

# NACL300B3-S5/SP2 电流传感器 Current Transducer

版本: A

产 品 说 明

Applications

该磁平衡式霍尔电流传感器适用于对交流、直流和脉动电流的隔离精确测量，测量时一次侧与二次侧之间完全绝缘。

For the electronic measurement of currents: AC, DC IMPL.,etc.,with galvanic isolation between the primary (high power) and the secondary (electronic) circuits.



| 产品优点 Advantages              | 产品应用 Applications                  | 参照标准 Standards |
|------------------------------|------------------------------------|----------------|
| 高精度 Excellent accuracy       | 交流变频器 AC variable speed drives     | EN50178        |
| 线性度好 Very good linearity     | 伺服电机驱动 Servo motor drives          | EN50155        |
| 低温漂 Low temperature drift    | 电池供电 Battery supplied applications |                |
| 宽频带 Wide frequency bandwidth | 变流器/逆变器 converter /inverter        |                |
| 快速响应 Optimized response time | UPS/SVG                            |                |

| 主要电气参数 Main electrical data                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                      |       |                                          |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------|-------|------------------------------------------|-------|--|-----|--|-----|--|--|-------|-------|-------|-------|---------------|----|-----|----|-----|---------------|----|-----|----|----|---------------|----|-----|----|-----|---------------|----|-----|----|-----|---------------|-----|------|-----|------|--------------|-----|------|-----|------|
| 额定测量电流 $I_{PN}$ (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Primary nominal current rms                                          |       | 300                                      |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 测量范围 $I_P$ (A)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Primary current measuring range                                      |       | 0~±500                                   |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 匝比                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Conversion ratio                                                     |       | 1:2000                                   |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 电源电压 $V_C$ (V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Supply voltage                                                       |       | +/-12 V~+/-20V (1±5%)                    |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 额定测量输出 $I_{SN}$ (mA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Secondary nominal current rms                                        |       | 150mA                                    |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 测量电阻 $R_M$ (Ω)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Measuring resistance                                                 |       |                                          |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| <table><tr><td></td><td colspan="2">70℃</td><td colspan="2">85℃</td></tr><tr><td></td><td>RMmin</td><td>RMmax</td><td>RMmin</td><td>RMmax</td></tr><tr><td>@±12V, ±300A:</td><td>0Ω</td><td>37Ω</td><td>0Ω</td><td>35Ω</td></tr><tr><td>@±12V, ±500A:</td><td>0Ω</td><td>10Ω</td><td>0Ω</td><td>8Ω</td></tr><tr><td>@±15V, ±300A:</td><td>0Ω</td><td>56Ω</td><td>0Ω</td><td>54Ω</td></tr><tr><td>@±15V, ±500A:</td><td>0Ω</td><td>21Ω</td><td>0Ω</td><td>19Ω</td></tr><tr><td>@±20V, ±300A:</td><td>0 Ω</td><td>88 Ω</td><td>0 Ω</td><td>86 Ω</td></tr><tr><td>@±20V, ±500A</td><td>0 Ω</td><td>40 Ω</td><td>0 Ω</td><td>38 Ω</td></tr></table> |                                                                      |       |                                          |       |  | 70℃ |  | 85℃ |  |  | RMmin | RMmax | RMmin | RMmax | @±12V, ±300A: | 0Ω | 37Ω | 0Ω | 35Ω | @±12V, ±500A: | 0Ω | 10Ω | 0Ω | 8Ω | @±15V, ±300A: | 0Ω | 56Ω | 0Ω | 54Ω | @±15V, ±500A: | 0Ω | 21Ω | 0Ω | 19Ω | @±20V, ±300A: | 0 Ω | 88 Ω | 0 Ω | 86 Ω | @±20V, ±500A | 0 Ω | 40 Ω | 0 Ω | 38 Ω |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 70℃                                                                  |       | 85℃                                      |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | RMmin                                                                | RMmax | RMmin                                    | RMmax |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±12V, ±300A:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0Ω                                                                   | 37Ω   | 0Ω                                       | 35Ω   |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±12V, ±500A:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0Ω                                                                   | 10Ω   | 0Ω                                       | 8Ω    |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±15V, ±300A:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0Ω                                                                   | 56Ω   | 0Ω                                       | 54Ω   |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±15V, ±500A:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0Ω                                                                   | 21Ω   | 0Ω                                       | 19Ω   |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±20V, ±300A:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0 Ω                                                                  | 88 Ω  | 0 Ω                                      | 86 Ω  |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| @±20V, ±500A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 0 Ω                                                                  | 40 Ω  | 0 Ω                                      | 38 Ω  |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 二次侧电流消耗 $I_C$ (@±20V)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Current consumption                                                  |       | ≤25mA+ Secondary output current $I_{SN}$ |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |
| 隔离耐压                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Isolation test: Between the primary circuit to the secondary circuit |       | 3.8 kVrms/50Hz/1min                      |       |  |     |  |     |  |  |       |       |       |       |               |    |     |    |     |               |    |     |    |    |               |    |     |    |     |               |    |     |    |     |               |     |      |     |      |              |     |      |     |      |

|        |                                          |      |
|--------|------------------------------------------|------|
| 脉冲耐受电压 | Impulse withstand voltage 1.2/50 $\mu$ s | 10kV |
|--------|------------------------------------------|------|

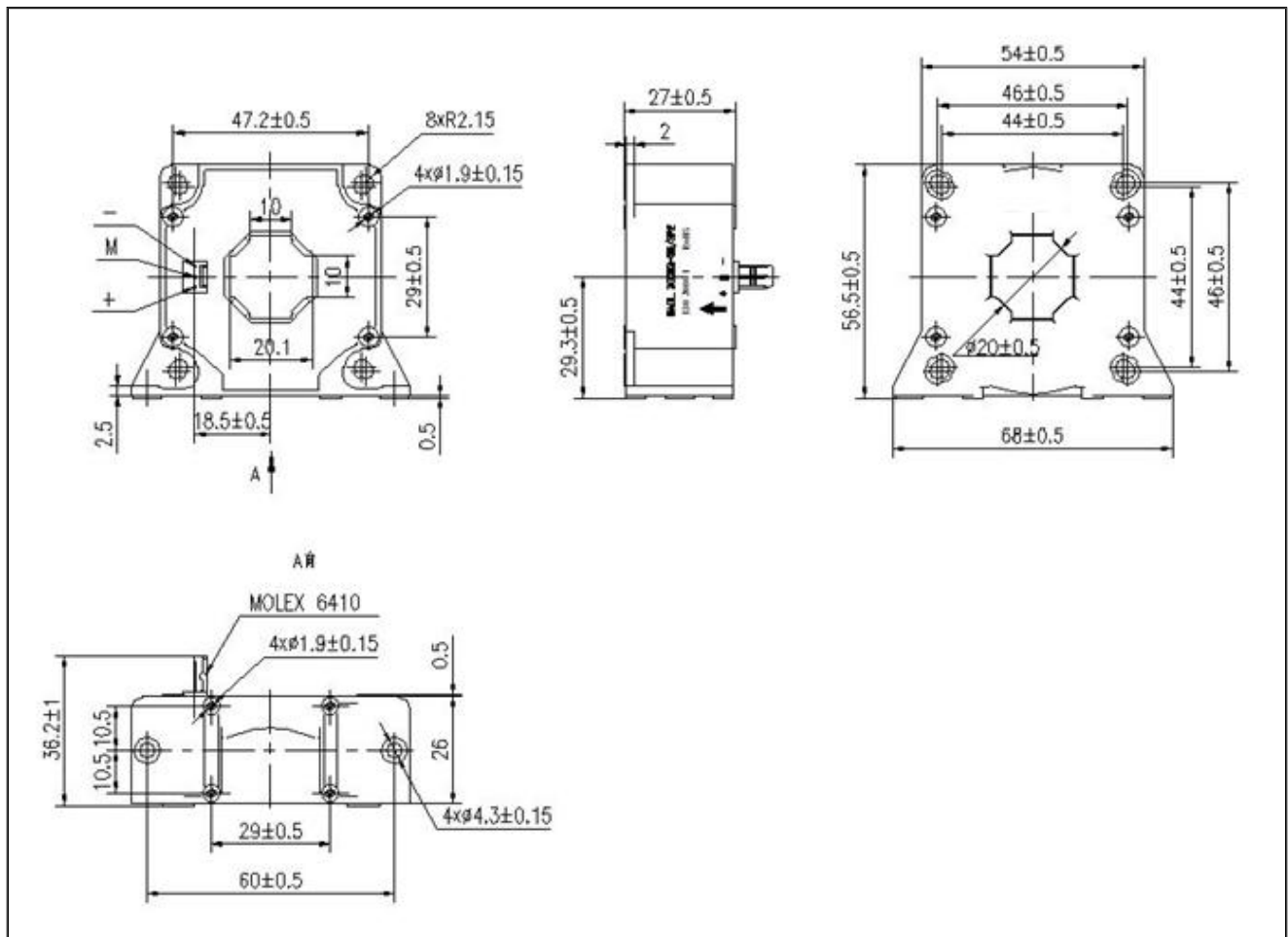
## 精度 - 动态参数 Accuracy - Dynamic performance data

|                                                            |                                       |                                                                     |
|------------------------------------------------------------|---------------------------------------|---------------------------------------------------------------------|
| 基本误差 $\delta_i$<br>(@ $I_{PN}$ , $T_A=25^\circ\text{C}$ )  | Overall Accuracy                      | $\leq \pm 0.5\%$                                                    |
| 线性度误差 $\delta_L$<br>(@ $I_{PN}$ , $T_A=25^\circ\text{C}$ ) | Linearity error                       | $< 0.1\%$                                                           |
| 零点输出电流 $I_O$<br>(@ $I_P=0$ , $T_A=25^\circ\text{C}$ )      | Offset current                        | $\leq \pm 0.2\text{mA}$                                             |
| 零点温漂 IOT                                                   | Thermal drift                         | $\leq \pm 0.70\text{mA} (-40^\circ\text{C} \sim +85^\circ\text{C})$ |
| 响应时间 $t_r$                                                 | Response time to 90% of $I_{PN}$ step | $\leq 1\mu\text{s}$                                                 |
| di/dt 精确度                                                  | di/dt Accurately followed             | $> 100\text{A}/\mu\text{s}$                                         |
| 频率带宽 BW                                                    | Frequency bandwidth(-3dB)             | DC..100kHz                                                          |

## 一般数据 General data

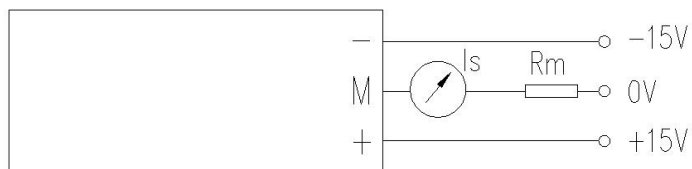
|            |                               |                                            |
|------------|-------------------------------|--------------------------------------------|
| 工作温度 $T_a$ | Ambient operating temperature | $-40^\circ\text{C} \sim +85^\circ\text{C}$ |
| 储存温度 $T_s$ | Ambient storage temperature   | $-40^\circ\text{C} \sim +90^\circ\text{C}$ |
| 重量 m       | Mass                          | $\leq 110\text{g}$                         |

## 外形图 Dimensions (in mm)



### 电气连接 Connection

Connection of secondary: MOLEX 6410



### 机械特征 Mechanical characteristics

### 备注 Remark

未注公差

General tolerance

±1 mm

传感器安装方式一(推荐)

Transducer fastening

(Recommended)

4 hole ø4.3mm

4 M4 steel screws

- 当测量电流方向与传感器上标示的  方向一致时，传感器输出  $I_{SN}$  为正。When measuring the current direction of arrow mark on direction and sensor, the sensor output  $I_{SN}$  is positive.
- 产品二次侧连接线优选屏蔽线，屏蔽层接近产品端连接线可接机壳，负电源或电源 0V。Product secondary side connecting line optimization shielding wire, cable shielding layer close to the product end can connect

|                                                                                                                                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>传感器安装方式二(推荐)<br/> <b>Transducer fastening</b><br/>         (Recommended)</p> <p>2 hole <math>\varnothing</math> 4.3mm<br/>         2 M4 steel screws</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>推荐力矩<br/> <b>Recommended fastening torque</b></p> <p>3.2 N • m</p>                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>母排尺寸(推荐)<br/> <b>Bus bar (Recommended)</b></p> <p><math>\varnothing</math>20mm</p>                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p>次边电气连接<br/> <b>Connection of secondary</b></p> <p>Molex 6410</p>                                                                                         | <p>chassis, negative power or power 0 v.</p> <p>3. 电量传感器安装螺钉孔的垂直度要求: 要求在国家标准 8 级或以上(或 0.06 以下)。<br/>         Power sensor mounting screw hole of the vertical degree requirements: requirements in the national standard grade 8 or above (or below 0.06).</p> <p>4. 电量传感器安装面平面度要求: Sensor mounting surface flatness requirements:<br/>         (a).大平面安装平面度国家标准 11 级或以上(或平面起伏小于 0.25mm); Planeness national standard installation grade 11 or above (or surface fluctuation is less than 0.25 mm);<br/>         (b).安装面加有小圆凸台设计时平面度要求达国家标准 12 级或以上(或平面起伏小于 0.5mm); When mounting surface with a small round convex platform design flatness requirement of national standard grade 12 or more (or less than 0.5 mm) in plane ups and downs;</p> <p>5. 未注公差 <math>\pm 1\text{mm}</math>; Did not note the tolerance + / - 1 mm;</p> |