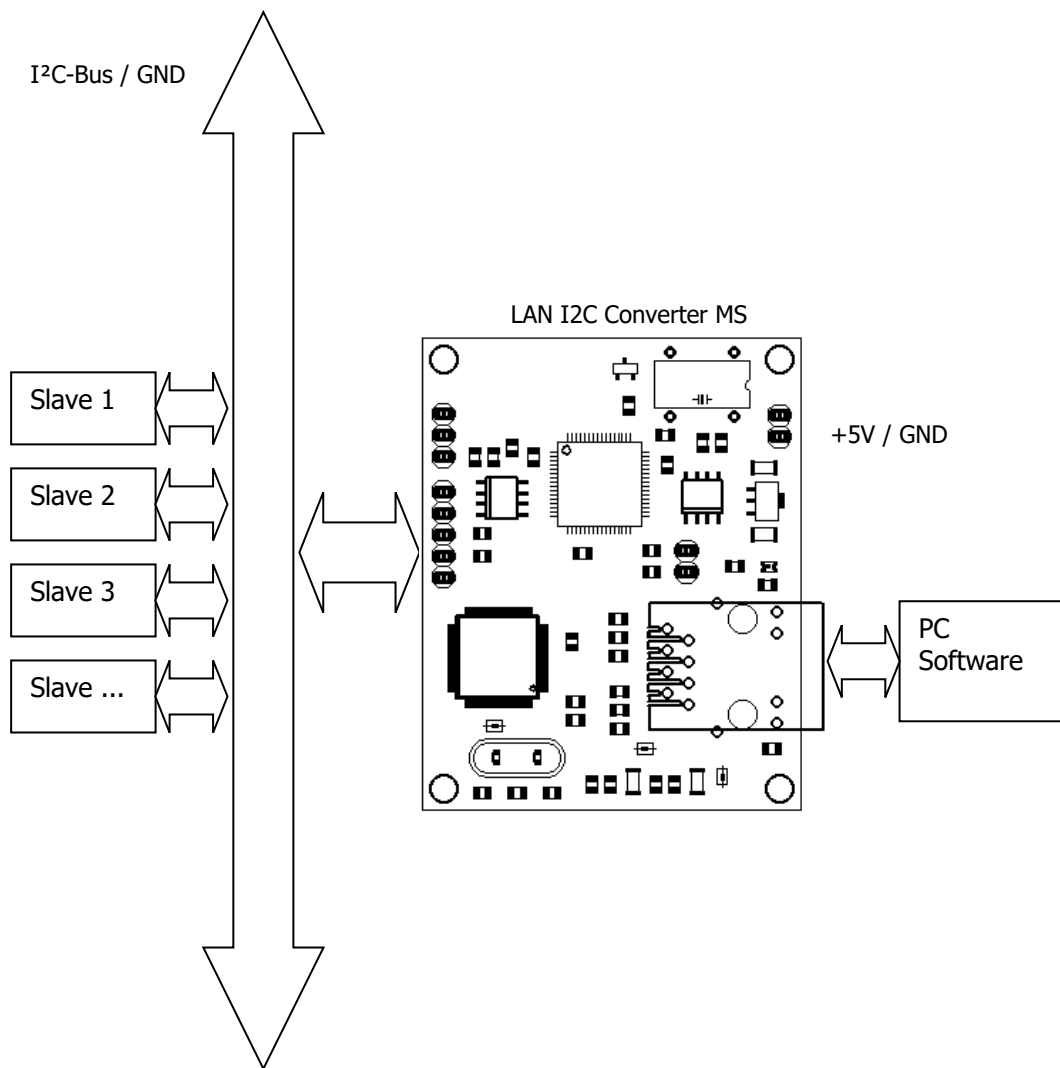
An 8KByte EEPROM is on board. There from 256 Bytes are reserved for internal use by the board, e.g. to save network settings. The remaining memory is available to the user.

With standard software components such as "TNMUDP", "ClientSocket", any WinSockets or the DLL "LANI2CMS.dll" it is possible to integrate the adapter into own applications.

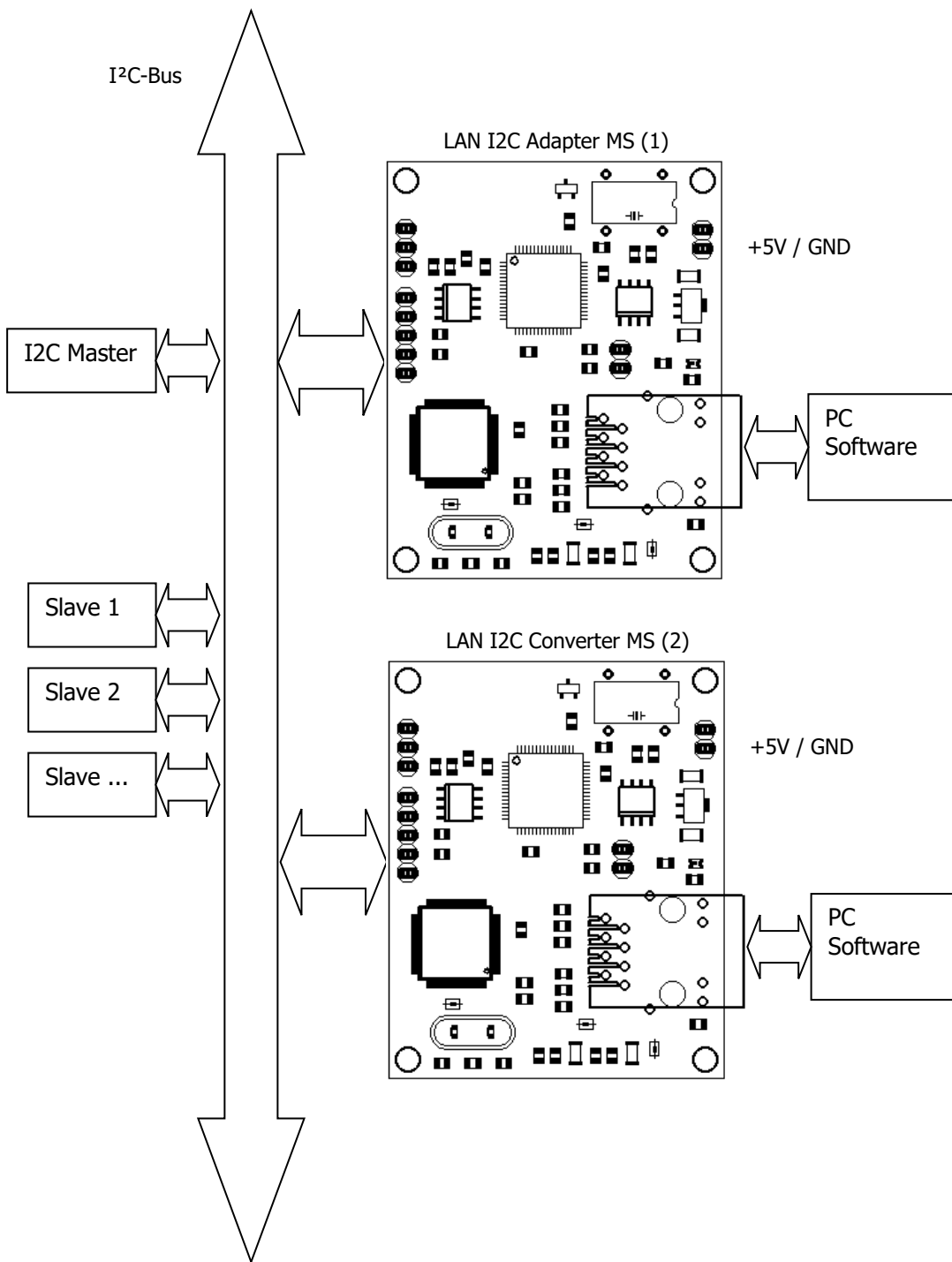
The IIC Control Software is for developers very helpfully. Thus it is possible to create and test immediately I2C devices, configure the adapter's network settings and read/write EEPROMs. The software supports EEPROMS of 1kbit (128 bytes) to 1Mbit (128k byte).

Features:

- Supply voltage 5V
- 2 independent Sockets: TCP/IP & UDP
- Configurable I2C frequency via Software from 500Hz to 400kHz.
- DHCP support
- Adjustable duty cycle (SCL frequency)
- On board I2C level shifter, I2C levels from 2.5V to 15V
- Supports multi-master
- Master transmit & receive
- Slave transmit & receive
- Supports clock stretching
- 7 bit addressing
- Interrupt input for external events
- 56x45 mm²



LAN I2C Adapter MS as Master



LAN I2C Adapter MS as Slave

2. Interface

- **1** Mag Jack (Transformer and RJ45)
10/100 Base-T Ethernet (Auto Detection)
Protocol: TCP, UDP
- **2** I²C-Interface (3,3V and 5V tolerant)
Pin 1: External pull-up voltage V_{ext} (2.5V – 15V)
Pin 2: Ground
Pin 3: I²C – SCL
Pin 4: I²C – SDA
Pin 5: Interrupt – Input (Master) / Interrupt – Out (Slave)
Header strip / 2.54 grid dimension
SCL and SDA are already connected to 4.7kOhm to 3.3V
- **3** Jumper – $V_{pull-up}$ Pull-up voltage
Pin 1: +3.3V
Pin 2: $V_{pull-up}$; connected to pull-up resistors
Pin 3: External pull-up voltage
Position 1-2: connects pull-up voltage to internal +3.3V
Position 3-2: connects pull-up voltage to external pull-up voltage
(see I²C-Interface, Pin 1)
- **4** VIN: Supply Voltage
Pin 1 (-): Ground
Pin 2 (+): +5V
Header strip / 2.54 pitch
- **5** JP1: (Default Settings Jumper)
If set, then default Network settings are loaded on power on,
else settings are loaded from EEPROM.
Header strip / 2.54 pitch

