

ISOLATION AMPLIFIER



- Input galvanically separated from output and supply
- Current or voltage input
- Signal conversion
- Current and voltage output
- 24 VDC supply or universally supplied
- Applicable in PELV/SELV circuits



Applications:

Galvanic separation of analogue signals (ground loop elimination). ● Measurement of floating signals. ● Signal conversion within the ranges: 0...10 VDC or 0...50 mA on the input and 0...20 mA and 0...10 VDC in fixed ranges on the output.

Technical characteristics:

General:

The 2204 uses microprocessor technology for the selection of gain and zero offset, yet the signal conditioning is analogue with a fast response time of less than 25 ms.

In standard ranges, the 2204 is programmable by use of internal dipswitches within the input and output ranges of the order schedule. Provided that front adjustments are still sealed, the unit needs no adjustment after programming. Universally supplied units have a 3-port galvanic separation between input, supply, and output.

Input:

Current or voltage in standard or special ranges within the measuring range.

Standard input voltage: 0/0.2...1 V, 0/0.5...2.5 V and 0/2...10 V.

Input resistance: typ. 10 M Ω .

Standard input current: 0/1...5 mA or 0/4...20 mA.

Input resistance: norm. 50 Ω (0/4...20 mA).

Output:

The output can be ordered for standard currents and voltages or special versions within the signal range.

Standard output current (pin 3) 0/4...20 mA and 0/1...5 mA acc. to order schedule with the possibility of reversal.

Current limit: 23...28 mA.

Standard voltage output (pin 2) is achieved by short-circuiting pins 2 and 3.

The current signal is available between pins 2 and 1.

For voltage signals in the ranges 0...1 VDC, a 50 Ω shunt (DP 2-1) is applied; in the ranges 0...10 VDC, a 500 Ω shunt (DP 2-2) is applied.

Using both signals simultaneously, the mA loop to ground must go through the internal shunt. Adjustment of 0 and 100% is possible at the front $\pm 10\%$, but please note that the basic calibration is thereby lost.

Electrical specifications:

Specification range:

(@-20°C to +60°C)

Common specifications:

Supply voltage DC 24 VDC $\pm 20\%$
Supply voltage universal 24...230 VAC $\pm 10\%$, 50...60 Hz
24...250 VDC $\pm 20\%$

Max. consumption 2204--D (24 VDC) ≤ 1.3 W

Max. consumption 2204--P

(universally supplied) ≤ 1.8 W

Isolation, test / operation 3.75 kVAC / 250 VAC

Signal / noise ratio Min. 60 dB

Response time (0...90%) < 25 ms

Temperature coefficient $< \pm 0.01\%$ of span / °C

Linearity error $< \pm 0.1\%$ of span

Effect of supply voltage change $< \pm 0.002\%$ of span / %V

EMC immunity influence $< \pm 0.5\%$ of span

Relative air humidity $< 95\%$ RH (non cond.)

Dimensions (HxWxD) 80.5 x 35.5 x 84.5 mm

Tightness IP50

Weight DC / universally supplied 110 g / 160 g

Input:

Current:

Measurement range 0...50 mADC

Min. measurement range (span) 4 mADC

Max. offset 20% of max. value

Input resistance Nom. 50 Ω

Voltage:

Measurement range 0...10 VDC

Min. measurement range (span) 0.2 VDC

Max. offset 20% of max. value

Input resistance 10 M Ω

Output:

Current output:

Signal ranges 0...5 mA / 0...20 mA

Min. measurement range (span) 4 mA / 16 mA

Max. offset 20% of max. value

Load (max.) 20 mA / 600 Ω / 12 VDC

Load stability $< \pm 0.01\%$ of span / 100 Ω

Current limit 23...28 mA

Voltage output through internal shunt:

Signal ranges 0...0.25V/0...1V/0...2.5V/0...10V

Min. measurement range (span) 0.2 V / 0.8 V / 2.0 V / 8.0 V

Max. offset 20% of max. value

Load (min.) 500 k Ω

Output resistance 50 Ω / 500 Ω

Observed authority requirements Standard

EMC 89/336/EEC, Emission EN 50 081-1, EN 50 081-2

Immunity EN 50 082-2, EN 50 082-1

LVD 73/23/EEC EN 61 010-1

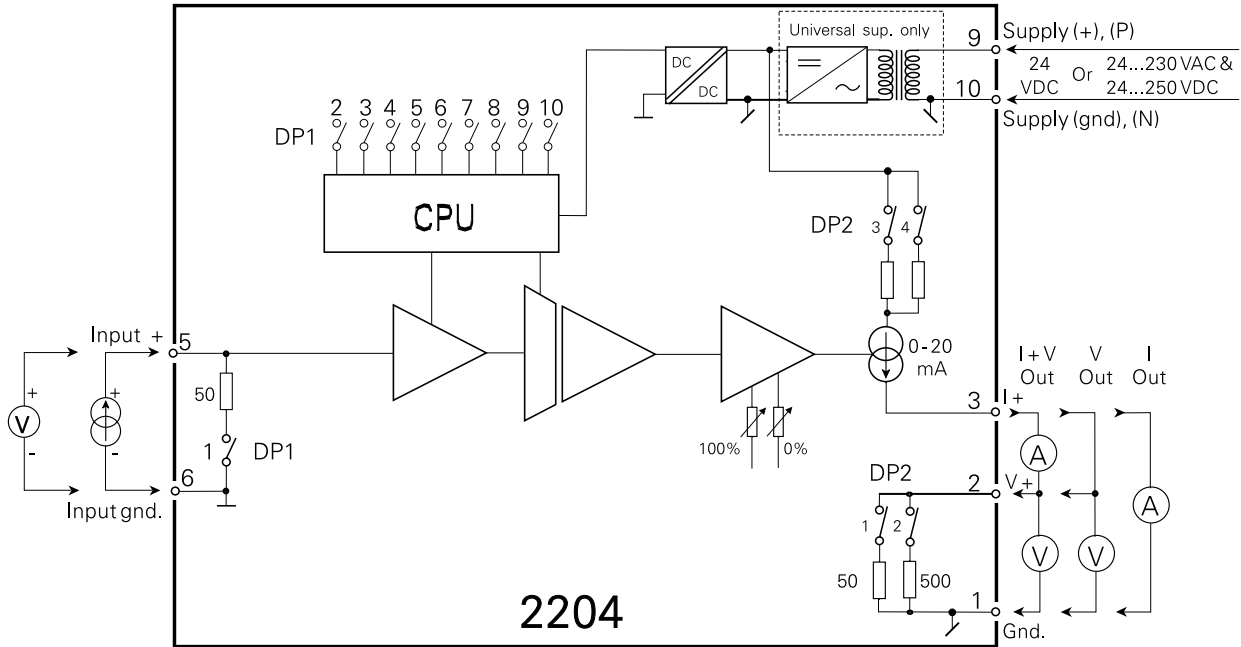
PELV/SELV IEC 364-4-41 and EN 60 742

Of span = Of the presently selected range

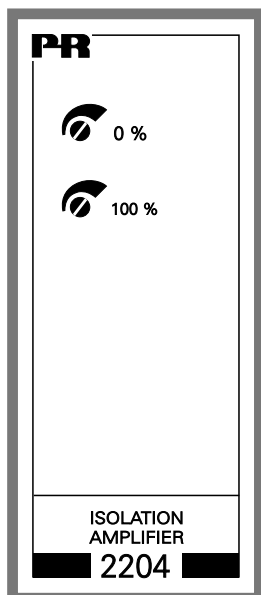
Order : 2204

| Type | Input | Output | Supply |
|------|---------------|---------------|--------------------|
| 2204 | 0...20 mA : A | Special : 0 | 24 VDC : D |
| | 4...20 mA : B | 0...20 mA : 1 | 24...230 VAC & : P |
| | 0...1 V : C | 4...20 mA : 2 | 24...250 VDC : P |
| | 0.2...1 V : D | 0... 5 mA : 3 | |
| | 0...10 V : E | 0...1 V : 4 | |
| | 2...10 V : F | 0.2...1 V : 5 | |
| | Special : X | 0...10 V : 6 | |
| | | 2...10 V : 7 | |

Block diagram:



Front layout:



Programming:

| INPUT PROGRAMMING | DP1 (10-pole) SW 1, 2, 3, 4, 5 | |
|--|--------------------------------|---------|
| | SW ON | SW OFF |
| 0...5 mA | 1, 3 | 2, 4, 5 |
| 0...20 mA | 1, 4 | 2, 3, 5 |
| 0...1 V | 2, 3 | 1, 4, 5 |
| 0...2.5 V | 2, 4 | 1, 3, 5 |
| 0...10 V | 2, 3, 4 | 1, 5 |
| For 20% offset on input, set DP1 SW5 ON e.g. input 4...20 mA | 1, 4, 5 | 2, 3 |

| OUTPUT PROGRAMMING | DP2 (4-pole) SW 1 - 4 | | DP1 (10-pole) SW 6, 7, 8, 9, 10 | |
|--|-----------------------|---------|---------------------------------|-------------|
| | SW ON | SW OFF | ON | OFF |
| 0...5 mA | 4 | 1, 2, 3 | 7 | 6, 8, 9, 10 |
| 0...20 mA | 3 | 1, 2, 4 | 8 | 6, 7, 9, 10 |
| 0...5 mA / 0...250 mV | 1, 4 | 2, 3 | 6 | 7, 8, 9, 10 |
| 0...20 mA / 0...1 V | 1, 3 | 2, 4 | 6, 7 | 8, 9, 10 |
| 0.5 mA / 0...2.5 V | 2, 4 | 1, 3 | 6, 8 | 7, 9, 10 |
| 0...20 mA / 0...10 V | 2, 3 | 1, 4 | 6, 7, 8 | 9, 10 |
| For 20% offset on output, set DP1 SW9 ON e.g. output 4...20 mA | 3 | 1, 2, 4 | 8, 9 | 6, 7, 10 |
| For reversed output set DP1, SW10 ON e.g. output 20...4 mA | 3 | 1, 2, 4 | 8, 9, 10 | 5, 6, 7 |

Note: At other spans than the above-mentioned, DP1 and DP2 have a different setting which applies to the delivered special range.