

# IRAN HALL EFFECT Group

## “Transducer 4-20mA” Datasheet



**In: 50~300 A    Out: 4 to 20 mA**

### Features:

- Economical and precise AC/DC current sensing solutions
- Based on Hall Effect linear Current Sensors
- Low power consumption
- High immunity to external interference
- Bidirectional / Unidirectional Output proportional to input current: 0-16mA , 4-20mA
- Bidirectional / Unidirectional Input AC/DC/Pulse Current:  $\pm 50\text{A}/100\text{A}/150\text{A}/200\text{A}/250\text{A}/300\text{A}$
- Optional input currents are available
- Tray /Surface Mount (Through 3mm Screws)
- Case Material: Polyamide –Poly Carbonate
- Withstanding Temperature :-15~85 Celsius
- Color Code :4205 (Optional)
- Size: 2.5Cm\*6Cm\*7Cm
- Conductor Shape and Diameter : Cylindrical, 2.2 Cm
- Single supply Operation (15~24 VDC)
- Output Accuracy : Better than 1%
- Operating temperature Range: -10 C~+60 C
- Maximum Output Voltage Swing 2V less than VSUPPLY
- Input frequency 0~10Khz (On demand Designs up to 250Khz)
- Very Low hysteresis
- Typical Applications include: Electromotor, Drivers, Soft starters, Industrial Power Supplies such as Battery chargers, Battery supplied applications, Inverters, AC variable speed drives, Uninterruptible Power Supplies (UPS systems) , Electric Vehicles , Welding Machines , Static converters for DC motor, Drives, Switched Mode Power Supplies(SMPS), DC-DC converters, load detection ,...

## General Description

The 4-20mA Current Transducer is used to convert input current Signal passing through its hole to output current signal, the input signal current shape may be AC, DC, Pulsed, or mix of them.

This 4-20mA Current Transducer is ideal building block for system requiring noise immune signal transmission to operate Valves, Actuators and other control devices.

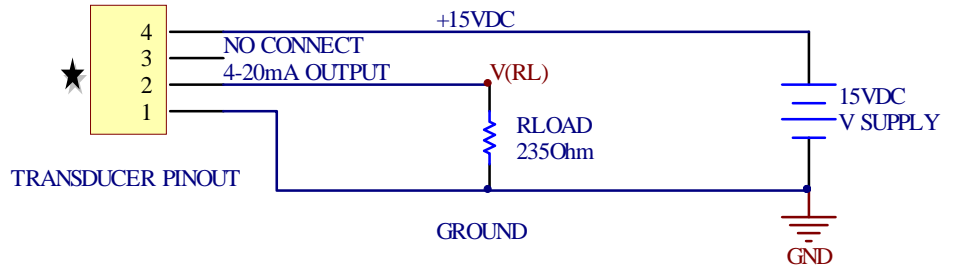
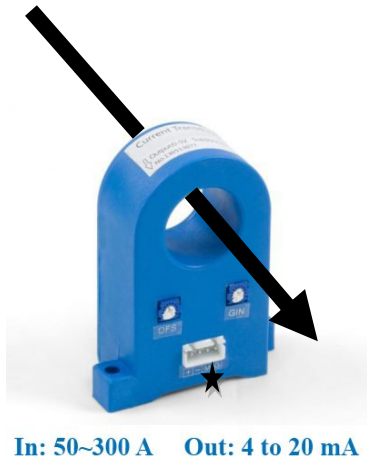
It is recommended as a replacement for discrete designs in a variety of applications in industrial process control, factory automation and system monitoring.

## PRODUCT HIGHLIGHTS

- Simple calibration procedure
- An embedded reference pin for software adjustment to gain high accuracy(better than 0.5 )%
- Input frequency 0~10Khz
- Very Low hysteresis

| Nominal current | Parameter        | 50A   | 100A     | 200A     | 300A       |
|-----------------|------------------|---|----------|----------|------------|
| Input           | Hole diameter    | Φ220mm  | Φ220mm   | Φ220mm   | Φ220mm     |
|                 | Current range(A) | -50~50  | -100~100 | -200~200 | -300 ~ 300 |
|                 | Overload         | Fixed to nominal current  |          |          |            |
|                 | Frequency        | 0Hz~10KHz   |          |          |            |
| Output          | Range            | DC 4-20mA (Maximum Load Voltage=RL*IL<(VSupply-2V))             |          |          |            |
|                 | Load resistance  | R Load: ≤230Ω(15V power supply );R Load ≤470Ω(24V power Supply) |          |          |            |
| Accuracy        | Better than1%    |   |          |          |            |
| Power supply    | Voltage          | 15 to 24 VDC (Ripple <1%)                                       |          |          |            |
|                 | Consumption      | ≤0.5VA (DC15V) ; ≤1VA (DC 24V)                                  |          |          |            |
| Mounting        | Tray Mount       |   |          |          |            |

## Sample Circuit diagram



$$Measured\ Current(A) = \left[ \frac{\left( \frac{V(RL)}{R_{Load}} - 12 \right)}{8} \right] * Nominal\ Transducer\ Current(A)$$

## Single Supply - Unidirectional Input Current (Iout 4mA-20mA)

|                    |                              |
|--------------------|------------------------------|
| <b>Part Number</b> | <b>HITRU03AD09VD1%CSA206</b> |
| Input              | 0~50 A                       |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRU04AD09VD1%CSA206</b> |
| Input              | 0~100 A                      |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRU05AD09VD1%CSA206</b> |
| Input              | 0~150 A                      |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRU06AD09VD1%CSA206</b> |
| Input              | 0~200 A                      |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRU07AD09VD1%CSA206</b> |
| Input              | 0~250 A                      |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRU08AD09VD1%CSA206</b> |
| Input              | 0~300 A                      |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |

## Single Supply - Bidirectional Input Current (Iout 4mA-20mA)

|                    |                              |
|--------------------|------------------------------|
| <b>Part Number</b> | <b>HITRB03AD09VD1%CSA206</b> |
| Input              | -50 ~ 50 A                   |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRB04AD09VD1%CSA206</b> |
| Input              | -100 ~ 100 A                 |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRB05AD09VD1%CSA206</b> |
| Input              | -150 ~ 150 A                 |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRB06AD09VD1%CSA206</b> |
| Input              | -200 ~ 200 A                 |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRB07AD09VD1%CSA206</b> |
| Input              | -250 ~ 250 A                 |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |
| <b>Part Number</b> | <b>HITRB08AD09VD1%CSA206</b> |
| Input              | -300 ~ 300 A                 |
| Output             | 4 to 20 mA                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | 15~24VDC                     |

# IRAN HALL EFFECT Group

## “Transducer 0-5V Series ” Datasheet



IN:15~300A

Out:0-5V

### Features:

- Economical and precise AC/DC current sensing solutions
- Based on Hall Effect linear Current Sensors
- Low power consumption
- High immunity to external interference
- Bidirectional / Unidirectional Output proportional to input current: 0-5 VDC , 0-4 VDC
- Bidirectional / Unidirectional Input AC/DC/Pulse Current:  $\pm 15/20/25/50/100/150/200/250/300A$
- Optional input currents are available
- Tray /Surface Mount (Through 3mm Screws)
- Case Material: Polyamide –Poly Carbonate
- Withstanding Temperature :-15~85 Celsius
- Color Code :4205 (Optional)
- Size: 2.5Cm\*6Cm\*7Cm
- Conductor Shape and Diameter : Cylindrical, 2.2 Cm
- Double supply Operation ( $\pm 12$  VDC  $\pm 3v$ ),Single Supply is an Option
- Output Accuracy : Better than 1%
- Operating temperature Range: -10 C~+60 C
- Input frequency 0~10Khz (On demand Designs up to 250Khz)
- Very Low hysteresis
- Typical Applications include: Electromotor, Drivers, Soft starters, Industrial Power Supplies such as Battery chargers, Battery supplied applications, Inverters, AC variable speed drives, Uninterruptible Power Supplies (UPS systems) , Electric Vehicles , Welding Machines , Static converters for DC motor, Drives, Switched Mode Power Supplies(SMPS), DC-DC converters, load detection ,...

## General Description

The 0-5V/0-4V Current Transducer is used to convert input current Signal passing through its hole to output voltage signal, the input signal current shape may be AC, DC, Pulse, or mix of them.

The 0-5V/0-4V Current Transducer is ideal building block for systems, without noise.

For noisy environments please take a look at “4-20mA Current Transducers”.

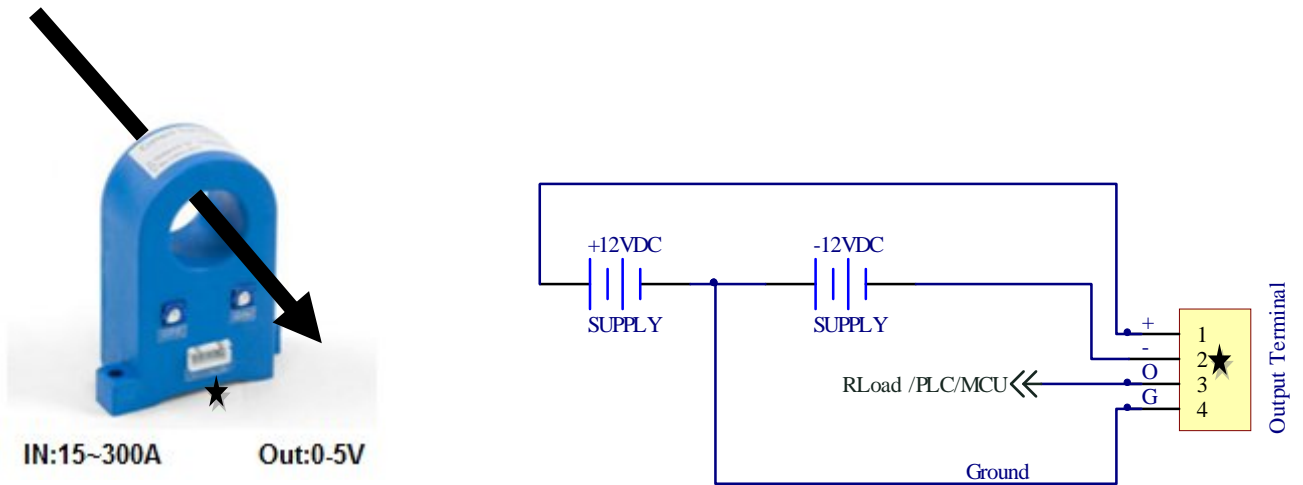
## PRODUCT HIGHLIGHTS

- Simple calibration procedure
- Input frequency 0~10Khz (0~250Khz is available for single supply transducers )
- Very Low hysteresis

| Nominal current | Parameter        | ±15/20/25/50/100/150/200/250/300A |            |     |            |            |
|-----------------|------------------|-----------------------------------|------------|-----|------------|------------|
| Input           | Hole diameter    | Φ220mm                            |            |     |            |            |
|                 | Current range(A) | -15 ~ 15 *                        | -100 ~ 100 | ... | -200 ~ 200 | -300 ~ 300 |
|                 | Overload         | Fixed to nominal current          |            |     |            |            |
|                 | Frequency        | 0Hz~10KHz                         |            |     |            |            |
| Output          | Range            | DC 0-5VDC 0-4VDC                  |            |     |            |            |
|                 | Load resistance  | R Load: ~ 10K Ohm                 |            |     |            |            |
| Accuracy        | Be er than1%     |                                   |            |     |            |            |
| Power supply    | Voltage          | ±12 VDC ±3VDC(Ripple <1%)         |            |     |            |            |
|                 | Consumption      | ≤0.5VA (DC15V) ; ≤1VA (DC 24V)    |            |     |            |            |
| Mounting        | Tray Mount       |                                   |            |     |            |            |

\* 15 – 20 - 25 Amperes are Optional

## Sample circuit diagram



$$\text{Measured Current}(A) = \frac{V(RL)}{\text{Nominal Transducer Output Voltage}} * \text{Nominal Transducer Current}(A)$$

*Nominal Transducer Output Voltage = 5 Or 4 VDC*

*Nominal Transducer Current(A) = 15 , ... 300 ADC*



## Double Supply Series - Bidirectional Input Current (Vout -5 to +5 VDC)

|                    |                              |
|--------------------|------------------------------|
| <b>Part Number</b> | <b>HITRB03AD05VD1%CSA206</b> |
| Input              | -50 ~ 50 A                   |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB04AD05VD1%CSA206</b> |
| Input              | -100 ~ 100 A                 |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB05AD05VD1%CSA206</b> |
| Input              | -150 ~ 150 A                 |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB06AD05VD1%CSA206</b> |
| Input              | -200 ~ 200 A                 |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB07AD05VD1%CSA206</b> |
| Input              | -250 ~ 250 A                 |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB08AD05VD1%CSA206</b> |
| Input              | -300 ~ 300 A                 |
| Output             | -5 to +5 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |

## Double Supply Series - Bidirectional Input Current (Vout -4 to +4VDC)

|                    |                              |
|--------------------|------------------------------|
| <b>Part Number</b> | <b>HITRB03AD04VD1%CSA206</b> |
| Input              | -50 ~ 50 A                   |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB04AD04VD1%CSA206</b> |
| Input              | -100 ~ 100 A                 |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB05AD04VD1%CSA206</b> |
| Input              | -150 ~ 150 A                 |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB06AD04VD1%CSA206</b> |
| Input              | -200 ~ 200 A                 |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB07AD04VD1%CSA206</b> |
| Input              | -250 ~ 250 A                 |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |
| <b>Part Number</b> | <b>HITRB08AD04VD1%CSA206</b> |
| Input              | -300 ~ 300 A                 |
| Output             | -4 to +4 V                   |
| Case Model         | A2                           |
| Installation       | Surface Mount-S              |
| Accuracy           | <1%                          |
| SUPPLY Voltage     | ±12VDC                       |

## Single Supply Series - Bidirectional Input Current (Vout 0.5 to 4.5VDC)

|                    |                                |
|--------------------|--------------------------------|
| <b>Part Number</b> | <b>HITRB03AD05VD0.5%CSA203</b> |
| Input              | -50 ~ 50 A                     |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |
| <b>Part Number</b> | <b>HITRB04AD05VD0.5%CSA203</b> |
| Input              | -100 ~ 100 A                   |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |
| <b>Part Number</b> | <b>HITRB05AD05VD0.5%CSA203</b> |
| Input              | -150 ~ 150 A                   |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |
| <b>Part Number</b> | <b>HITRB06AD05VD0.5%CSA203</b> |
| Input              | -200 ~ 200 A                   |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |
| <b>Part Number</b> | <b>HITRB07AD05VD0.5%CSA203</b> |
| Input              | -250 ~ 250 A                   |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |
| <b>Part Number</b> | <b>HITRB08AD05VD0.5%CSA203</b> |
| Input              | -300 ~ 300 A                   |
| Output             | 0.5 to 4.5 V                   |
| Case Model         | A2                             |
| Installation       | Surface Mount-S                |
| Accuracy           | <0.5%                          |
| SUPPLY Voltage     | +12VDC                         |