

# K18 Series Current Sensor

The K18 series is a Open-Loop current sensor based on the Hall effect. It provides electronic measurement of DC, AC or pulse currents at same time, and their combinations with galvanic between the primary (high current) and secondary circuits, PCB mount design is suitable for general low power applications.



## Features

- Non-contact measurement of high current
- Output voltage proportional to carried current
- Max. measuring range  $\pm 180\text{A}$  (DC or AC peak)
- RoHs compliance (Lead-Free)

## Advantages

- Compact design for general industrial measurement
- Excellent  $dv/dt$  performance
- Enhanced humidity and dust resistance
- High ESD sensitivity (Human Body Model) 8kV

## Applications

- Frequency converters
- Servo motor drives
- Battery management systems
- Welding applications

## Standards

- IEC60068-2 Series
- EN 61000-4 Series
- EN 55014-1: 2017
- EN 55014-2: 2015
- EN 50178: 1998
- IEC61800-3: 2017
- IEC61800-5-1: 2016

## Absolute maximum ratings

Symbol	Parameter	Min.	Max.	Unit
$V_{DD\ max.}$	Maximum supply voltage (not destructive)	-18	18	V
$I_{PM}$	Maximum measuring current	- 180	180	A
$T_A$	Ambient operating temperature	-30	80	°C
$T_S$	Storage temperature range	-40	85	°C
$V_{ESD-HBM}$	ESD sensitivity HBM (Human Body Model)	4	8	kV

Stresses above these ratings may cause permanent damage. Exposure to absolute maximum ratings for extended periods may degrade reliability.

## Specifications ( $T_A = 25^\circ\text{C}$ , $V_{DD} = \pm 15.0\text{V}$ )

Symbol	Parameter	Test condition	Min.	Typ.	Max.	Unit
$V_{DD}$	Supply voltage			$\pm 15$		V
$I_C$	Current consumption	$I_P = 0\text{A}$ without load		14	18	mA
$I_{PN}$	Current nominal measuring range	K18D003D15	-9	$\pm 3$	9	A
		K18D005D15	-15	$\pm 5$	15	A
		K18D010D15	-30	$\pm 10$	30	A
		K18D015D15	-45	$\pm 15$	45	A
		K18D020D15	-60	$\pm 20$	60	A
		K18D025D15	-75	$\pm 25$	75	A
		K18D030D15	-90	$\pm 30$	90	A
		K18D040D15	-120	$\pm 40$	120	A
		K18D050D15	-150	$\pm 50$	150	A
		K18D060D15	-180	$\pm 60$	180	A
$V_{OUT}$	Output voltage	$\pm I_{PN}$		$\pm 4$		V
$V_{OE}$	Offset voltage	$I_P = 0\text{A}$ K18D003...030D15	-40		40	mV
		$I_P = 0\text{A}$ K18D040...060D15	-50		50	mV
$\epsilon_L$	Non-linearity error	$\pm I_{PN}$ without offset		$< \pm 1$		%/ $I_{PN}$
$V_{OM}$	Magnetic offset voltage @ $I_P = 0\text{A} \rightarrow I_{PN} \rightarrow 0\text{A}$	K18DxxxD15 (xxx:003-030)			25	mV
		K18DxxxD15 (xxx:040-060)			40	mV
$T_{CVOUT}$	Temperature coefficient of $V_{OUT}$	$T_A = -30^\circ\text{C} \dots 80^\circ\text{C}$ (except $T_{CVOE}$ )	-1		1	mV/°C
$T_{CVOE}$	Temperature coefficient of offset	$T_A = -30^\circ\text{C} \dots 80^\circ\text{C}$	-1.5		1.5	mV/°C
$T_R$	Step response to 90% of $I_{PN}$			3	5	$\mu\text{s}$
<b>BW</b>	Frequency bandwidth(-3dB)			50		kHz

## Insulation characteristics

Symbol	Parameter	Value	Unit	Comment
<b>V<sub>0</sub></b>	Insulation voltage for isolation, 50Hz, 1 min	3000	V	
<b>R<sub>iso</sub></b>	Isolation resistance @500VDC	>500	MΩ	

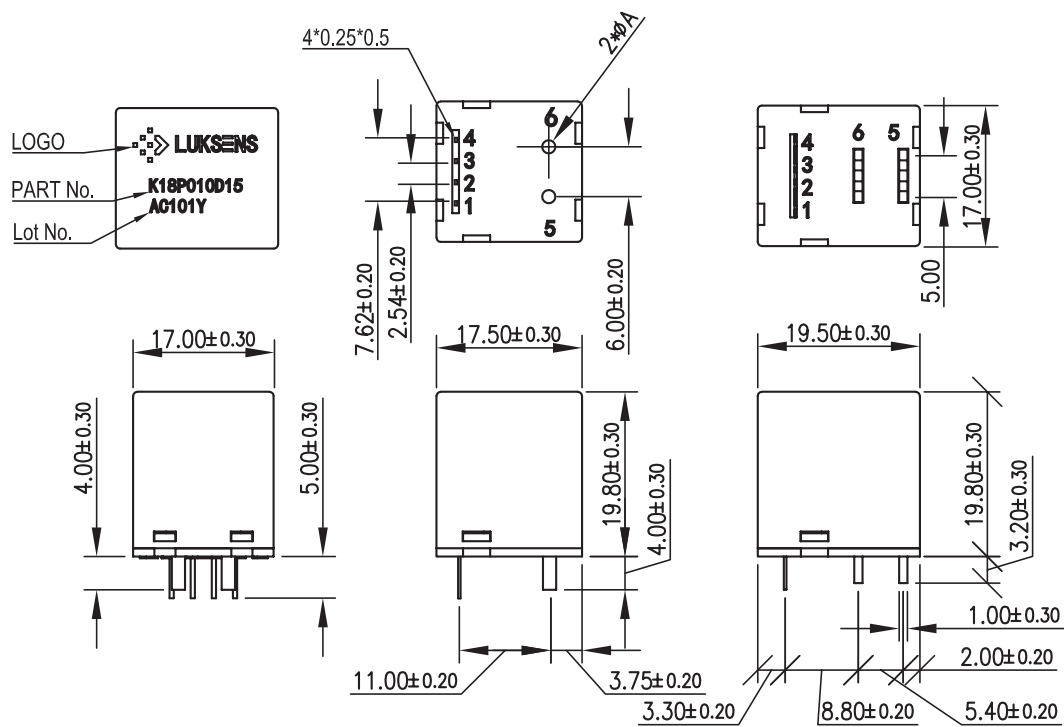
## General characteristics

Symbol	Parameter	Value	Unit	Comment
<b>m-HSE</b>	Housing material	V0		Flame retardant UL 94
<b>m-CDT</b>	Conductor material	H62		
<b>m</b>	Mass	8	grams	

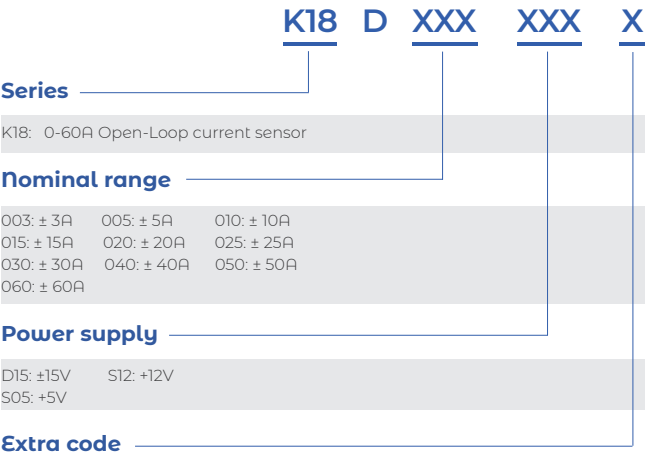
## Dimension (mm)

Pin	Symbol
1	$-V_{DD}$
2	GND
3	$+V_{DD}$
4	$V_{OUT}$
5	$+I_P$
6	$-I_P$

Current	Primary conductor
3A	$\phi 0.6\text{mm}$
5A	$\phi 0.8\text{mm}$
10A	$\phi 1.1\text{mm}$
15A	$\phi 1.4\text{mm}$
20A	$\phi 1.6\text{mm}$
25A	$\phi 1.6\text{mm}$
30A	$\phi 1.6\text{mm}$
40A	40A Busbar 1.0x6.3mm
50A	50A Busbar 1.0x6.3mm
60A	60A Busbar 1.0x6.3mm



# Name Guide Description



## Notes

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# Safety and Environment



The product is to be installed by manufacturer trained personnel or competent person trained in accordance with manufacturer installation instructions.

With respect to applicable standards IEC 61010-1/ EN 61010-1 *safety requirements for electrical equipment for measurement, control and laboratory use part 1 general requirements*, the product should be used in limited energy secondary circuits.



## Risk of electrical shock

Certain parts of the module can carry hazardous voltage during the operation process of the product because hazardous live voltage of primary conductor, power supply occurs, injury and/or serious damage will be caused if this warning is ignored.

Conducting parts must be inaccessible after installation of the product. Additional protection including shield or protective housing could be used according to IEC 60664 Insulation coordination for equipment within low-voltage supply systems.

Disconnection of the main supply will protect against possible injury and serious damage.



## ESD protection

Damage from an ESD event will occur if the personnel is not well grounded when handling.

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