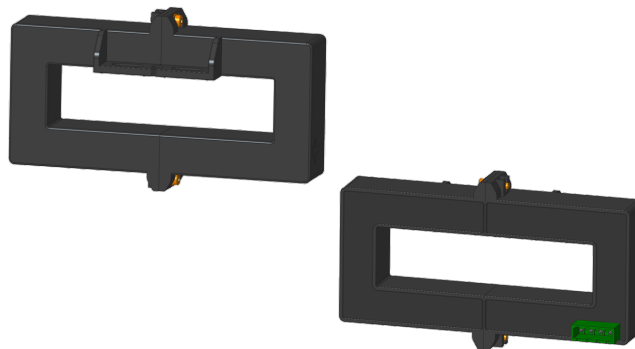# Current Sensor

Model Number:

HK4V 2000 H00
HK4V 3000 H00
HK4V 5000 H00

RoHS compliant

CE

For the electronic measurement of current:DC,AC,pulsed...,with galvanic Insulation between the primary and the secondary circuit.

Features

✧ Open loop sensor using the Hall Effect
✧ Galvanic Insulation between primary and secondary
✧ Insulating plastic case recognized according to UL 94-V0
✧ No insertion loss
✧ Standards:
  ■ IEC 60664-1:2020
  ■ IEC 61800-5-1:2022
  ■ IEC 62109-1:2010

Applications

✧ AC variable speed drives
✧ Uninterruptible power supplies (UPS)
✧ Static converters for DC motor drives
✧ Switch mode power supplies (SMPS)
✧ Power supplies for welding applications
✧ Battery management

Safety

This sensor must be used according to IEC 61800-5-1.
This sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacture's operating instructions.

When operating the sensor, certain parts of the module can carry hazardous voltage (e.g., Primary busbar, power supply). Ignore this warning can lead to injury and/or cause serious damage.
This sensor is a built-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.
 Main supply must be able to be disconnected.

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1 /6

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	X_CÁ	V	ł Áŕĺ ĚĺÍ

※ Stresses above these ratings may cause permanent damage.

※ Exposure to absolute maximum ratings for extended periods may degrade reliability.

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	℃	-40		85	
Ambient storge temperature	T_S	℃	-40		105	
Mass	m	g		630		HK4V 2000 H00
				630		HK4V 3000 H00
				610		HK4V 5000 H00

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test@ 50Hz,1min	V_d	kV	3	
Plastic case	-	-	UL94-V0	
Impulsewithstandvoltage1.2/50us	Uw	KV	12	
Relative creepage resistance index	CTI	PLC	Level Ⅲa	
Creepage distance (pri.- sec.)	d_{cp}	mm	13.5	
Clearance (pri.- sec.)	d_{ci}	mm	33.6	

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08/15/2025

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2/6

HK4V 2000 H00

※ With T_A = 25℃, V_C = ±15V, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		2000		
Primary current, measuring range	I_{PM}	A	-4000		4000	
Supply voltage	V_C	V		±15		@ ±I_{PN}, R_L = 10 kΩ , T_A = 25°C
Current consumption	I_C	mA		25		
Insulation resistance	R_{IS}	MΩ		>1000		@ 500 VDC
Internal impedance	R_{OUT}	Ω		100		Approximate value
Load resistance	R_L	kΩ		>10		
Output voltage（Analog）@ I_{PN}	V_{OUT}	V	3.96	4	4.04	
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature coefficient of V_{OE}	TCV_{OE}	mV/℃	-0.5		0.5	
Output offset temperature drift	TCV_{OUT}	%/℃	-0.05		0.05	
Linearity error 0…I_{PN}	ε_L	% of I_{PN}		±0.5		Exclusive of V_{OE}
Hysteresis offset voltage@I_P=0 after 1×I_{PN}	V_{OM}	mV	-10		10	
Response time	t_r	μs		<3	5	
Current following di/dt	di/dt	A/μS		>500		
Accuracy@ I_{PN}	X	%		<±1		
Frequency bandwidth	BW	kHz		DC~40		@-3dB

※ In the case of ±12V≤V_C≤±15V power supply, the measuring range of the sensor will be reduced.

※ If a 1KΩ load resistor is used, the current to be measured needs to be limited to the rated current, if the full range current is to be measured, the load resistance should be at least 10KΩ.

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3/6

HK4V 3000 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		3000		
Primary current, measuring range	I_{PM}	A	-5500		5500	
Supply voltage	V_C	V		±15		@ ±I_{PN}, R_L = 10 kΩ ,T_A = 25°C
Current consumption	I_C	mA		25		
Insulation resistance	R_{IS}	MΩ		>1000		@ 500 VDC
Internal impedance	R_{OUT}	Ω		100		Approximate value
Load resistance	R_L	kΩ		>10		
Output voltage（Analog）@I_{PN}	V_{OUT}	V	3.96	4	4.04	
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature coefficient of V_{OE}	TCV_{OE}	mV/℃	-0.5		0.5	
Output offset temperature drift	TCV_{OUT}	%/℃	-0.05		0.05	
Linearity error 0…I_{PN}	ε_L	% of I_{PN}		±0.5		Exclusive of V_{OE}
Hysteresis offset voltage@I_P=0 after 1×I_{PN}	V_{OM}	mV	-10		10	
Response time	t_r	μs		<3	5	
Current following di/dt	di/dt	A/μS		>500		
Accuracy@ I_{PN}	X	%		<±1		
Frequency bandwidth	BW	kHz		DC~40		@-3dB

※ In the case of ±12V≤V_C≤±15V power supply, the measuring range of the sensor will be reduced.

※ If a 1KΩ load resistor is used, the current to be measured needs to be limited to the rated current, if the full range current is to be measured, the load resistance should be at least 10KΩ.

Doc Ref.: 2801 000 00172

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4/6

HK4V 5000 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		5000		
Primary current, measuring range	I_{PM}	A	-6000		6000	
Supply voltage	V_C	V		±15		@ ±I_{PN}, R_L = 10 kΩ ,T_A = 25°C
Current consumption	I_C	mA		25		
Insulation resistance	R_{IS}	MΩ		>1000		@ 500 VDC
Internal impedance	R_{OUT}	Ω		100		Approximate value
Load resistance	R_L	kΩ		>10		
Output voltage（Analog）@ I_{PN}	V_{OUT}	V	4.95	5	5.05	
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature coefficient of V_{OE}	TCV_{OE}	mV/℃	-0.5		0.5	
Output offset temperature drift	TCV_{OUT}	%/℃	-0.05		0.05	
Linearity error 0…I_{PN}	ε_L	% of I_{PN}		±0.5		Exclusive of V_{OE}
Hysteresis offset voltage@I_P=0 after 1×I_{PN}	V_{OM}	mV	-10		10	
Response time	t_r	μs		<3	5	
Current following di/dt	di/dt	A/μS		>500		
Accuracy@ I_{PN}	X	%		<±1		
Frequency bandwidth	BW	kHz		DC~40		@-3dB

※ In the case of ±12V≤V_C≤±15V power supply, the measuring range of the sensor will be reduced.

※ If a 1KΩ load resistor is used, the current to be measured needs to be limited to the rated current, if the full range current is to be measured, the load resistance should be at least 10KΩ.

Doc Ref.: 2801 000 00172
08/15/2025
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5/6

HK4V H00 SERIES

Dimensions （in mm. 1 mm = 0.0394 inch）

Connection:
1： +Vc
2： −Vc
3： M
4： 0V

Primary input current (-)

Primary input current (+)

Laser marking area

2EDG-4P-3.81

	d_{CI}(mm)	d_{CP}(mm)
A-B	13.5	33.6
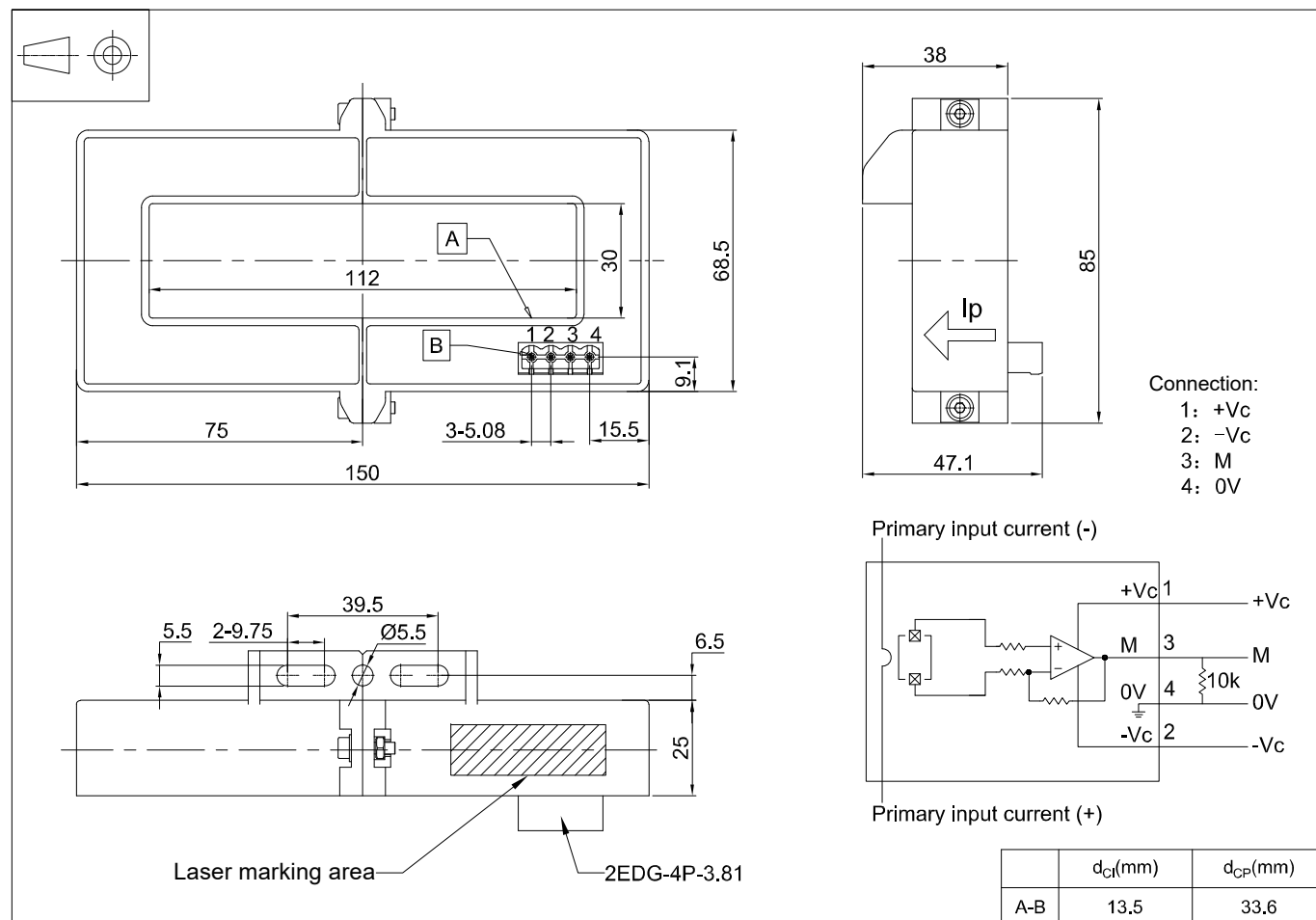
Mechanical characteristics

◇ General tolerance ±0.5mm

◇ Connection of secondary 2EDG-4P-3.81

◇ Primary hole 112mm×30mm

◇ Sensor 2pcs Φ15.25 x 5.5mm Ellipse through hole

Remarks

◇ V_{OUT} and I_P are in the same direction, when I_P flows in the direction of arrow.

◇ Temperature of the primary conductor should not exceed 105℃.

◇ Dynamic performances (di/dt and response time)are best with a single bar completely filling the primary hole.

This is a standard model. For different applications (measurement, secondary connections…), please contact CHIPSENSE.

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6/6