

### Contents

1 SCOPE AND DEVELOPMENT KIT CONTENT .....	2
2 KEY FEATURES.....	3
2.1 DVK .....	3
2.2 Sensor ICs .....	3
2.3 PCB.....	3
3 HARDWARE.....	4
3.1 MLX91208/16 PCB layout.....	4
3.2 MLX91208/16 Schematics .....	4
3.3 MLX91208/16 Pins Designation .....	5
3.4 MLX91208/16 Bill of Material .....	5
3.5 MLX91218 PCB layout .....	6
3.6 MLX91218 Schematics.....	6
3.7 MLX91218 Pins Designation .....	7
3.9 MLX91218 Bill of Material .....	7
4 SENSORS CHARACTERISTICS .....	8
4.1 MLX 91208/16 Characteristics .....	8
4.2 MLX91218 Characteristics .....	8
5 DISCLAIMER .....	9

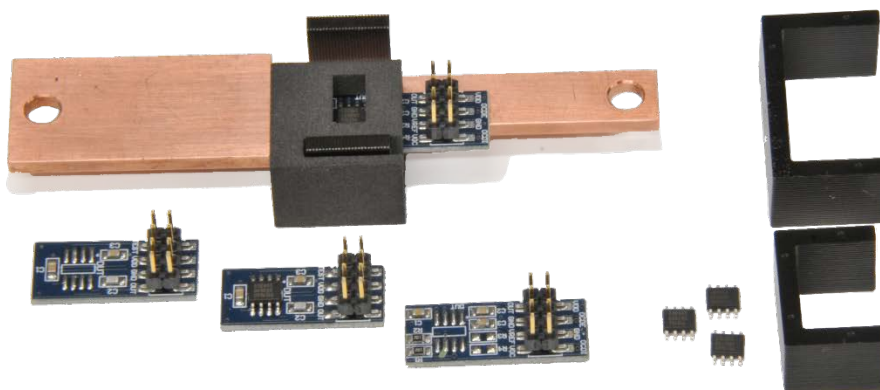
## User Guide

### 1 Scope and Development Kit content

The DeVelopment Kit (DVK) DVK-IMC-Hall-Shield (rev1) provides all the needed components to evaluate the performances and the functionalities of [MLX91208](#), [MLX91216](#) and MLX91218 IMC-Hall® current sensor ICs.

The kit includes:

- Ready-to-use evaluations boards provided with MLX91216LDC-CAV-001 and MLX91218LDC-ARX-300 for a quick start.
- An MLX91208/91216 evaluation board with no IC to be customized with the reference you need.
- An MLX91218 evaluation board with no IC to be customized with the reference you need.
- Additional spare sensors.
- SiFe ferromagnetic shields.
- Copper bars.
- Plastic holders in order to easily assemble all the configurations possible



*Figure 1: Content of DVK IMC-Hall Shield: plastic holder copper bar, shields and PCBs*

## User Guide

### 2 Key features

#### 2.1 DVK

- Plug and play DVK (all included from copper bar to sensor)
- DVK provided with extra PCBs to connect any other variant
- Build and test different configurations (shields, sensors, sensitivity)

All the shields datasheets can be downloaded from our supplier website:  
<https://www.maglab.ch/products/core-lam/Sensors>

#### 2.2 Sensor ICs

- (Programmable) high speed current sensors
- (Programmable) linear transfer characteristic
- Measurement range from 3 to 100mT
- SOIC8 package RoHS compliant
- Wideband from DC to 400kHz
- Short response time

#### 2.3 PCB

- Placeholder for output filter implementation
- Ground Layer and Decoupling capacitors for high EMC performances

# DVK IMC-Hall® Shield

## User Guide

### 3 Hardware

#### 3.1 MLX91208/16 PCB layout

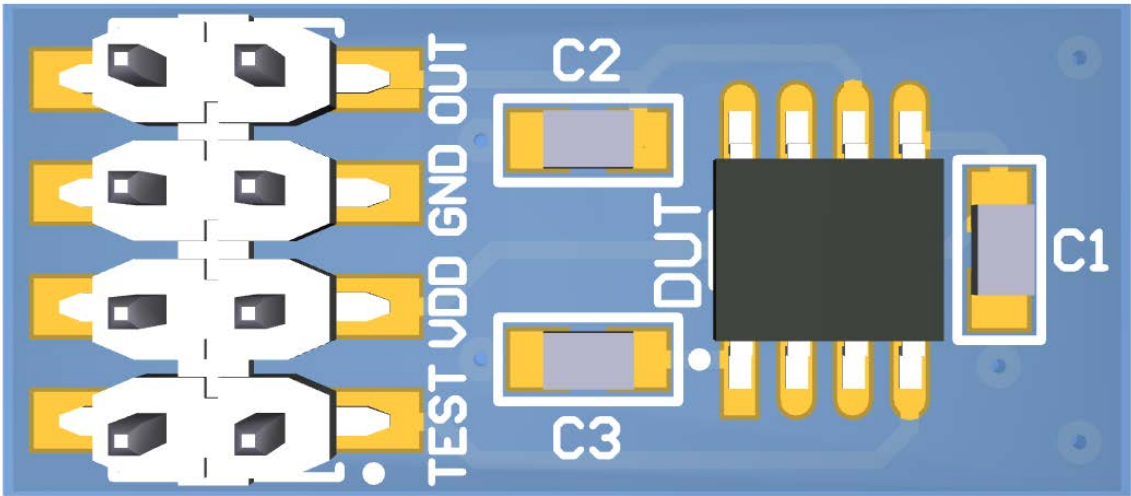


Figure 2: Layout of the PCB91208/91216

#### 3.2 MLX91208/16 Schematics

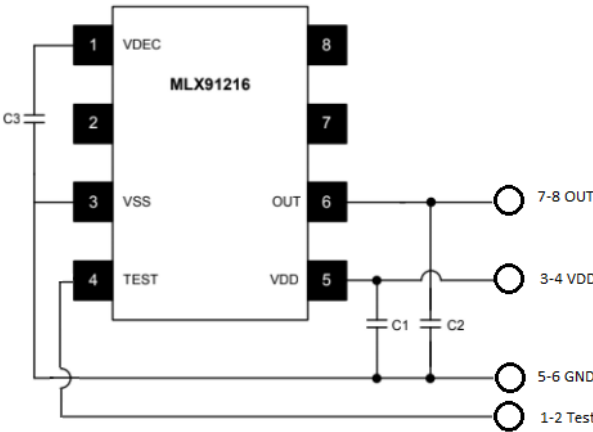


Figure 3: Schematics of the EVB91208/91216

## User Guide

### 3.3 MLX91208/16 Pins Designation

Table 1: MLX91208/91216 pin designation

PIN	Name	Function	Type
1	VDEC	Internal digital voltage	Analog
2	NC	Not connected	-
3	VSS	Ground Voltage	Ground
4	TEST	Test pin	
5	V <sub>DD</sub>	Supply Voltage	Supply
6	V <sub>OUT</sub>	Output Voltage	Analog
7	NC	Not connected	-
8	NC	Not connected	-

Table 2: MLX91208/91216 connector pins designation

PIN	Function
1-2	Test pin
3-4	Supply Voltage
5-6	Ground Voltage
7-8	Output Voltage

### 3.4 MLX91208/16 Bill of Material

Table 3: MLX91208/91216 BOM

Part	Description	Value
C1	Reference pin decoupling capacitor EMI, ESD	100 nF
C2	Supply capacitor, EMI , ESD	2.2 nF
C3	Output pin Decoupling capacitor EMI, ESD	47 nF

# DVK IMC-Hall® Shield

## User Guide

### 3.5 MLX91218 PCB layout

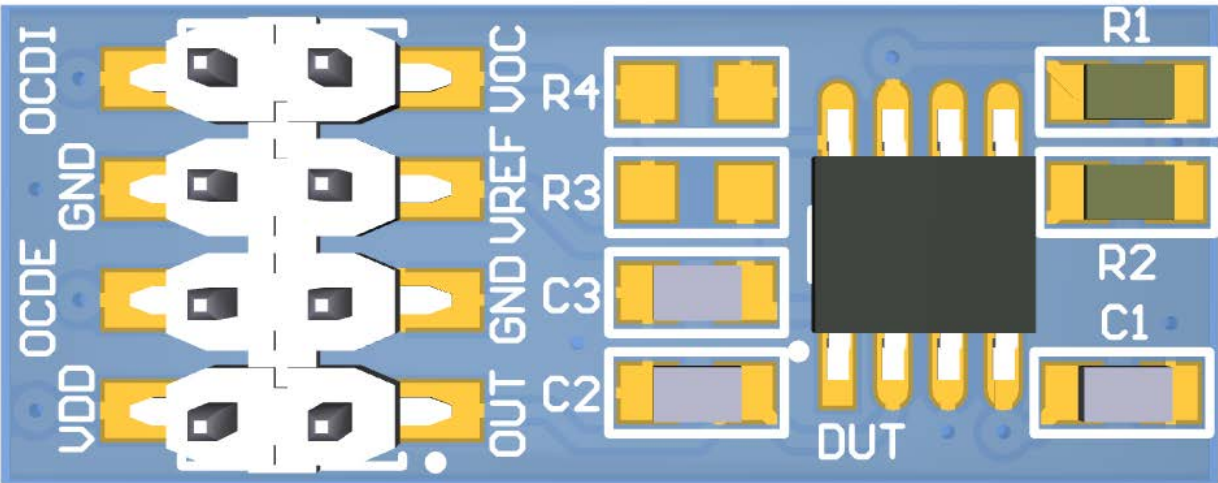


Figure 4: Layout of the PCB91218

### 3.6 MLX91218 Schematics

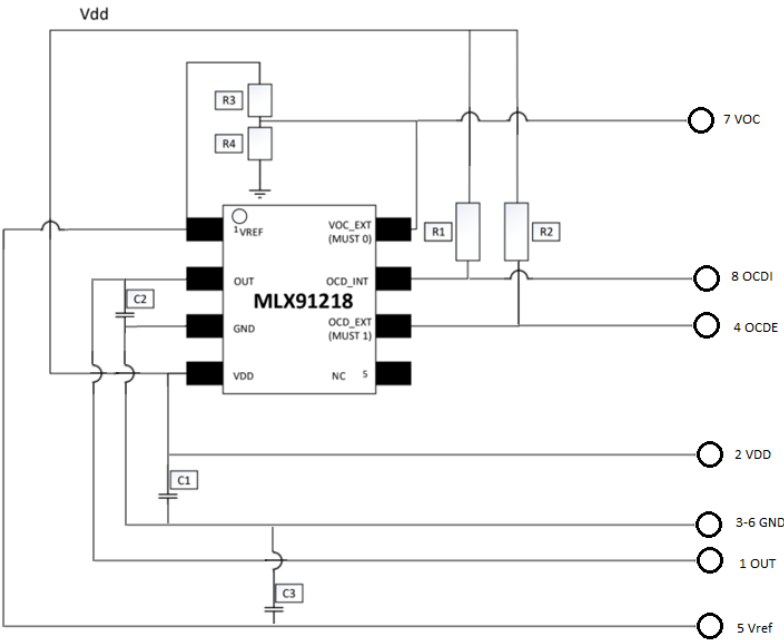


Figure 5: Schematics of the EVB91218

### 3.7 MLX91218 Pins Designation

Table 4: MLX91218 pin designation

PIN	Pin	Function	Type
1	VREF	Reference voltage	Analog
2	OUT	Output voltage	Analog
3	GND	Ground Voltage	Ground
4	VDD	Supply voltage	Supply
5	NC	Not connected	-
6	OCD_EXT	Overcurrent detection based on external threshold	Analog
7	OCD_INT	Overcurrent detection based on an internal threshold	Analog
8	VOC_EXT	External threshold for the OCD	Analog

Table 5: MLX91218 connector pins designation

Pins	Function
1	Output voltage
2	Supply Voltage
3	Ground Voltage
4	OCD_EXT pin
5	Reference voltage
6	Ground voltage
7	VOC_EXT pin
8	OCD_INT pin

### MLX91218 Bill of Material

Table 5: MLX91218 BOM

Part	Description	Value
C1	Reference pin decoupling capacitor EMI, ESD	47 nF
C2	Supply capacitor, EMI , ESD	4.7 nF
C3	Output pin Decoupling capacitor EMI, ESD	47 nF
R1	Internal OCD resistor	10 kΩ
R2	External OCD resistor	10 kΩ
R3/R4	Customized External OCD resistor	-

## User Guide

### 4 Sensors characteristics

#### 4.1 MLX 91208/16 Characteristics

The Development Kit contains four PCBs. Two are not populated. Please refer to the datasheet of MLX91208, MLX91216 or MLX91218 to find the adapted product for your application.

*Table 6: MLX91216LDC-CAV-001 configuration*

Product code	Legend
<b>MLX91216</b>	5V Supply Integrated Current Sensor
<b>L</b>	- 40°C to 125°C ambient temperature
<b>DC</b>	SOIC-8 NB (Narrow Body – 150mils) package
<b>CAV-001</b>	IMC size and sensitivity

#### 4.2 MLX91218 Characteristics

*Table 7: MLX91218LDC-ARX-300 configuration*

Product code	Legend
<b>MLX91218</b>	5V Supply Integrated Current Sensor
<b>L</b>	- 40°C to 125°C ambient temperature
<b>DC</b>	SOIC-8 NB (Narrow Body – 150mils) package
<b>ARX-001</b>	IMC size and sensitivity



## User Guide

### 5 Disclaimer

*The content of this document is believed to be correct and accurate. However, the content of this document is furnished "as is" for informational use only and no representation, nor warranty is provided by Melexis about its accuracy, nor about the results of its implementation. Melexis assumes no responsibility or liability for any errors or inaccuracies that may appear in this document. Customer will follow the practices contained in this document under its sole responsibility. This documentation is in fact provided without warranty, term, or condition of any kind, either implied or expressed, including but not limited to warranties of merchantability, satisfactory quality, non-infringement, and fitness for purpose. Melexis, its employees and agents and its affiliates' and their employees and agents will not be responsible for any loss, however arising, from the use of, or reliance on this document. Notwithstanding the foregoing, contractual obligations expressly undertaken in writing by Melexis prevail over this disclaimer.*

*This document is subject to change without notice, and should not be construed as a commitment by Melexis. Therefore, before placing orders or prior to designing the product into a system, users or any third party should obtain the latest version of the relevant information.*

*Users or any third party must determine the suitability of the product described in this document for its application, including the level of reliability required and determine whether it is fit for a particular purpose.*

*This document as well as the product here described may be subject to export control regulations. Be aware that export might require a prior authorization from competent authorities. The product is not designed, authorized or warranted to be suitable in applications requiring extended temperature range and/or unusual environmental requirements. High reliability applications, such as medical life-support or life-sustaining equipment or avionics application are specifically excluded by Melexis. The product may not be used for the following applications subject to export control regulations: the development, production, processing, operation, maintenance, storage, recognition or proliferation of:*

- 1. chemical, biological or nuclear weapons, or for the development, production, maintenance or storage of missiles for such weapons;*
- 2. civil firearms, including spare parts or ammunition for such arms;*
- 3. defense related products, or other material for military use or for law enforcement;*
- 4. any applications that, alone or in combination with other goods, substances or organisms could cause serious harm to persons or goods and that can be used as a means of violence in an armed conflict or any similar violent situation.*

*No license nor any other right or interest is granted to any of Melexis' or third party's intellectual property rights.*

*If this document is marked "restricted" or with similar words, or if in any case the content of this document is to be reasonably understood as being confidential, the recipient of this document shall not communicate, nor disclose to any third party, any part of the document without Melexis' express written consent. The recipient shall take all necessary measures to apply and preserve the confidential character of the document. In particular, the recipient shall (i) hold document in confidence with at least the same degree of care by which it maintains the confidentiality of its own proprietary and confidential information, but no less than reasonable care; (ii) restrict the disclosure of the document solely to its employees for the purpose for which this document was received, on a strictly need to know basis and providing that such persons to whom the document is disclosed are bound by confidentiality terms substantially similar to those in this disclaimer; (iii) use the document only in connection with the purpose for which this document was received, and reproduce document only to the extent necessary for such purposes; (iv) not use the document for commercial purposes or to the detriment of Melexis or its customers. The confidentiality obligations set forth in this disclaimer will have indefinite duration and in any case they will be effective for no less than 10 years from the receipt of this document.*

*This disclaimer will be governed by and construed in accordance with Belgian law and any disputes relating to this disclaimer will be subject to the exclusive jurisdiction of the courts of Brussels, Belgium.*

*The invalidity or ineffectiveness of any of the provisions of this disclaimer does not affect the validity or effectiveness of the other provisions. The previous versions of this document are repealed.*

*Melexis © - No part of this document may be reproduced without the prior written consent of Melexis. (2021)*

*IATF 16949 and ISO 14001 Certified*

***For the latest version of this document or find your local contact, visit us at  
[www.melexis.com/DVK-IMC-hall-shield](http://www.melexis.com/DVK-IMC-hall-shield)***