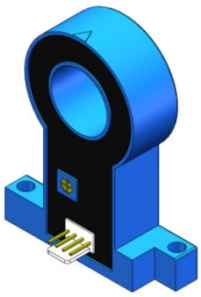
# Hall effect Current Sensor

# SCB1



## Product description

### Features

- Based on Hall effect measurement principle, close loop circuit mode.
- The isolation voltage between primary and secondary is greater than 3000VAC.
- Comply with UL94-V0 flame retardant rating.

### Performance

- It can measure DC, AC, pulse, and various irregular waveform currents of cable conductors under isolation conditions.
- Very low temperature drift, zero drift, fast response time, good linearity, accuracy can reach 0.1%.
- Dynamic performance (di/dt and response time) is optimal when the busbar is fully filled with primary perforations.
- Strong ability to resist external electromagnetic interference (BCI, EFT, CS, CE, ESD, dv/dt, etc.).

### Application

- It can be widely used in inverters, UPS, photovoltaic inverters, electric vehicle drives, high-frequency power supplies, inverter welding machines and other products.

### Implementation standards

- GB/T 7665-2005
- JB/T 7490-2007
- JB/T 25480-2010
- JB/T 9473-2020
- SJ 20792-2000

### Certification

## Technical Parameters

| Model / Parameters（25℃） | SCB1-/SCB1T- | | | |
|---|---|---|---|---|
| | 50A | 100A | 200A | 300A |
| Primary Current (A)$I_{PN}$ | 50A | 100A | 200A | 300A |
| Primary Current Max. Peak Value (A) $I_{PM}$ | ±100A | ±200A | ±400A | ±400A |
| Turns ratio $K_N$ | 1:1000 | 1:1000 | 1:2000 | 1:3000 |
| Secondary coil internal resistance $R_S$ @$T_A$=70℃ | 20Ω | 20Ω | 40Ω | 77Ω |
| Output signal $I_{SN}$ @$I_{PN}$，(Remark 2) | ±50mA | ±100mA | ±100mA | ±100mA |
| Measure resistance $R_M$ @$I_{PN}$,Vc=±15V, | 50～200Ω | 30～100Ω | 30～80Ω | 0～40Ω |

## Electrical Data

| Item | Min. | Typical | Max. | Unit |
|---|---|---|---|---|
| Input power supply voltage range Vc （±5%）(Remark 1) | ±12 | ±15 | ±18 | $V_{DC}$ |
| Current consumption Ic Ic @±15V | 13mA+Output Current $I_S$ | | | mA |
| Accuracy X @$I_{PN}$，$T_A$= 25℃ | - | ±0.5 | ±0.8 | % |
| Linearity $\varepsilon_L$ @$R_L$=10KΩ，$T_A$= 25℃ | - | ±0.1 | ±0.5 | % |
| Offset current $I_{OE}$ @$T_A$= 25℃,$I_P$=0 | - | ±0.2 | ±0.5 | mA |
| Magnetic offset current $I_{OM}$ @ $I_P$→0 | - | ±0.2 | ±0.5 | mA |
| Temperature coefficient of offset current $TCI_{OE}$ | - | ±0.2 | ±1 | mA |
| Response time $t_D$ @ 0→$I_{PN}$ | - | 1 | - | us |
| Bandwidth BW | - | 50 | 100K | Hz |
| Ambient operating temperature $T_A$ | -40 | 25 | 85 | ℃ |
| Ambient storage temperature $T_s$ | -40 | 25 | 90 | ℃ |
| Withstand voltage $V_D$@50Hz,60s,0.1mA | - | 3000 | - | $V_{AC}$ |
| Weight m | - | 60 | - | g |

Remarks:

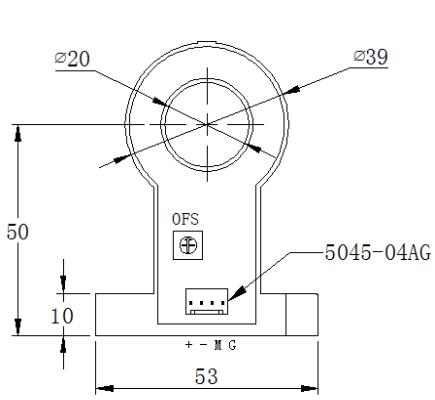
**1.** VC greater than the maximum value may cause the measurement device to fail permanently.

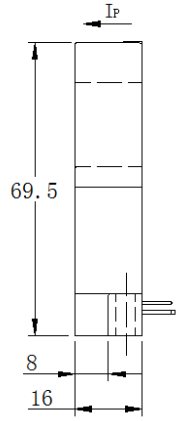
2. $I_{OUT} = I_{SN} * \frac{I_P}{I_{PN}} + I_{OE}$

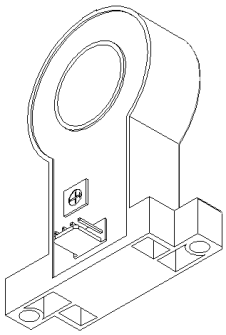
3.Follow speed di/dt＞100A/uS

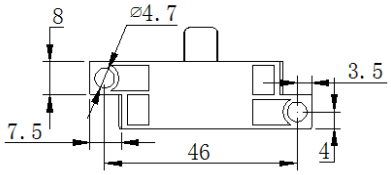
## Dimensions (in mm)

SCB1



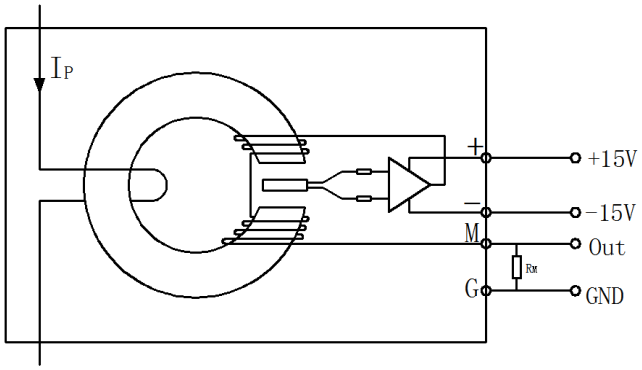



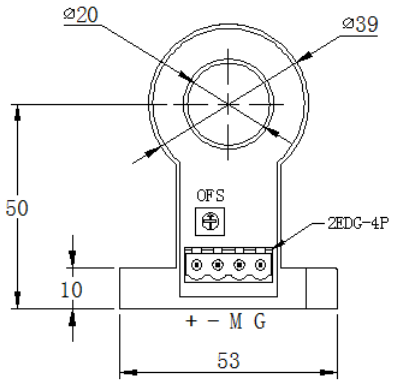


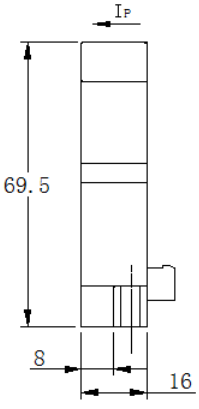

单位：mm

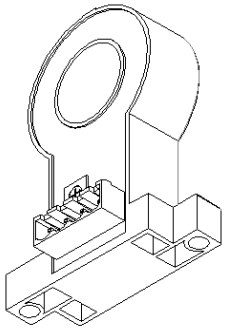
| 序号 | 标识 | 说明 |
|---|---|---|
| 1 | + | +15V |
| 2 | - | -15V |
| 3 | M | Out |
| 4 | G | GND |

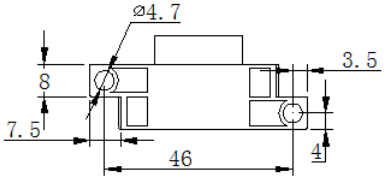



SCB1T






单位：mm

| 序号 | 标识 | 说明 |
|---|---|---|
| 1 | + | +15V |
| 2 | - | -15V |
| 3 | M | Out |
| 4 | G | GND |

Notes:

1. Size error: ±1mm;
2. Primary aperture: φ20mm;
3. Fastening hole: φ4.5mm*2;
4. SCB1 output terminal: Molex 5045-04AG;
   SCB1T output terminal: 2EDGVC-5.08-4P;
5. The IP indication direction is the positive direction of the current, and the OFS is the zero adjustment;
6. Incorrect wiring may cause damage to the sensor.

# Data Sheet

| Model / Parameters（25℃） | SCB1V-/SCB1VT- | | | |
|---|---|---|---|---|
| | 50A | 100A | 200A | 300A |
| Primary Current (A)$I_{PN}$ | 50A | 100A | 200A | 300A |
| Primary Current Max. Peak Value (A) $I_{PM}$ | ±100A | ±200A | ±400A | ±400A |
| Turns ratio $K_N$ | 1:1000 | 1:1000 | 1:2000 | 1:3000 |
| Output signal $I_{SN}$ @$I_{PN}$ | ±5V(0.5%) | | | |

## Electrical Data

| Item | Min. | Typical | Max. | Unit |
|---|---|---|---|---|
| Input power supply voltage range Vc （±5%）(Remark 1) | ±12 | ±15 | ±18 | $V_{DC}$ |
| Current consumption Ic Ic @±15V | 13mA+Output Current $I_S$ | | | mA |
| Secondary coil internal resistance $R_S$ @$T_A$=70℃ | - | 100 | - | Ω |
| Measure resistance $R_M$ @$I_{PN}$,Vc=±15V | - | 10 | - | KΩ |
| Accuracy X @$I_{PN}$，$T_A$= 25℃ | - | ±0.5 | ±0.8 | % |
| Linearity $\varepsilon_L$ @$R_L$=10KΩ，$T_A$= 25℃ | - | ±0.1 | ±0.5 | % |
| Offset current $I_{OE}$ @$T_A$= 25℃,$I_P$=0 | - | ±20 | ±25 | mV |
| Magnetic offset current $I_{OM}$ @ $I_P$→0 | - | ±10 | ±15 | mV |
| Temperature coefficient of offset current $TCI_{OE}$ | - | ±0.2 | ±1 | mA |
| Response time $t_D$ @ 0→$I_{PN}$ | - | 1 | - | us |
| Bandwidth BW | - | 50 | 100K | Hz |
| Ambient operating temperature $T_A$ | -40 | 25 | 85 | ℃ |
| Ambient storage temperature $T_s$ | -40 | 25 | 90 | ℃ |
| Withstand voltage $V_D$@50Hz,60s,0.1mA | - | 3000 | - | $V_{AC}$ |
| Weight m | - | 60 | - | g |

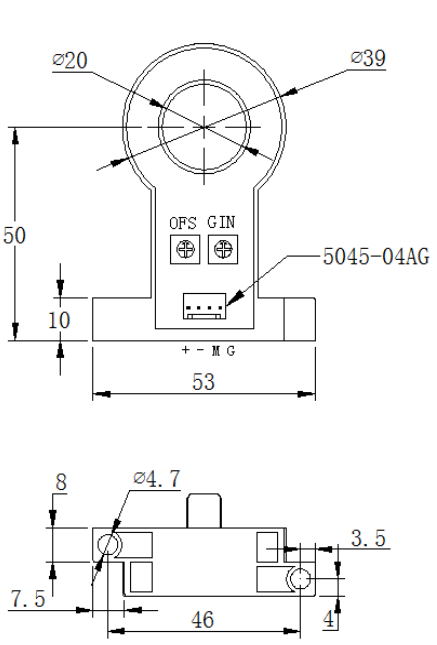
Remarks:

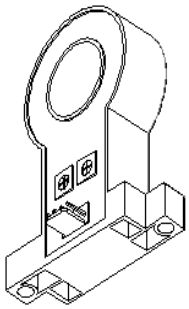
1.VC greater than the maximum value may cause the measurement device to fail permanently.

2. $V_{OUT} = 5.05 * \frac{R_L}{100 + R_L} * \frac{I_P}{I_{PN}} + V_{OE}$

3.Follow speed di/dt＞100A/uS

## SCB1V(Voltage Output)Dimension (in:mm)

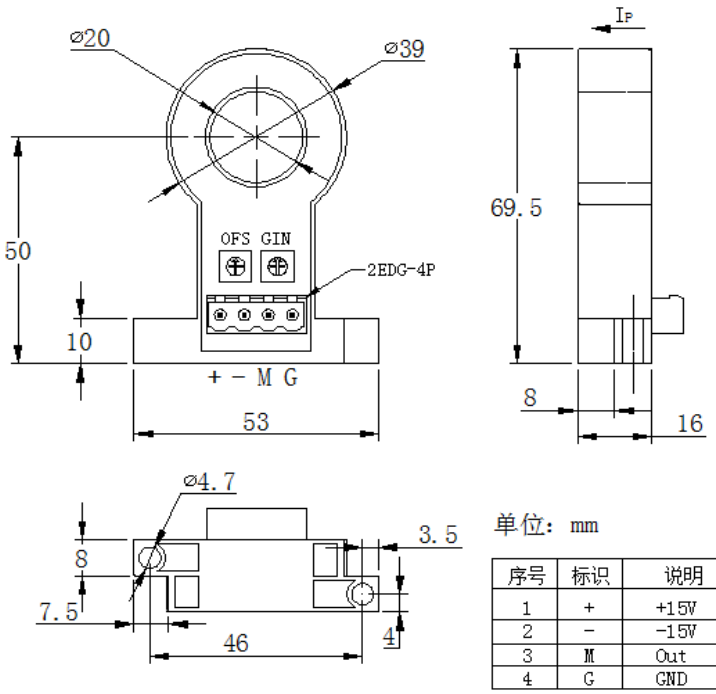


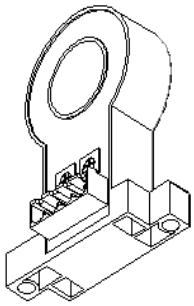



单位：mm

| 序号 | 标识 | 说明 |
|---|---|---|
| 1 | + | +15V |
| 2 | - | -15V |
| 3 | M | Out |
| 4 | G | GND |

## SCB1VT(Voltage Output)Dimension (in:mm)

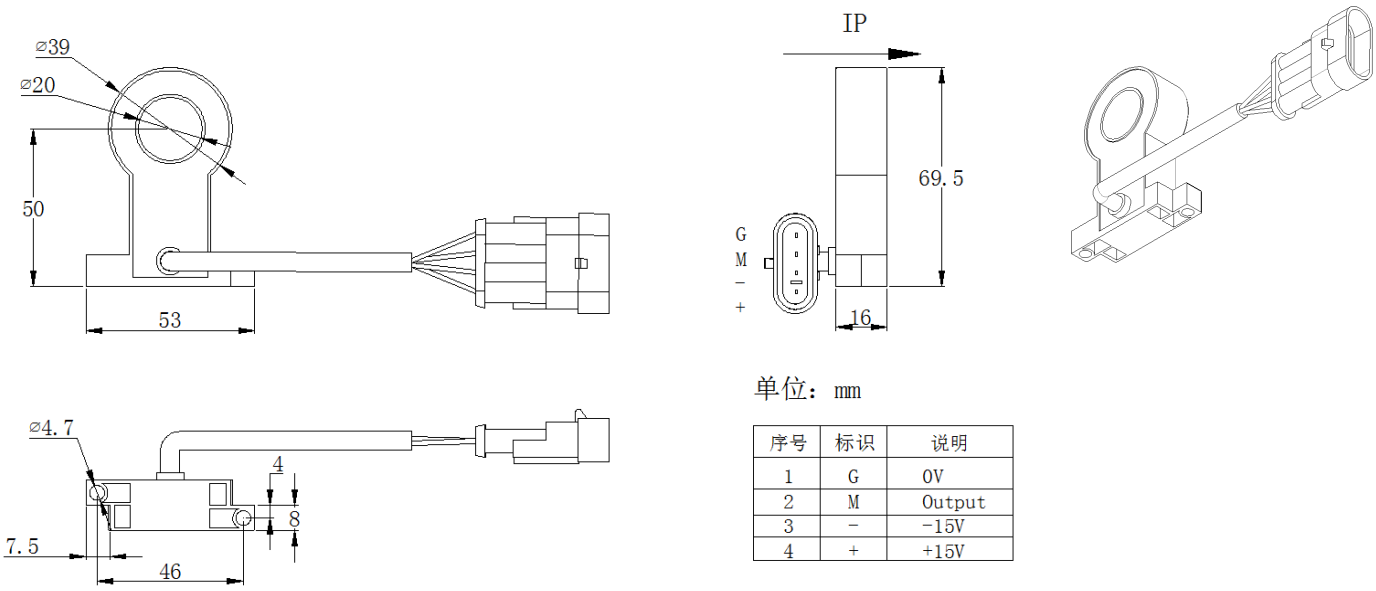


单位：mm

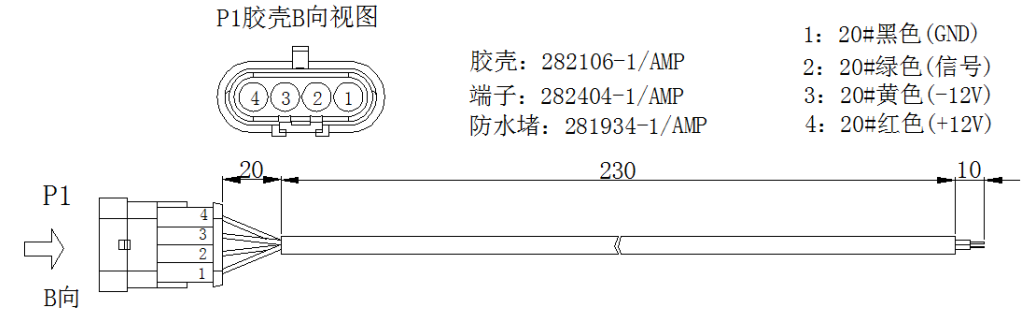
| 序号 | 标识 | 说明 |
|---|---|---|
| 1 | + | +15V |
| 2 | - | -15V |
| 3 | M | Out |
| 4 | G | GND |

## SCB1R(Voltage Output)Dimension (in:mm)




单位：mm

| 序号 | 标识 | 说明 |
|---|---|---|
| 1 | G | 0V |
| 2 | M | Output |
| 3 | − | -15V |
| 4 | + | +15V |




Notes:

1. Size error: ±1mm;
2. Primary hole diameter: φ20mm;
3. Fastening hole: φ4.5mm*2;
4. SCB1V Output Terminal: Molex 5045-04AG;
   SCB1VT output terminal: 2EDGVC-5.08-4P;
   SCB1R Housing: 282106-1/AMP
   SCB1R terminal: 282404-1/AMP
   SCB1R Waterproof Plug: 281934-1/AMP
5. The IP indication direction is the positive direction of the current, the OFS is the zero adjustment, and the GIN is the output adjustment;
6. Incorrect wiring may cause damage to the sensor.