



EVB80104-A1

Short Description

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1. Scope

This document is intended to give a brief introduction of the EVB80104-A1 Evaluation Board (EVB). This EVB is equipped with the MLX80104KLW-DAG QFN28 5x5 LIN Slave Controller for switches.

Beside of this document, several other important documentation papers are necessary for a detailed understanding.

The detailed information regarding our products including all required development tools will be distributed via the Melexis Softdist server (<https://softdist.melexis.com>).

2. Melexis Softdist Server

Melexis SoftDist (<https://softdist.melexis.com>) is a software distribution system which allows customers to download documents, development software and other stuff related to Melexis products. In case updates or new items are available a notification email will be send automatically to all subscribers.

It's required to register in order to access the Melexis Softdist server.

In case you are not registered yet, please contact our sales team and specify which Melexis product you are interested in, in order to create an account and grant access to the correct product specific information:

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3. MLX80104KLW-DAG - Overview

3.1. Application Examples

- LIN slave for switch applications
- LIN slave for IO-Extension

3.2. Hardware Features

- 16-bit MULAN MCU
 - 16kB ROM
 - 512 Byte RAM
 - 192 Byte EEPROM with ECC
- LIN Protocol Controller according to LIN 2.x and SAE J2602
- LIN Transceiver according to LIN 2.x and SAE J2602
- 10x SW high voltage I/O pins
 - fully configurable high current/high voltage inputs/outputs (7mA/26.5V)
 - configurable pull up or pull down characteristics
 - Wake up sources
- 8x IO high voltage I/O pins
 - fully configurable high current/high voltage inputs/outputs (7mA/26.5V)
 - configurable pull up or pull down characteristics
 - PWM outputs (8-bit, 80Hz to 30kHz)
 - 10-bit ADC inputs
 - Interrupt capable Inputs
 - Interrupt capability
 - Wake up sources
- Constant current output (2mA) for external low voltage loads via bipolar transistor
- Integrated window watchdog and additional independent analogue watchdog
- Integrated Voltage Regulator
- Integrated RC-Oscillator
- QFN28 5x5 package
- Designed for automotive applications
- Ready-to-use firmware (UniROM)

3.3. UniROM Software Features

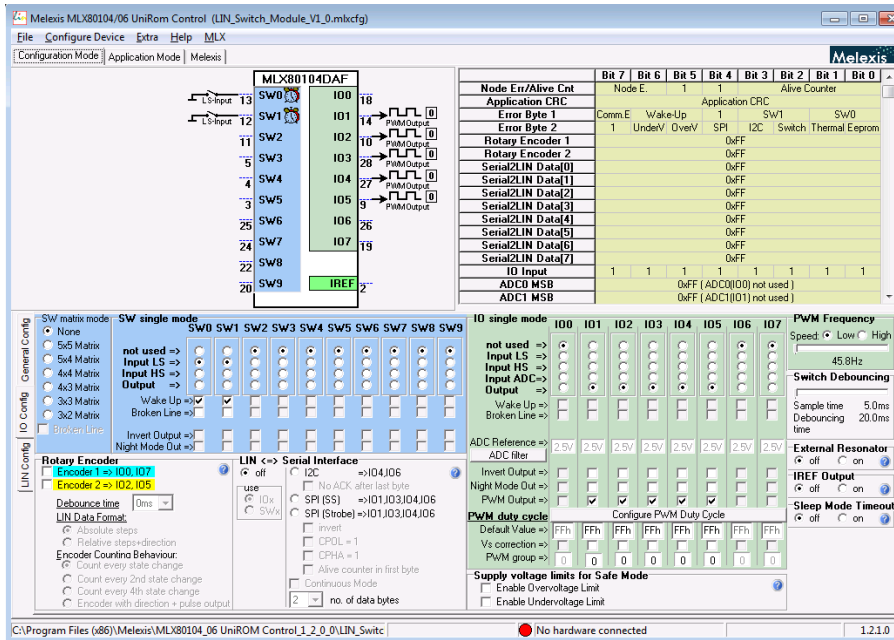
- LIN protocol specification according to LIN 2.x and J2602
- 19.2kBaud and 10.4kBaud transmission speed
- Up to 5 LIN configurable LIN frames:
 - Configurable data byte length
 - Configurable LIN identifier
 - Configurable communication direction (slave to master, master to slave)
 - Configurable data byte content on byte level
- Event triggered frame
- Go to sleep command
- Node configuration services
 - Assign NAD
 - Assign frame ID range
 - Assign frame ID (according LIN2.0)
 - Read by identifier
 - J2602 target reset
 - J2602 broadcast reset
- Error detection (Communication error (according LIN2.x), EEPROM error, Thermal overload error, under voltage error, over voltage error etc.)
- EEPROM user area for production data
- Hardware CRC to protect EEPROM data
- Internal 12MHz RC-oscillator. For higher accuracy an external resonator can be applied. But this is only necessary for slave to slave communication)
- Window watchdog and additional independent analog watchdog
- 18 configurable high voltage I/O pins which are ground shift tolerant and can be used as following:
 - Up to 18 switch inputs (low side or low side can be configured for each pin separately)) incl. broken line detection
 - Switch matrix inputs (5x5, 5x4, 4x4, 4x3, 3x3, 3x2) incl. broken line detection
 - Up to 18 configurable open drain outputs
 - Up to eight 10bit ADC inputs
 - Up to 8 PWM outputs with common frequency between 45Hz ... 46,9kHz and different duty cycles for each output
 - Up to two rotary encoders supported
- Configurable debouncing times for switches
- Internal supply voltage measurement
- Configurable Wake up sources (LIN, switches, ADC)
- Software SPI and I²C-interface supported for controlling IO extension
- Constant current source output IREF (2mA) for building an external help supply

4. EVB - General Description

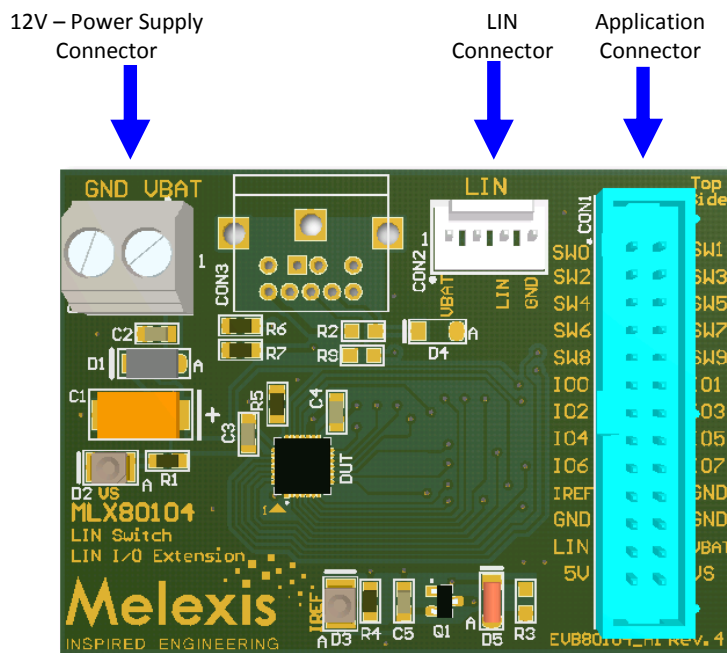
The EVB80104-A1 is equipped with an MLX80104KLV-DAG (UniROM).

The EVB can be used to evaluate the features of the MLX80104KLV-DAG UniROM firmware. The UniROM firmware is a ready to use LIN firmware to meet the demands of switch applications with LIN bus connection. The configuration of the UniROM firmware is done by setting a configuration in the EEPROM.

There is special PC software available in order to configure and download the configuration. This PC software is also usable for the test of the application.



5. EVB - Hardware overview



5.1. EVB - Application Connector CON1

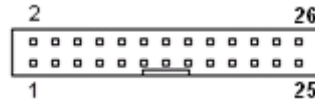


Figure 1 Application Connector - IDC MALE (Top view)

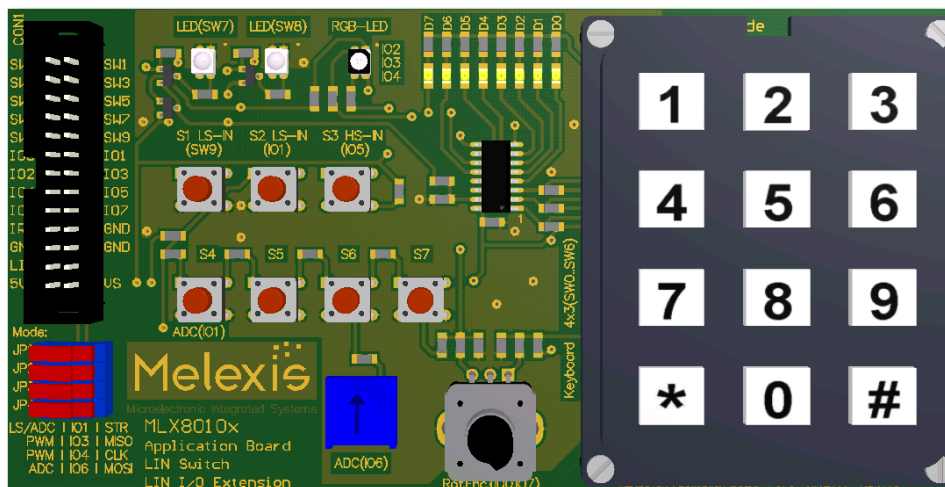
Pin	Name	Description
1	SW0	Configurable: Switch Matrix, Single Switch, Output
2	SW1	Configurable: Switch Matrix, Single Switch, Output
3	SW2	Configurable: Switch Matrix, Single Switch, Output
4	SW3	Configurable: Switch Matrix, Single Switch, Output
5	SW4	Configurable: Switch Matrix, Single Switch, Output
6	SW5	Configurable: Switch Matrix, Single Switch, Output
7	SW6	Configurable: Switch Matrix, Single Switch, Output
8	SW7	Configurable: Switch Matrix, Single Switch, Output
9	SW8	Configurable: Switch Matrix, Single Switch, Output
10	SW9	Configurable: Switch Matrix, Single Switch, Output
11	IO0	Configurable: Single Switch, Output, PWM, A/D, Rotary
12	IO1	Configurable: Single Switch, Output, PWM, A/D, SPI
13	IO2	Configurable: Single Switch, Output, PWM, A/D, Rotary
14	IO3	Configurable: Single Switch, Output, PWM, A/D, SPI
15	IO4	Configurable: Single Switch, Output, PWM, A/D, SPI
16	IO5	Configurable: Single Switch, Output, PWM, A/D, Rotary
17	IO6	Configurable: Single Switch, Output, PWM, A/D, SPI
18	IO7	Configurable: Single Switch, Output, PWM, A/D, Rotary
19	IREF	Current Source for Creating External Supply Voltages
20	GND	System ground
21	GND	System ground
22	GND	System ground
23	LIN	Connection to LIN Bus
24	VBAT	12V Power Supply (Not Reverse Polarity Protected)
25	V5	Output from IREF supply
26	VS	Voltage After Polarity Protection Diode / Chip Supply Voltage

Table 1 EVB Application Connector

5.2. EVB – Available Add-on boards

Part	Picture
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EVB80104-B
 (Add-on for:
 EVB80104-A1
 EVB80104-A2
 EVB80104-A3)



6. Revision History

Version	Changes	Remark	Date
001		Initial release	25.07.18

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