# TBC-LTHB Series High Precision Closed Loop Mode Hall Effect Current Sensor

TBC-LTHB Series current sensor is a closed loop device based on the measuring principle of the hall effect and null balance method ,with a galvanic isolation between primary and secondary circuit, the size of primary not affect test precision, no matter the location of primary in the hole of current sensor, It can really measure resolution 1000:1 and it uses for precision measurement of DC, AC and pulse current

## Electrical data (Ta=25℃±5℃)

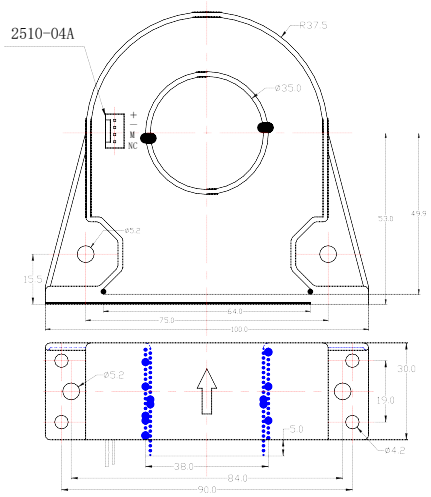
| Parameter \ Type | TBC300LTHB | TBC400LTHB | TBC500LTHB | Unit |
|---|---|---|---|---|
| Rated input (Ipn) | ±300 | ±400 | ±500 | A |
| Measure range (Ip) | ±900 ( ±24V , 33Ω ) | ±1200 ( ±24V , 20Ω ) | ±1500 ( ±24V , 1.0Ω ) | A |
| Turns ratio (Np/Ns) | 1:3000 | 1:4000 | 1:5000 | T |
| Measure resister with ±15V | @±300Amax 100(max) | @±400Amax 75(max) | @±500Amax 50(max) | Ω |
| | @±600Amax 30(max) | @±800Amax 15(max) | @±800Amax 10(max) | Ω |
| Measure resister with ±18V | @±300Amax 150(max) | @±400Amax 120(max) | @±500Amax 91(max) | Ω |
| | @±600Amax 43(max) | @±800Amax 25(max) | @±1000Amax 7.5(max) | Ω |
| Coil resister | 38 | 55 | 75 | Ω |
| Rated output (Isn) | ±100±0.2%FS | | | mA |
| Supply voltage | ±15 ~ ±24 | | | V |
| Power consumption | ≤20+IpX (Np/Ns) | | | mA |
| Zero offset current | @Ip=0 | ≤±0.2 | | mA |
| Offset current drift | ≤±0.5 ( Typ ) , ≤±0.75 ( Max ) , | | | mA |
| Response time | @100A/μS,10%-90% | < 1.0 | | μs |
| Linearity | @Ip=0-±Ipn | ≤0.1 | | %FS |
| Galvanic isolation | @ 50Hz, AC,1min | 6 | | KV |
| di/dt accurately followed | > 100 | | | A/μs |
| Band-width | @-3dB | DC-200 | | KHz |

## Applications

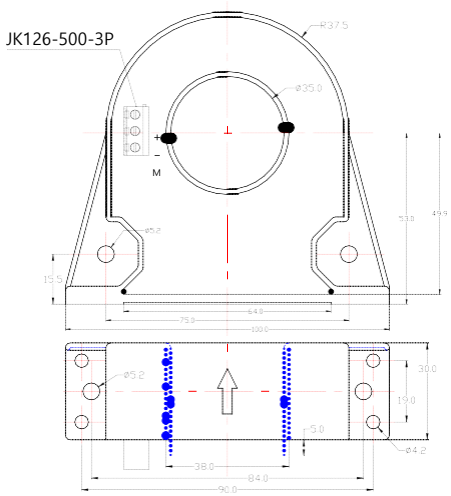
- Variable speed drives
- Welding machine
- Battery supplied applications
- Uninterruptible Power Supplies (UPS)
- Electrochemical

## Mechanical dimension (for reference only)

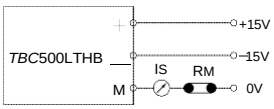
TBC-LTHB1




TBC-LTHB2




Secondary terminals




Remarks : TBC-LTHB is divided into two types TBC-LTHB1 and TBC-LTHB2

1. All dimensions are in mm.
2. General tolerance ±1mm
3. TBC-LTHB1:With Molex connector(Molex 22011042 : 5045-04AG , 5051-04)
4. TBC-LTHB2: With DG301-5.0-03P connector

## Directions for use

1. Is will be in a forward direction when the Ip flows according to the direction of the arrowhead.
2. The primary conductor should be≤120℃.
3. The dynamic performance (di/dt and the response time) is the best when the primary hole is fully filled with the bus bar.

4. The primary turns should be at the top of the sensor for the best magnetic coupling.
5. When the current will be measured goes through a sensor, the voltage will be measured at the output end. (Note: The false wiring may result in the damage of the sensor)
6. Custom design in the different rated input current and the output current are available.

## Standards

UL94-V0

EN60947-1:2004

IEC60950-1:2001

EN50178:1998

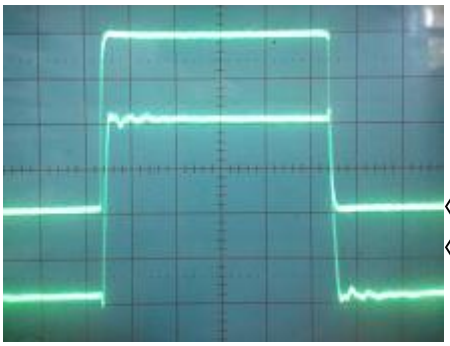
SJ 20790-2000

## General data

| | Value | Unit | Symbol |
|---|---|---|---|
| Operating temperature | -40 to +85 | ºC | TA |
| Storage temperature | -40 to +125 | ºC | TS |
| Mass(approx) | 290 | g | M |

## Characteristics chart

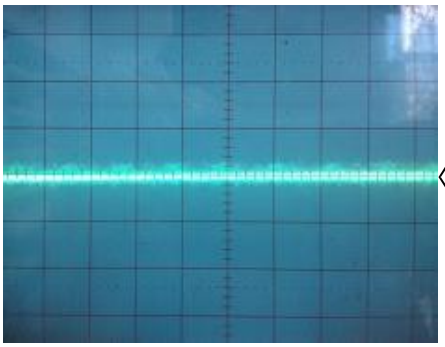
Pulse current signal response characteristic



(Input signal)

(Output signal)

Effects of impulse noise



(Output voltage)