DACOM
West

Sense

Hall Position Sensors
Hall Current Sensors
Pressure Sensors
NFC/RFID
Time-of-Flight

Smart
Solutions
for **you!**

About us

In 1986 DACOM West GmbH was established as a distributor for high-quality active and passive electronical components.

Since then we have been an independent, privately owned company, supporting our customers with the implementation of electronical components of the newest generation for telecom, industrial, consumer and automotive applications.

Our head office is based in Haan (near Düsseldorf), with additional offices located in Erfurt and Bruckbach (Austria).

Our Partners are selected based on our core competence and are meant not to compete, but complete each others portfolio.

By concentrating on selected manufacturers, an in-depth technical competence, detailed product knowledge and first class product support is achieved. With most of our suppliers we have long lasting business relationships of more than 10 years.

We are ISO 9001:2015 certified, documenting and acknowledging a complete quality chain from manufacturer to customer.

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Our Partners

Melexis

Sense

Hall Position Sensors
Hall Current Sensors
Pressure Sensors
NFC/RFID
Time-of-Flight

Cactus
Technologies

hyperstone

SP Silicon Power
INDUSTRIAL

Store

Industrial Flash Products
Flash Controllers

DAVICOM
Connectivity Beyond Limits

Siretta
Enabling the Industrial IoT

TAIMAG

ubec

WIZnet

Connect

Ethernet
RJ45 Jacks / Transformers
Hardwired TCP/IP
ISM/WiFi/ZigBee
2G/3G/4G Modems & Routers
Mobile network analysers

Melexis
INSPIRED ENGINEERING

Sensor Solutions

About Melexis

Melexis N.V., based in Belgium, was founded in 1988. With their experience of more than 30 years, they have become one of the world leaders in automotive semiconductor sensors, as well as a leading player in integrated circuits for motor driving, car networking and wireless communication.

Primarily focused on the automotive market, Melexis is also active in other areas such as industrial and medical sectors, home automation and smart appliances.

Melexis offers a wide range of standard products such as Sensor ICs (Hall-Effect, Optical, Infrared and MEMS), Communication ICs (Low Power RF, RFID and Automotive BUS), Actuator-ICs (for electric motors, electro magnets and LEDs), as well as application specific integrated circuits (ASICs).
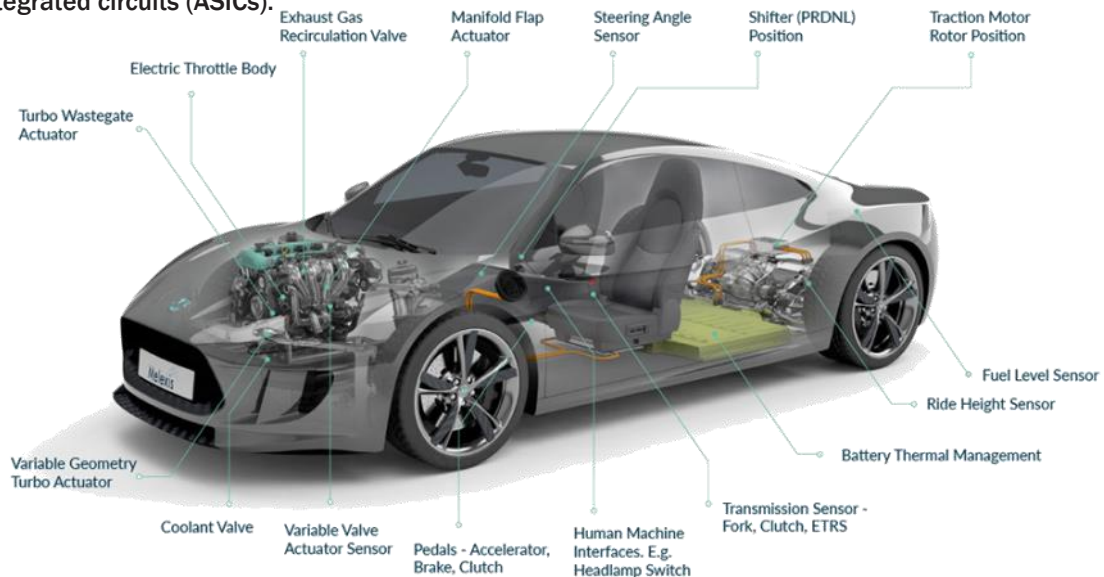

Hall Effect Sensor ICs

Position sensor ICs

Hall based position sensor ICs including the famous Triaxis® technology

The main task of position sensors is the sensing of angular or linear displacements, distances, gaps, distensions and fill levels.

Traditional Hall sensors are only sensitive to the magnetic flux density perpendicular to the surface of the Hall element and consequently of the IC and package. These single-axis devices, despite enabling some applications, often require complex magnetic structures and face accuracy challenges especially over a wide temperature range (due to the thermal drift of the measured magnet).

Triaxis® sensors, on the other hand, are based on a patented innovative magnetic sensor technology that enables measurement of the three magnetic flux components (BX, BY and BZ) in a single integrated circuit. This is done by utilizing a unique Integrated Magnetic Concentrator (IMC®). Using the three magnetic components, it is possible to create 2D or 3D sensors that determine rotary (angle), linear (stroke), or even joystick type motion as well as 3D-magnetometers that can output the individual magnetic (BX, BY, and BZ) components.

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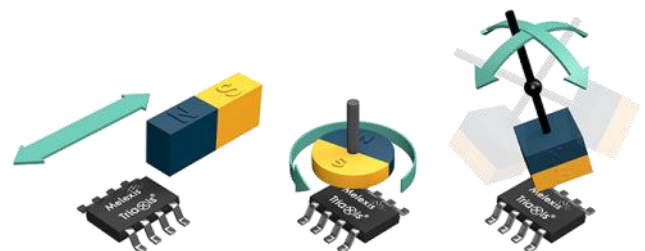
Triaxis® Hall												
Product	**Supported motion**				**Output format**						**Magnetic field strength**		**Safety**
	Rotary On-Axis	Rotary Off-Axis	Linear	Joystick (3D)	Ratiometric Analog	PWM	SENT	SPI	I²C	PSI-5	mT [G]	Min. Field (mT/mm)	ASIL (ISO26262)
MLX90316	✓				✓	✓		✓			20-70 [200-700]		
MLX90324	✓				✓	✓	✓				20-70 [200-700]		
MLX90333		✓	✓	✓	✓	✓		✓			20-70 [200-700]		
MLX90340	✓	✓	✓		✓	✓					20-70 [200-700]		(6)
MLX90363	✓	✓	✓	✓				✓			20-70 [200-700]		B(7)
MLX90364	✓	✓	✓		✓	✓					20-70 [200-700]		B(6)
MLX90365	✓	✓	✓		✓	✓					20-70 [200-700]		B(6)
MLX90366	✓	✓	✓				✓				20-70 [200-700]		B(6)
MLX90367	✓	✓	✓				✓				20-70 [200-700]		B(6)
MLX90393	✓	✓	✓	✓				✓	✓		5-50 [50-500]		
MLX90395	✓	✓	✓	✓				✓	✓		5-50 [50-500]		(6)
MLX90371	✓	✓	✓		✓	✓					10-70 [100-700]	6	B
MLX90372	✓	✓	✓			✓	✓				10-70 [100-700]	6	C
MLX90373	✓	✓	✓							✓	10-70 [100-700]	6	C
MLX90374	✓	✓	✓			dual	✓				10-70 [100-700]	6	C
MLX90378			✓			✓	✓				10-70 [100-700]		C

Linear Hall								
Product	**Programmable**		**Output format**				**Magnetic field strength**	**Safety**
	By customer (End of line)	Preprogrammed by Melexis	Analog Voltage	PWM	SENT	SPC	PSI-5	mT [G]	ASIL (ISO26262)
MLX90251	✓		✓					±6 to ±800 [±60 to ±8000]	
MLX90288	✓		✓					±6 to ±650 [±60 to ±6500]	
MLX90290		✓	✓					±20 to ±100 [±200 to ±1000]	
MLX90291	✓			✓				±15 to ±400 [±150 to ±4000]	
MLX90292	✓			✓			✓	±30 to ±170 [±300 to ±1700]	
MLX90293	✓		✓	✓	✓			±7 to ±400 [±70 to ±4000]	B(6)
MLX91377	✓		✓	✓	✓	✓		±10 to ±100 [±100 to ±1000]	B: Analog C: SENT & SPC

(1) Dual Mold Package. Package is intended to be used without a PCB with electrical connections made directly to a leadframe.
(2) TSSOP-16 packages include two dies with individual electrical connections where full redundancy is needed.
(3) Average current draw will depend on the programmable conversion duty cycle and filtering.
(4) Stray field robust mode utilizes a gradient field (mT/mm) while the traditional mode uses a homogenous field (mT).
(5) Standard supply range 4.5-5.5V. Extended mode (6-18V) selectable via EEPROM programming.
(6) Safety applications supported by safety analysis report and safety manual via HW Evaluation under Clause 13 of ISO26262
(7) Safety applications supported by safety analysis report and safety manual via Proven In Use process under Clause 14 of ISO26262

Hall Effect Sensor ICs

Speedsensor ICs
Solutions for speed measurement

Speedsensors are used to measure the covered distance or angle per time unit. A major application field is the speed controlling and monitoring of asynchronous drive systems applied in various industries like on- and off-road vehicles, the energy sector, medical sector, automation and machinery sectors.

Hall-Effect geartooth sensing makes use of the Hall element to sense the variation in flux found in the airgap between a magnet and passing ferrous gearteeth.

A modern approach is to convert the signal from the Hall element to a digital value and then perform signal processing to create a digital output from that effort.

In the case of the Melexis geartooth sensing (e.g. MLX90217 geartooth sensor) scheme, each time the signal changes direction a counter is reset. If the signal level changes beyond the preset magnitude from the positive or negative peak the output level is changed. This creates a digital zero speed peak detection speed sensor. It is immune to orientation requirements and can follow the gear speed down to the cessation of motion. It will detect the first edge of the next tooth immediately after power on. The digital signal processing does introduce an uncertainty from quantization that is greater at larger speeds. Extremely demanding timing requirements like those found in crank position sensors may suffer from the loss of accuracy at high speeds.

Current sensor ICs
Based on renowned Hall-effect technology

Melexis provides two types of current sensors suitable for a broad range of applications.

Conventional Hall sensors are sensitive to the magnetic field perpendicular to the chip surface, planar IMC-Hall® sensors are sensitive to magnetic fields parallel to the chip surface.

Each current sensor is individually tested and calibrated over temperature on the Melexis production line. However, in order to achieve optimal accuracy, a final calibration is required at customer-side after assembly to compensate for mechanical tolerances (sensor position deviations, shield dimensions, etc.)

This final calibration can be done in two ways: either by using the Melexis tools to directly program the sensor EEPROM, or by adjusting the gain/offset at microcontroller level.

All recent current sensor products (starting from MLX91206) can be programmed using the Melexis universal programmer (PTC-04) and related software. The PTC-04 communicates with the sensor through 3- or 4-wire connectors, and with the PC through USB or RS-232. Melexis provides a library of sensor-specific high level functions (.dll), which can be used to develop custom software using common programming language.

Product Overview

DACOM West

Current Sensors

Product	Type	Magnetic saturation	Temp	Supply current	Output	Supply voltage	Bandwidth	Sensitivity	
		mT	°C	mA	type	V	kHz	mV/mT	mV/A
MLX91206		10 / 25	-40...150°C	7-9	Analog ratiometric / PWM	5V +/- 10%	70	2,2 - 580	
MLX91208		10 - 60	-40...150°C	12	Analog ratiometric	5V +/- 10%	250	40 - 250	
MLX91216		25 - 90	-40...150°C	10 / 12.5	Analog ratiometric	5V +/- 10%	250 (prog.)	20 - 100	
MLX91207	Conventional Hall		-40...150°C	9	Analog ratiometric	5V +/- 10%	70	10 - 25	
MLX91209			-40...150°C	12	Analog ratiometric	5V +/- 10%	250	7,3 - 50	
MLX91217			-40...150°C	10 / 12.5	Analog ratiometric	5V +/- 10%	250 (prog.)	9 - 13	
MLX91211			-40...150°C	5	Analog ratiometric	5V +/- 10%	40	16,5 - 100	
MLX91220	Integrated Primary		-40...125°C	20	Analog ratiometric / Analog Fixed	5V +/- 10%	300		26,7 - 120
MLX91221			-40...125°C	20	Analog ratiometric / Analog Fixed	3.3V +/- 5%	100		16,67 - 120

Standard accuracy temperature detector

Product	Operating Temperature (°C)			Object Temperature (°C)		Supply voltage (V)			Package	Field of View (°)				
	-40 to 125	-40 to 85	-20 to 85	-70 to 380	-20 to 200	4.5 - 5.5	2.6 - 3.6	3.0 - 3.6		5-10	12-15	50	90	120
MLX90614	✓	✓		✓		✓	✓		TO-39	✓	✓		✓	✓
MLX90632			✓		✓			✓	QFN			✓		

Medical accuracy temperature detector

Product	Operating Temperature (°C)		Object Temperature (°C)			Supply voltage (V)			Package	Field of View (°)				
	-40 to 85	-20 to 85	-70 to 380	-40 to 115	-20 to 100	2.6 - 3.4	2.6 - 3.6	3.0 - 3.6		5/12	35	50	90	80/100
MLX90614	✓		✓				✓		TO-39	✓	✓		✓	
MLX90615	✓			✓		✓			TO-46					✓
MLX90632		✓			✓			✓	QFN			✓		

Multipixel array

Product	Operating Temperature (°C)		Object Temperature (°C)	Supply voltage (V)				Package	Field of View (°)				
	-40 to 85	-40 to 125	-40 to 300	2.5 - 3.3	2.5 - 3.4	2.9 - 3.6	3.0 - 3.6		40x10	60x15	55x35	110x75	120x25
MLX90621	✓		✓	✓	✓			TO-39	✓	✓			✓
MLX90640	✓		✓			✓		TO-39			✓	✓	
MLX90641	✓	✓	✓				✓	TO-39			✓	✓	

MLX90614ESF-AAA   MLX90615   MLX90621ESF-BAB   MLX90632

Infrared and optical ICs

Optical sensor ICs

Small form factor optical sensors with light-to-voltage or light-to-digital output either as single input or linear array

Enabling high accuracy, high resolution, robust and wide field-of-view 3D detection, classification and anti-spoof authentication of persons and objects for automotive, industrial, AGVs (automated guided vehicles), robotics, security (smart entry, smart cities), etc.
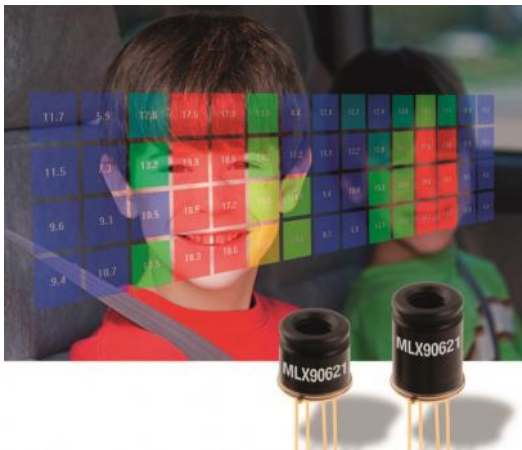
Infrared ICs

Suitable for demanding thermal environments with extended operating temperature range

Electronic devices that measure and detect infrared radiation in the surrounding environment. Active infrared sensors both emit and detect infrared radiation.

Non-contact temperature sensing relies on detecting energy emitted in the infrared (IR) wavelength region. Every object emits energy in this way, which can be measured to calculate its temperature. However, as the sensing devices behind this get ever smaller, they become more susceptible to the impact of thermal shocks, which can induce measurement error and thermal noise.

Thermopile temperature sensing technology is increasingly being used in medical (including home healthcare) and industrial applications (like infrared temperature gun), as it is robust, accurate and reliable. A thermopile is simply an electronic transducer that converts thermal energy into an electrical signal and works on the principle that everything emits thermal far-infrared (FIR) radiation.

Electrically speaking, a thermopile is comprised of several thermocouples connected in series. Together, they generate a voltage that is proportional to the temperature difference between two points; this difference gives a relative temperature measurement.

A MEMS thermopile sensor uses a thin, thermally isolated membrane.
As this has a low thermal mass, it is rapidly heated by incoming heat flux, consequently creating a temperature differential that the thermopile can report as a temperature difference.
By incorporating a reference thermistor into the MEMS system, an absolute temperature measurement can be generated..

Sensor Solutions

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INSPIRED ENGINEERING
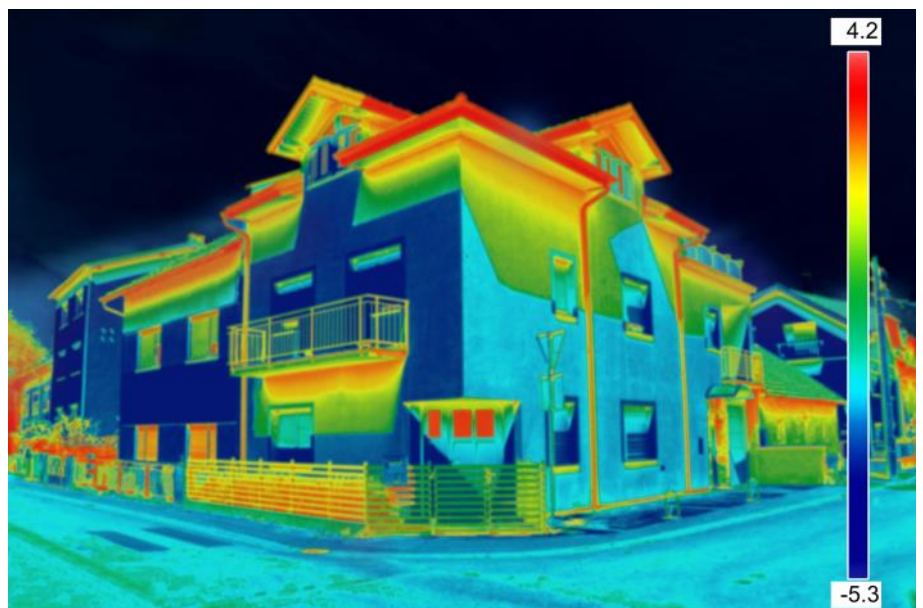
Hall Effect Sensor ICs

Latch & switch ICs
Unique latch & switch family with lateral sensitivity

As our world becomes more technology-driven and automated, the role of basic sensors becomes ever more important. More and more systems, including vehicles, household white goods and industrial installations rely on sensing to operate correctly and safely.
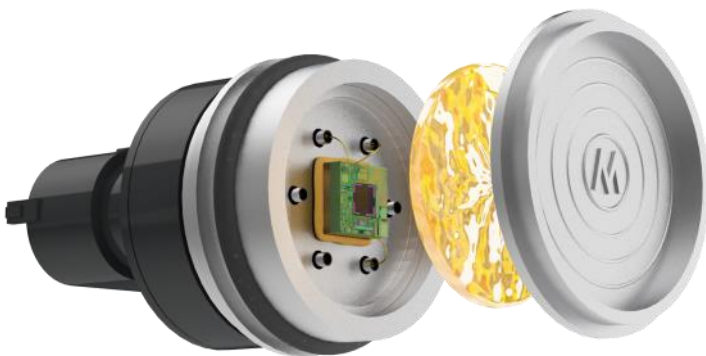
Latch and switch devices rely on the principles of the Hall-effect to, through the position of a magnet, determine the physical position of an object. These on-off switching devices are very common in automotive applications such as braking, shifter applications, doorlocks or seatbelts. However, they are equally valuable to ensure the door of a washing machine is closed, BLDC motor commutation or ensuring that a safety interlock is in place on an industrial machine.

The integrated EEPROM allows key thresholds and compensation to be programmed into devices while on the production line, effectively delivering a custom solution without cost penalties. By programming compensation curves, the devices can be used effectively with low-cost magnets thereby lowering the total cost of the sensing solution. The EEPROM programming enables high accuracy performance by programming the magnetic operating and release points (including temperature compensation) after packaging. The resulting flexibility allows customers to finetune the sensor settings based on the specific application parameters.

Miscellaneous ICs

Pressure sensor ICs
Suitable for a variety of pressure ranges, outstanding in terms of long-term stability and compact size

Melexis' micromachined versatile pressure sensor IC solutions are suitable for a variety of low, middle and high pressure ranges. They excel in long-term stability and compact size.

The application of micro-electro-mechanical system (MEMS) technology into a pressure sensing context is far from new. This approach has shown itself to be highly effective in a variety of system designs for several decades. The performance and reliability offered by such devices, as well as their extremely compact nature, have proved beneficial to the automotive and medical sectors in particular. They have been utilized predominantly for tasks where low pressures are involved (0 to 5 bar), but increasingly the potential merits of MEMS further up the pressure scale are starting to be recognized.

Through its belief in inspired engineering, Melexis has been able to introduce a next generation solution optimized from mid-range pressure measurement which fully exploits the many key advantages relating to MEMS technology. It permits significant system miniaturization, simplifies the assembly process, lowers the bill-of-material costs and makes EMC compliance easier to deal with. This is certain to open up new opportunities that the industry as a whole had previously overlooked.
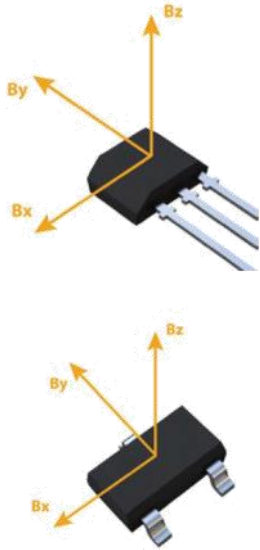
Pressure Sensors						
Product	Type	Factory calibrated	Operating temperature	Harsh media	Output type	Operating supply voltage
			°C	Corrosive gases		V
MLX90809	Relative	✓	-40...150°C	-	Analog ratiometric / Digital SENT	4.5 - 5.5
MLX90821	Relative	✓	-40...150°C	-	Analog ratiometric / Digital SENT	4.5 - 5.5
MLX90807	Relative	-	-40...150°C	-	Analog ratiometric	4.5 - 5.5
MLX90808	Absolute	-	-40...150°C	-	Analog ratiometric	4.5 - 5.5
MLX90817	Absolute	✓	-40...150°C	-/✓	Analog ratiometric	4.5 - 5.5
MLX90818	Absolute	✓	-40...150°C	✓	Digital SENT	4.5 - 5.5
MLX90819	Relative	-	-40...150°C	-	Analog ratiometric / Digital SENT	4.5 - 5.5
MLX90820	Absolute	-	-40...150°C	-	Analog ratiometric / Digital SENT	4.5 - 5.5

Latch & Switch

For a further overview on all available latches and switches
please contact the DACOM West sales team.

Packages		
	Visual Appearance	Sensitive Axis
Through-Hole Package	UA Package TO92-3L flat VA Package SIP 4L flat	
Surface Mount Package	SE Package TSOT-3L SE Package TSOT-5L	
Chip Size Package	LD Package UTQFN-6L	

Development and programming tools

The Melexis family of programmable sensors is designed to be integrated into an application and then programmed. Programming allows for setting the various operating modes inside the chip and for performing an end-of-line calibration which reduces or removes residual error due to mechanical tolerances for example.

The PTC-04 programmer is designed for efficient and precise calibration of the Melexis families of programmable ICs and can be easily adapted to a standard PC and to an application module to allow calibration of programmable sensor ICs within the operating environment.

Communication to the PC is done via an RS-232 null modem cable or USB.

The PC requires no custom configuration, allowing the programmer to be used with any PC with a COM port speed of 115.2kbs or a standard USB 1.1 or USB 2.0 (Type A) interface.

Daughterboards for Triaxis position sensor products	
Sensor	Daughterboard required
MLX90316	PTC-04-DB-90316
MLX90324	PTC-04-DB-90316
MLX90333	PTC-04-DB-90316
MLX90340	PTC-04-DB-90316
MLX90360	PTC-04-DB-90316
MLX90363	DB-SPI or N/A (1)
MLX90364	PTC-04-DB-90316 or PTC-04-DB-HALL06 (2)
MLX90365	PTC-04-DB-90316 or PTC-04-DB-HALL06 (2)
MLX90366	PTC-04-DB-90316 or PTC-04-DB-HALL06 (2)
MLX90367	PTC-04-DB-90316 or PTC-04-DB-HALL06 (2)
MLX90371	PTC-04-DB-HALL06
MLX90372	PTC-04-DB-HALL06
MLX90373	PTC-04-DB-HALL06
MLX90374	PTC-04-DB-HALL06
MLX90378	PTC-04-DB-HALL06
MLX90393	N/A (1)

Daughterboards for Linear Hall position sensor products	
Sensor	Daughterboard required
MLX90293	PTC-04-DB-90316
MLX90292	PTC-04-DB-HALL03 (3) or PTC-04-DB-HALL04 (4)
MLX90288	PTC-04-DB-HALL03
MLX90251	PTC-04-DB-HALL01
MLX90215	PTC-04-DB-HALL01

Daughterboards for Latches & Switches	
Sensor	Daughterboard required
MLX92232	PTC-04-DB-922xx
MLX92242	PTC-04-DB-922xx
MLX92292	PTC-04-DB-922xx

Daughterboards for current sensors	
Sensor	Daughterboard required
MLX91206	PTC-04-DB-HALL03
MLX91207	PTC-04-DB-HALL03
MLX91208	PTC-04-DB-HALL05
MLX91209	PTC-04-DB-HALL05
MLX91216	PTC-04-DB-HALL05
MLX91217	PTC-04-DB-HALL05

(1) The MLX90363 and MLX90393 can be programmed via SPI and therefore do not require the use of the PTC-04.
(2) Compatibility with PTC-04-DB-HALL06
(3) PWM Output.
(4) PSI5 Output.

DACOM
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