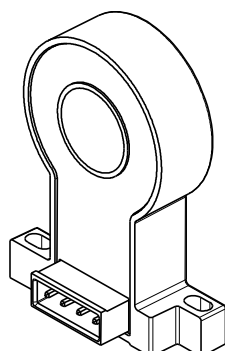# TR1V H00 SERIES

## Current Sensor

## Model Number

TR1V 0.01 H00
TR1V 0.02 H00
TR1V 0.05 H00
TR1V 0.10 H00
TR1V 0.20 H00

Used to measure 50Hz AC current,with galvanic separation between the primary and the secondary circuits.

## Features

✧ Ac current sensor based on transformer technology
✧ DC voltage output
✧ Insulating plastic case recognized according to UL 94-V0（Blue）
✧ High accuracy
✧ Very low offset drift over temperature
✧ Standards:
   ■ EN50178: 1997
   ■ IEC 61010-1: 2000
   ■ UL 508: 2010

## Applications

✧ AC current measurement
✧ Wide range of single or three phase current detection（Max.±100A）
✧ Failure mode detection of current sources
✧ Symmetrical fault detection (e.g. at inverter output)
✧ AC screen

## Safety

This sensor must be used according to IEC61010-1.

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.

*Caution, risk of electrical shock!*

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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# TR1V  H00 SERIES

## Absolute maximum ratings(not operating)

| Parameter | Symbol | Unit | Value |
|---|---|---|---|
| Supply voltage | $V_C$ | V | ±18 |
| Primary conductor temperature | $T_B$ | ℃ | 100 |

※ 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 | $T_A$ | ℃ | –10 | | 70 | |
| Ambient storge temperature | $T_S$ | ℃ | –40 | | 85 | |
| Mass | $m$ | g | | 63 | | |
| Standards | | EN 50178, IEC 61010-1, UL 508C | | | | |

## Insulation coordination

| Paramter | Symbol | Unit | Value | Comment |
|---|---|---|---|---|
| Rms voltage for AC insulation test @ 50Hz,1min | $V_d$ | kV | 3 | |
| Clearance (pri.- sec.) | $d_{Cl}$ | mm | 7.2 | |
| Creepage distance (pri.- sec.)) | $d_{Cp}$ | mm | 7.2 | |
| Plastic case | - | - | UL94-V0 | |
| Comparative traking index | $CTI$ | PLC | 3 | |
| Application example | - | - | 300V CAT Ⅲ PD2 | Reinforced insulation,according to EN 50178, EN 61010-1 |
| Application example | - | - | 600V CAT Ⅲ PD3 | Basic insulation,according to EN 50178, EN 61010-1 |

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## TR1V 0.01 H00

※ With $T_A$ = 25℃, $V_C$ = ±15V, Output measuring resistance $R_L$=10kΩ,unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | mA | | 10 | | |
| Primary current, measuring range | $I_{PM}$ | mA | | 15 | | |
| Supply voltage | $V_C$ | V | ±12 | | ±15 | @5% |
| Current consumption | $I_C$ | mA | | | 20 | @ $I_{PN}$=0A |
| Rated output voltage | $V_{OUT}$ | V | | 5 | | DC voltage |
| Measuring resistance | $R_L$ | kΩ | 10 | | | |
| Theoretical sensitivity | $G_{th}$ | V/A | | 500 | | |
| Temperature of G | $TCG$ | mV/k | | ±1.5 | | @−10℃~70℃ |
| Electrical offset voltage | $V_{0E}$ | mV | −50 | | 50 | |
| Temperature coefficient of $V_{OE}$ @$I_P$ = 0 | $TCV_{0E}$ | mV/k | | ±1.5 | | @−10℃~70℃ |
| Linearity error 0…$I_{PN}$ | $\varepsilon_L$ | % | −1 | ±0.5 | 1 | |
| Accuracy@ $I_{PN}$ | $X$ | % | −1 | ±0.5 | 1 | |
| Frequency bandwidth | $BW$ | Hz | | 50 | | |

## TR1V 0.02 H00

※ With $T_A$ = 25℃, $V_C$ = ±15V, Output measuring resistance $R_L$=10kΩ,unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | mA | | 20 | | |
| Primary current, measuring range | $I_{PM}$ | mA | | 30 | | |
| Supply voltage | $V_C$ | V | ±12 | | ±15 | @5% |
| Current consumption | $I_C$ | mA | | | 20 | @ $I_{PN}$=0A |
| Rated output voltage | $V_{OUT}$ | V | | 5 | | DC voltage |
| Measuring resistance | $R_L$ | kΩ | 10 | | | |
| Theoretical sensitivity | $G_{th}$ | V/A | | 250 | | |
| Temperature of G | $TCG$ | mV/k | | ±1.5 | | @−10℃~70℃ |
| Electrical offset voltage | $V_{0E}$ | mV | −50 | | 50 | |
| Temperature coefficient of $V_{OE}$@$I_P$ = 0 | $TCV_{0E}$ | mV/k | | ±1.5 | | @−10℃~70℃ |
| Linearity error0…$I_{PN}$ | $\varepsilon_L$ | % | −1 | ±0.5 | 1 | |
| Accuracy@ $I_{PN}$ | $X$ | % | −1 | ±0.5 | 1 | |
| Frequency bandwidth | $BW$ | Hz | | 50 | | |

## Electrical data

## TR1V 0.05 H00

※ With $T_A$ = 25℃, $V_C$ = ±15V, Output measuring resistance $R_L$=10kΩ,unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | mA | | 50 | | |
| Primary current, measuring range | $I_{PM}$ | mA | | 75 | | |
| Supply voltage | $V_C$ | V | ±12 | | ±15 | @5% |
| Current consumption | $I_C$ | mA | | | 20 | @ $I_{PN}$=0A |
| Rated output voltage | $V_{OUT}$ | V | | 5 | | DC voltage |
| Measuring resistance | $R_L$ | kΩ | 10 | | | |
| Theoretical sensitivity | $G_{th}$ | V/A | | 100 | | |
| Temperature of G | TCG | mV/k | | ±1.5 | | @-10℃~70℃ |
| Electrical offset voltage | $V_{0E}$ | mV | −50 | | 50 | |
| Temperature coefficient of $V_{0E}$@$_P$ = 0 | $TCV_{0E}$ | mV/k | | ±1.5 | | @-10℃~70℃ |
| Linearity error 0…$I_{PN}$ | $\varepsilon_L$ | % | −1 | ±0.5 | 1 | |
| Accuracy@ $I_{PN}$ | X | % | −1 | ±0.5 | 1 | |
| Frequency bandwidth | BW | Hz | | 50 | | |

## TR1V 0.1 H00

※ With $T_A$ = 25℃, $V_C$ = ±15V, Output measuring resistance $R_L$=10kΩ,unless otherwise noted.

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | mA | | 100 | | |
| Primary current, measuring range | $I_{PM}$ | mA | | 150 | | |
| Supply voltage | $V_C$ | V | ±12 | | ±15 | @5% |
| Current consumption | $I_C$ | mA | | | 20 | @ $I_{PN}$=0A |
| Rated output voltage | $V_{OUT}$ | V | | 5 | | DC voltage |
| Measuring resistance | $R_L$ | kΩ | 10 | | | |
| Theoretical sensitivity | $G_{th}$ | V/A | | 50 | | |
| Temperature of G | TCG | mV/k | | ±1.5 | | @-10℃~70℃ |
| Electrical offset voltage | $V_{0E}$ | mV | −50 | | 50 | |
| Temperature coefficient of $V_{0E}$@$_P$ = 0 | $TCV_{0E}$ | mV/k | | ±1.5 | | @-10℃~70℃ |
| Linearity error 0…$I_{PN}$ | $\varepsilon_L$ | % | −1 | ±0.5 | 1 | |
| Accuracy@ $I_{PN}$ | X | % | −1 | ±0.5 | 1 | |
| Frequency bandwidth | BW | Hz | | 50 | | |

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## TR1V 0.2 H00

※ With $T_A$ = 25℃, $V_C$ = ±15V, Output measuring resistance $R_L$=10kΩ, unless otherwise noted,

| Parameter | Symbol | Unit | Min | Typ | Max | Comment |
|---|---|---|---|---|---|---|
| Primary nominal rms current | $I_{PN}$ | A | | 200 | | |
| Primary current, measuring range | $I_{PM}$ | A | | 250 | | |
| Supply voltage | $V_C$ | V | ±12 | | ±15 | @5% |
| Current consumption | $I_C$ | mA | | 2 | | @ $I_{PN}$=0A |
| Rated output voltage | $V_{OUT}$ | V | | 5 | | DC Voltage |
| Measuring resistance | $R_L$ | kΩ | 10 | | | |
| Theoretical sensitivity | $G_{th}$ | V/A | | 25 | | |
| Temperature of G | $TCG$ | mV/k | | ±1.5 | | @-10℃~70℃ |
| Electrical offset voltage | $V_{0E}$ | mV | −50 | | 50 | |
| Temperature coefficient of $V_{OE}$@$I_P$ = 0 | $TCV_{0E}$ | mV/k | | ±1.5 | | @-10℃~70℃ |
| Linearity error0…$I_{PN}$ | $\varepsilon_L$ | % | −1 | ±0.5 | 1 | |
| Accuracy@ $I_{PN}$ | $X$ | % | −1 | ±0.5 | 1 | |
| Frequency bandwidth | $BW$ | Hz | | 50 | | |

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## Dimensions（in mm. 1 mm = 0.0394 inch）
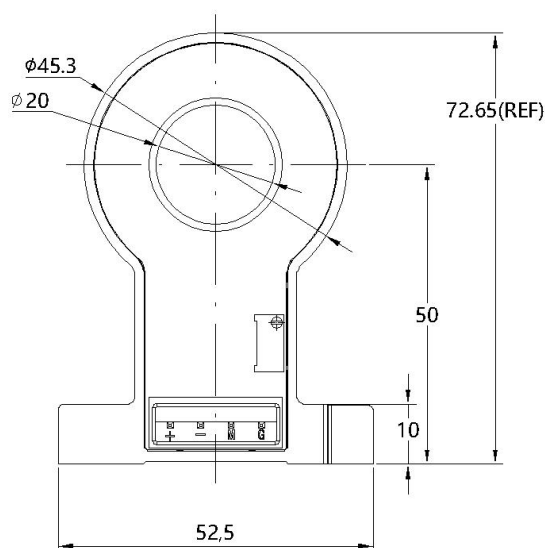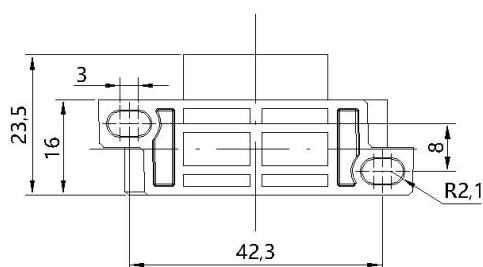


## Mechanical characteristic

| | | |
|---|---|---|
| ✧ | General tolerance | ±0.3mm |
| ✧ | Connection of secondary | JK2EDG-5.08-4P |
| ✧ | Primary hole | Φ20mm |
| ✧ | Sensor | 1pc Φ4.0 mm through hole<br>1pc M4 Metal screws |

Recommended fastening torque   1.8 N•m (±10%)

## Remarks

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

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