

# K04 Series Current Sensor

The K04 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.



## Features

- Non-contact measurement of high current
- Output voltage proportional to carried current
- Max. measuring range  $\pm 2500\text{A}$  (DC or AC peak)
- RoHs compliance (Lead-Free)

## Applications

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

## Advantages

- Design for wide current range measurement
- High immunity from external interference
- High ESD sensitivity (Human Body Model) 8kV

## Standards

- EN 50178:1997
- IEC 61010-1:2010
- IEC 618000-5-1:2027

## Absolute maximum ratings

Symbol	Parameter	Min.	Max.	Unit
$V_{DD\ max}$	Maximum supply voltage (not destructive)	-15.7	15.7	V
$I_{PM}$	Maximum measuring current	-2500	2500	A
$T_{PC}$	Primary conductor temperature		110	°C
$T_A$	Ambient operating temperature	-10	80	°C
$T_S$	Storage temperature range	-40	90	°C
$V_{ESD-HBM}$	ESD sensitivity HBM (Human Body Model)		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			±15		V
$I_C$	Current consumption	$I_p=0\text{A}$ without load		20		mA
$I_{PN}$	Current nominal measuring range	K04D200D15	-600	±200	600	A
		K04D400D15	-1200	±400	1200	
		K04D500D15	-1500	±500	1500	
		K04D600D15	-1800	±600	1800	
		K04D800D15	-2400	±800	2400	
		K04D1000D15	-2500	±1000	2500	
		K04D1200D15	-2500	±1200	2500	
		K04D1500D15	-2500	±1500	2500	
$V_{OUT}$	Output voltage	$\pm I_{PN}$	-4.04	4	4.04	V
$V_{OE}$	Offset voltage	$I_p=0\text{A}$	-30		30	mV
$\epsilon_L$	Non-linearity error	$\pm I_{PN}$ without offset		<±1		%/ $I_{PN}$
$V_{OM}$	Magnetic offset voltage	$I_p = 0\text{A} \rightarrow I_{PN} \rightarrow 0\text{A}$		±20		mV
$T_{CVOE}$	Temperature coefficient of $V_{OE}$	K04D200 ...D500D15	-1.5		1.5	mV/K
		K04D1000 ...1500D15	-1		1	mV/K
$T_{CVOUT}$	Temperature coefficient of $V_{OUT}$	$T_A = -10^\circ\text{C} \dots 80^\circ\text{C}$ (except $T_{CVOE}$ )	-0.1		0.1	%/°C
$T_R$	Step response to 90% of $I_{PN}$			3	5	µs
<b>BW</b>	Frequency bandwidth(-3dB)			50		kHz

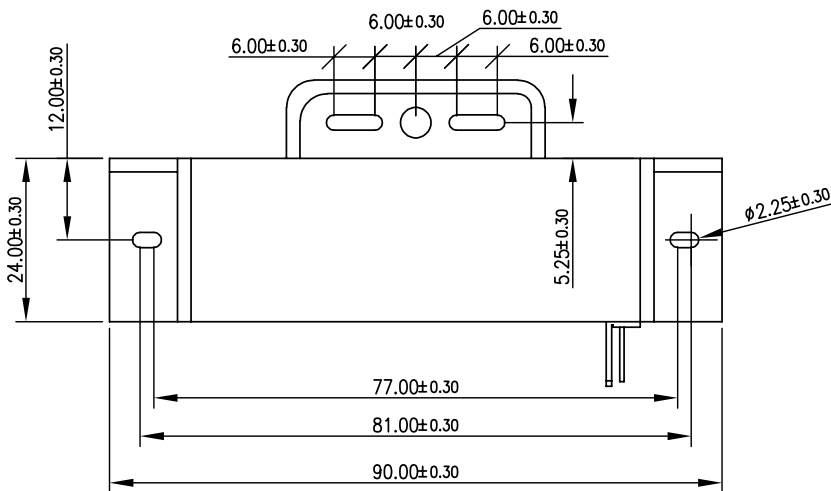
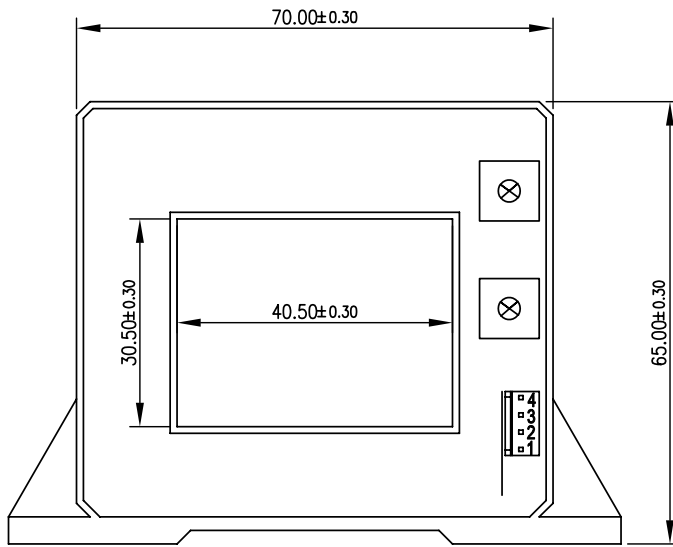
## Insulation characteristics

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

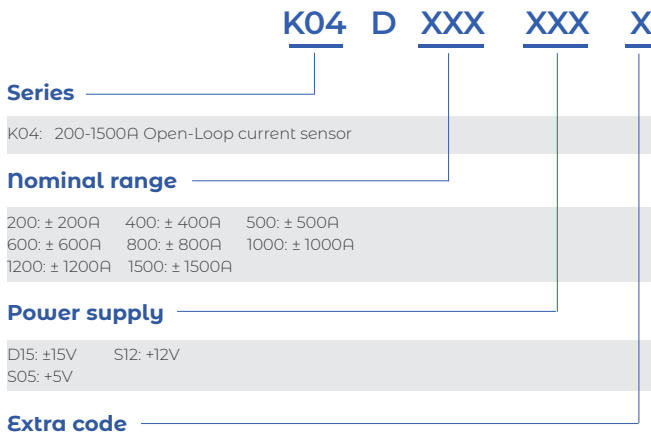
Symbol	Parameter	Value	Unit	Comment
<b>m-HSE</b>	Housing material	V0		Flame retardant UL 94
<b>m-FC</b>	Flux collector material	Oriented silicon steel		Superior magnetic permeability

## Dimension (mm)



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

# 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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