

DVK IMC-Hall® Shield

User Guide

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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

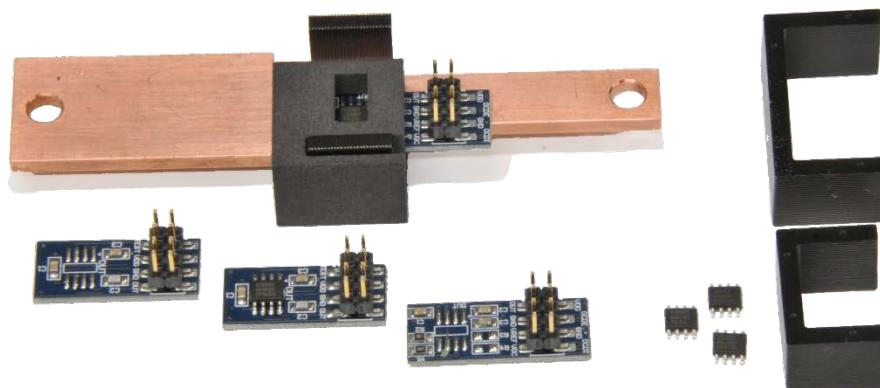


Figure 1: Content of DVK IMC-Hall Shield: plastic holder, copper bar, shields and PCBs

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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

3 Hardware

3.1 MLX91208/16 PCB layout

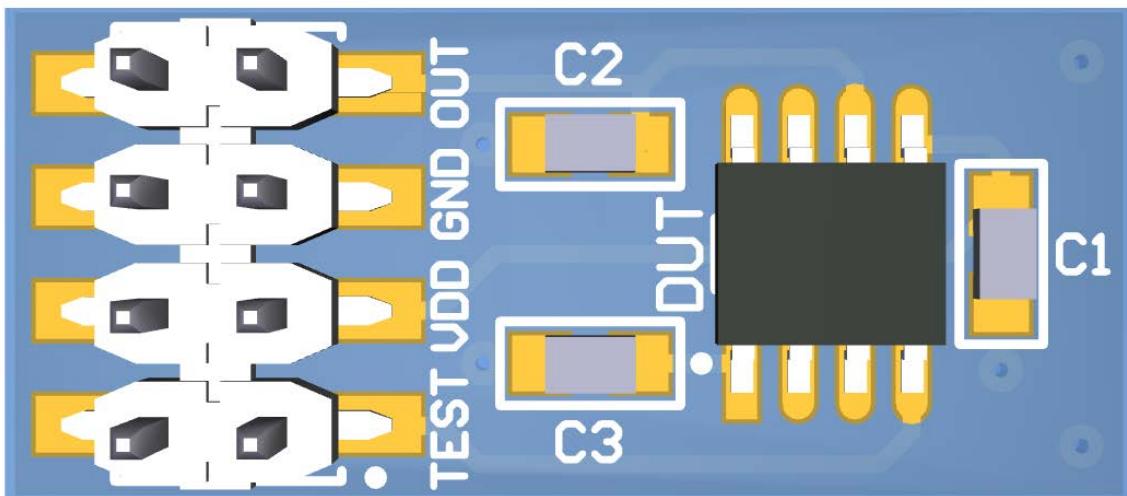


Figure 2: Layout of the PCB91208/91216

3.2 MLX91208/16 Schematics

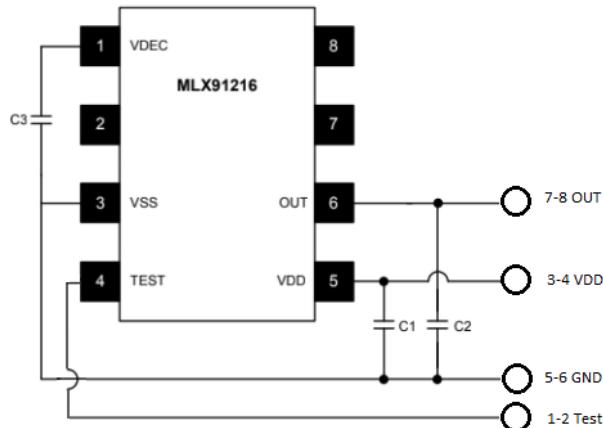


Figure 3: Schematics of the EVB91208/91216

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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 _{DD}	Supply Voltage	Supply
6	V _{OUT}	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

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3.5 MLX91218 PCB layout

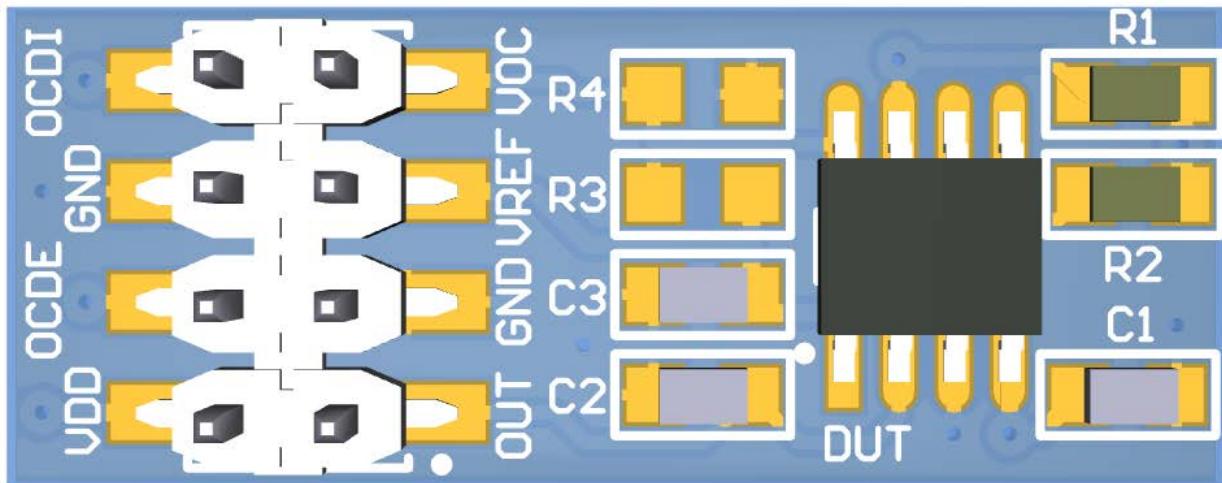


Figure 4: Layout of the PCB91218

3.6 MLX91218 Schematics

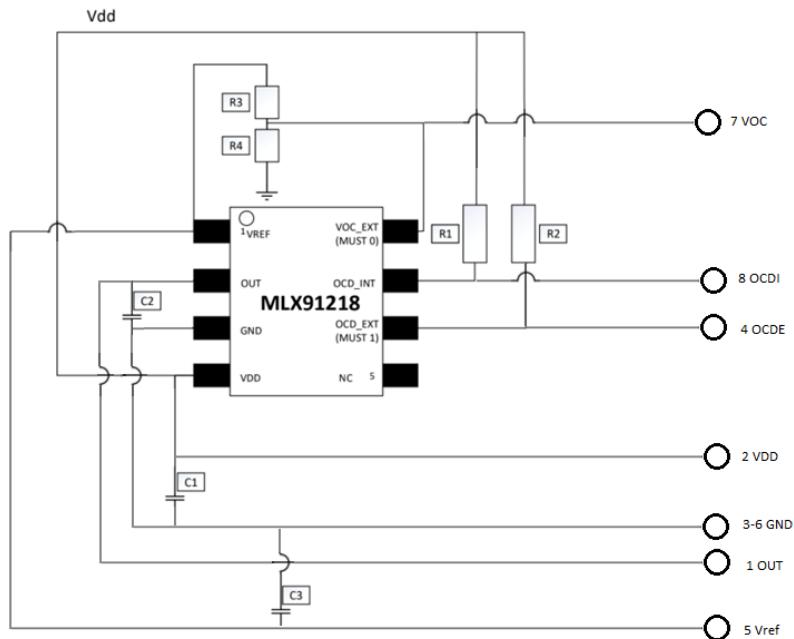


Figure 5: Schematics of the EVB91218

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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	-

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

4.2 MLX91218 Characteristics

Table 7: MLX91218LDC-ARX-300 configuration

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

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