USB-PMBus Adapter Kit

FAB8020785/B

User Guide

flex.

| FAB8020785/B | 28701- FAB8020785   Rev. A   August 2018 |
| USB-PMBus Adapter | © Flex |

Copyright
© Flex 2018. All rights reserved

Disclaimer
No part of this document may be reproduced in any form without the written permission of the copyright owner.

The contents of this document are subject to revision without notice due to continued progress in methodology, design and manufacturing. Flex shall have no liability for any error or damage of any kind resulting from the use of this document.

Trademarks
All trademarks are properties of their owners.

Flex is the trademark of Flextronics International, LTD.
PMBus™ is a trademark of SMIF, Inc.
Windows® and **Microsoft®** are the trademarks of Microsoft Corporation in the United States or other countries.

Contents

1   Introduction

This Product serves as an interface adapter or a bridge between a host PC (IBM™ compatible) and one or multiple PMBus design/evaluation boards via a standard type-A to mini-B USB cable. The communication between the USB-PMBus adapter and the host PC is via USB, while the communication between the USB-PMBus adapter and PMBus design/evaluation board(s) is via an inter-integrated circuit (I2C) and/or general-purpose inputs/outputs GPIOs. The bridge converts communication transactions between the USB and PMBus.

1.1   How to contact Flex

For general questions or interest in our products, please contact your local sales representative. Contact details are found on our website:

www.flex.com/powermodules

1.2   Information about cautions and warnings

The information in a caution or a warning is provided for your protection. Please read each caution and warning carefully.

Attention!
Observe precautions
electrostatic sensitive device

By default, the PMBus data and clock lines are pulled up internally to 3.3 V. If an external ones are used, please make sure to pull up to 3.3V only. Operation from 5V is not specified and may permanently damage this USB-PMBus adapter. This equipment is intended for use in a laboratory test environment only. It generates, uses, and can radiate radio frequency energy and has not been tested for compliance with the limits of computing devices pursuant to subpart J of part 15 of FCC rules, which are designed to provide reasonable protection against radio frequency interference. Operation of this equipment in other environments may cause interference with radio communications, in which case, the user, at his/her own expense, will be required to take whatever measures may be required to correct this interference.

FAB8020785/B	28701- FAB8020785 Rev. A August 2018
USB-PMBus Adapter	© Flex

2   Product overview

In order to operate this USB interface adapter, the following items are required. Ensure you have received all parts shown below.

Standard type-A to type B (5pin) USB cable

10-ribbon cable with connectors on both ends

USB-PMBus adapter

| FAB8020785/B | 28701- FAB8020785   Rev. A   August 2018 |
| USB-PMBus Adapter | © Flex |

2.1   Alternate connection cable

The kit also includes a simple PMBus Cable (RPM 901 391) that can be used in place of the 10-ribbon cable to connect to the PMBus signals (DGND, SCL, and SDA) directly on the customer board.

The three wires are color coded.

Color	Function
Brown	SDA
Green	DGND
White	SCL

2.2   Computer system and software requirements

System requirements:

- Pentium 1GHz or better processor

- At least 512 MB of RAM

- 10 MB of available hard-disk space

- USB 1.0 port or higher

Supported operating system:

- Windows XP Pro SP2 and later 32-bit Windows version

The following software environment is required:

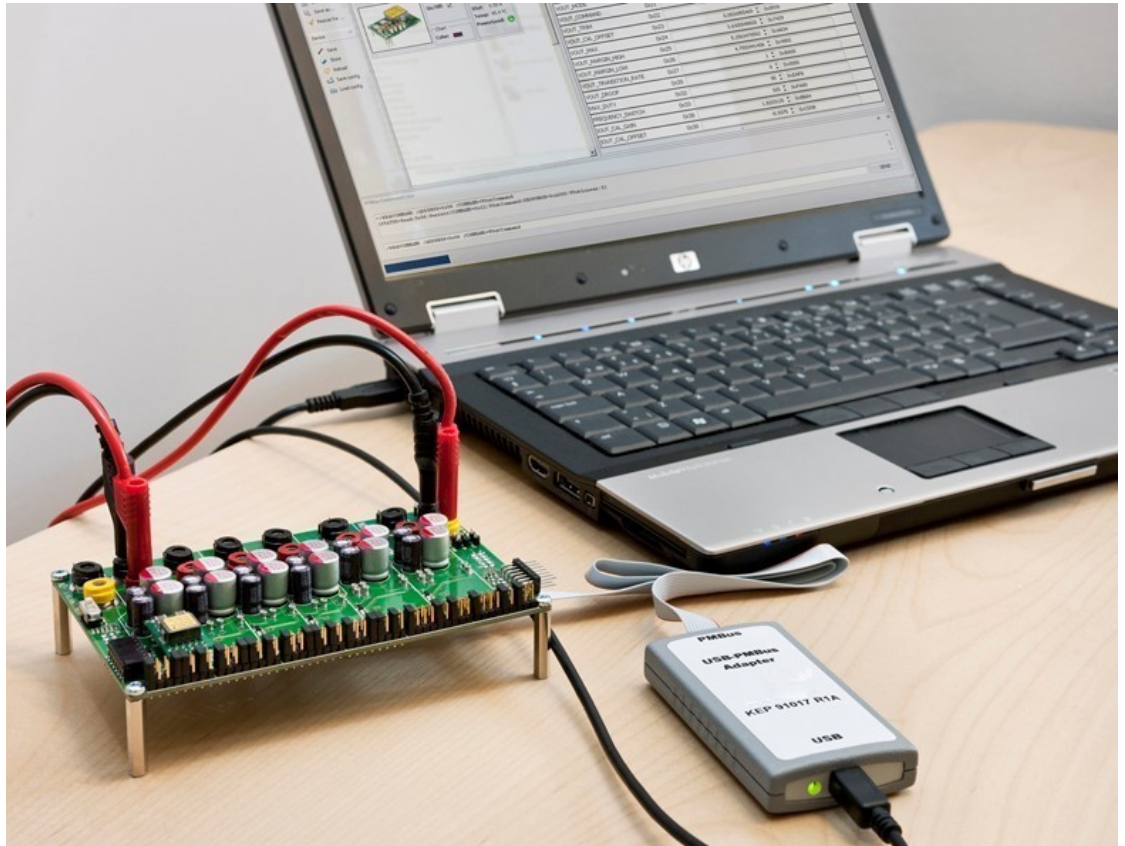- Windows Installer 3.1 or later

3   Connecting the USB-PMBus adapter

In the figure below it is shown how to connect the USB-PMbus adapter to, for example, Flex's POL design board (ROA 128 3836 R2A). The 10-pin ribbon cable is connected to the board. The USB shall be connected to one USB port of your PC.

FAB8020785/B	28701- FAB8020785 Rev. A August 2018
USB-PMBus Adapter	© Flex

4   Electrical specification

Characteristics	min	typ	max	unit
C_{BUS}, Total capacitance load per bus segment	-	-	400	pF
R_{pullup_int}, Default internal pull-up resistance	-	2.2	-	kΩ
R_{pullup}, Total pull-up resistance	688	-		Ω
I_{pullup}, Current through pull-up resistor or current source	100	-	350	μA
V_{I2C}, Nominal PMBus/I^2C voltage	2.7	3.3	3.6	V
Tref = +10 to + 30°C				

The addition of external pull-up resistors between the data/clock lines and the nominal PMBus/I2C voltage is shown in the figure below.
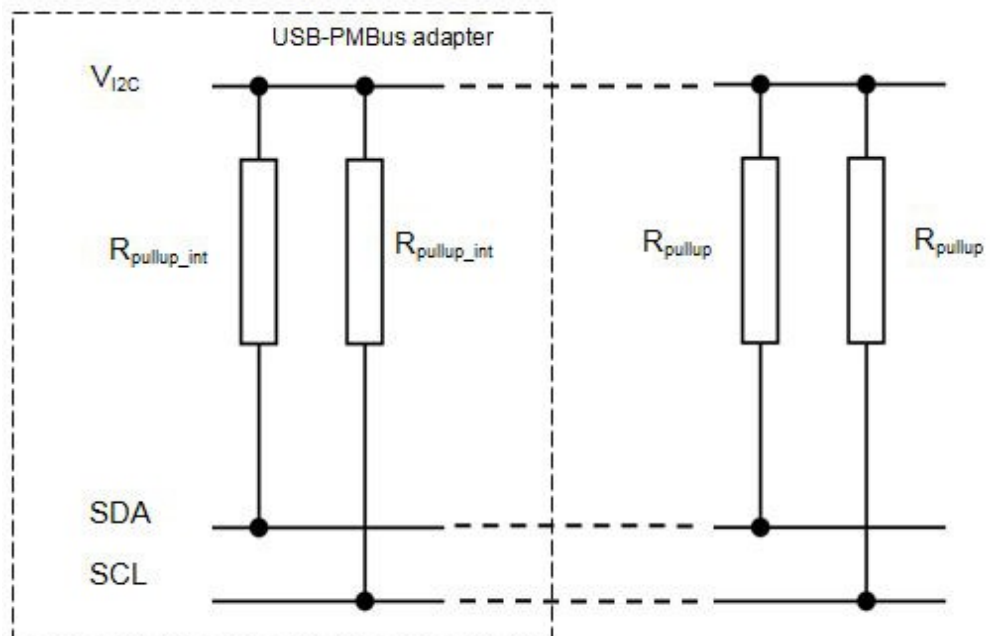
5   Mechanical information

The pinout of the board connector of the PMBus cable is shown in the figure below.

| NC | NC | V_{I2C} | CTRL | SCL |

| NC | NC | DGND | SALERT | SDA |

6   Step-by-step instructions for operation and troubleshooting

Below you find short instructions for operation and troubleshooting:

1. Plug in the USB cable to both the PC and the USB-PMBus adapter and wait for the green LED to illuminate. Troubleshooting: If the green LED does not illuminate after 30 s, check to ensure the USB cable is securely connected. If the connection is secure, try a different USB port. If a different USB port does not solve the problem, try to reboot the computer. If rebooting the computer does not fix the problem, try a different USB cable.

2. Plug in the 10-pin ribbon cable to both the USB-PMBus adapter and a design board (for example ROA 128 3835 or ROA 128 3836). Make sure that the notch on the ribbon-cable connector matches the keyhole of the socket in the enclosure.

3. Power up the design board. Note that the default I2Cspeed is set at 100 kHz and the default pullups for PMBus data (SDA) and clock lines (SCL) are set at 2.2 kΩ.

Further instructions for troubleshooting:
If the design board cannot talk with the USB-PMBus adapter, first check to ensure the 10-pin ribbon cable has been securely connected. If the ribbon cable has been securely connected, check the PM-Bus communication speed and the pull-ups for data (SDA) and clock (SCL) lines suitable for the application. If not, modify the PMBus communication speed and the pull-ups accordingly. If this still does not solve the problem, contact your local Flex representative.