

Application

Shunts provide an accurate DC millivolt signal to drive ammeter indicators, overload protection and control devices, especially for higher amperage. They supply a voltage drop proportional to the DC current which is measured and indicated by a moving-coil meter with the dial calibrated in amps.

In accordance with DIN standard 43 703 shunts are available from 1 A up to 15,000 A with an accuracy of 0.5%. Standard voltage drop is 60 mV or 150 mV. Intermediate current ratings, other voltage outputs, better accuracy and purpose-built shunts can be supplied.

Shunts are manufactured in three different format versions depending on current ratings.

Operating Principle

The current passing through the shunt produces a proportional voltage drop. A moving coil instrument connected to the shunt measures the voltage drop across the shunt terminals.

Shunts are calibrated in such a way that they produce an accurately defined voltage drop (60 mV, 150 mV or other).

General Data

| | |
|------------------------|---|
| format version A | insulating base mounted shunts clamping to DIN mounting rail or wall mounting (up to 25 A / 60, 100, 150 or 300 mV); without insulating base (30 ... 150 A) ▶ |
| format version B | L-profile end blocks |
| format version C | T-profile end blocks |
| material | |
| resistance bars | manganin |
| end blocks | |
| format version A | high conductivity brass |
| format version B | high conductivity brass/solid copper |
| format version C | solid copper |
| base material | Lexan, black |
| format version A | self-extinguishing to UL rating 94 V-0 |
| connections | thread screws |
| current | please refer to "Dimensions" |
| voltage | M5x8 |
| mounting | screw mounting (M8 max.) or clamping to DIN mounting rail |
| format version A | (to DIN EN 50 022 - 35) |
| enclosure code | IP 00 |
| dimensions | please refer to "Dimensions" |
| weight | please refer to table below |
| rated current ▶ | weight approx. for rated voltage drop ▶ |
| | 60 mV 100 mV¹⁾ 150 mV 300 mV¹⁾ |

| | | | | |
|------------------------------|---------|---------|---------|---------|
| 1 A | 0.12 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 1.5 A | 0.13 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 2 A ^{1) 2)} | 0.13 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 2.5 A | 0.12 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 3 A ^{1) 2)} | 0.12 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 4 A | 0.13 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 5 A ^{1) 2)} | 0.12 kg | 0.12 kg | 0.12 kg | 0.14 kg |
| 6 A | 0.12 kg | 0.12 kg | 0.13 kg | 0.14 kg |
| 8 A ^{1) 2)} | 0.13 kg | 0.13 kg | 0.13 kg | 0.15 kg |
| 10 A | 0.13 kg | 0.13 kg | 0.13 kg | 0.15 kg |
| 12 A ^{1) 2)} | 0.13 kg | 0.13 kg | 0.13 kg | 0.15 kg |
| 15 A | 0.13 kg | 0.13 kg | 0.13 kg | 0.15 kg |
| 20 A ^{1) 2)} | 0.13 kg | 0.14 kg | 0.14 kg | 0.16 kg |
| 25 A | 0.13 kg | 0.14 kg | 0.14 kg | 0.16 kg |
| 30 A ^{1) 2)} | 0.12 kg | 0.13 kg | 0.15 kg | 0.20 kg |
| 40 A | 0.12 kg | 0.14 kg | 0.16 kg | 0.20 kg |
| 50 A ^{1) 2)} | 0.12 kg | 0.14 kg | 0.16 kg | 0.20 kg |

| | | | | |
|---------------------------------|--|----------------------------|-----------------------|----------------------------|
| rated current ▶ | weight approx. for rated voltage drop ▶ | | | |
| | 60 mV | 100 mV¹⁾ | 150 mV | 300 mV¹⁾ |
| 60 A | 0.12 kg | 0.14 kg | 0.17 kg | 0.20 kg |
| 80 A ^{1) 2)} | 0.12 kg | 0.15 kg | 0.18 kg | 0.20 kg |
| 100 A | 0.12 kg | 0.17 kg | 0.20 kg | 0.25 kg |
| 150 A | 0.13 kg | 0.20 kg | 0.23 kg | 0.30 kg |
| 200 A ^{1) 2)} | 0.61 kg | 0.65 kg | 0.68 kg | 0.80 kg |
| 250 A | 0.61 kg | 0.65 kg | 0.68 kg | 0.80 kg |
| 300 A ^{1) 2)} | 0.61 kg | 0.68 kg | 0.72 kg | 0.90 kg |
| 400 A | 0.83 kg | 1.00 kg | 1.05 kg | 1.30 kg |
| 500 A ^{1) 2)} | 0.83 kg | 1.10 kg | 1.15 kg | 1.40 kg |
| 600 A | 0.85 kg | 1.11 kg | 1.16 kg | 1.60 kg |
| 800 A ^{1) 3)} | 0.90 kg | 1.12 kg | 1.30 kg | 1.80 kg |
| 1,000 A | 1.45 kg | 2.00 kg | 2.15 kg | 2.80 kg |
| 1,200 A ^{1) 2)} | 1.45 kg | 2.10 kg | 2.25 kg | 3.10 kg |
| 1,500 A | 1.96 kg | 2.50 kg | 3.10 kg | 3.70 kg |
| 2,000 A ¹⁾ | 2.30 kg ³⁾ | 2.80 kg ³⁾ | 5.10 kg ²⁾ | 6.40 kg ²⁾ |
| 2,500 A | 2.90 kg | 3.20 kg | 5.20 kg | 6.00 kg |
| 3,000 A ¹⁾ | 3.00 kg ³⁾ | 3.50 kg ³⁾ | 9.80 kg ²⁾ | 11.7 kg ²⁾ |
| 4,000 A | 4.25 kg | 5.80 kg | 10.5 kg | 13.1 kg |
| 5,000 A ¹⁾ | 4.30 kg ³⁾ | 7.30 kg ³⁾ | 13.4 kg ²⁾ | 16.8 kg ²⁾ |
| 6,000 A | 10.5 kg | 12.0 kg | 15.0 kg | 17.7 kg |
| 8,000 A ¹⁾ | 12.0 kg ³⁾ | — | 25.4 kg ²⁾ | — |
| 10,000 A | 21.0 kg | — | 28.0 kg | — |
| 15,000 A | 32.0 kg | — | — | — |
| 20,000 A ¹⁾ | 44.0 kg | — | — | — |

¹⁾ ratings deviating from DIN standard

²⁾ dimensions equal to next higher current rating

³⁾ dimensions equal to next lower current rating

overload range (according to DIN EN 60 051)

continuously 1.2 times rated current

5 s max. ≤ 2,000 A 5 times rated current

>2,000 ... 10,000 A 2 times rated current

Accuracy at Reference Conditions

accuracy class 0.5 ▶

reference conditions

ambient temperature 23°C ± 1K

Environmental

climatic suitability climatic class 3 acc. to VDE/VDI 3540

operating temperature range -10 ... +55°C

storage temperature range -25 ... +65°C

relative humidity ≤ 75% annual average, non-condensing

Rules and Standards

DIN 43 703 Shunts

DIN EN 60 051 direct acting indicating electrical measuring instruments and their accessories

DIN EN 50 022-35 mounting rails

Options

rated voltage drop on request

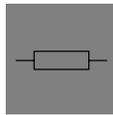
rated current on request

accuracy class 0.2

insulating base suitable for shunts 30 ... 150 A / 60 mV
others on request

purpose built shunts on request

▶ for other ratings refer to "Options"



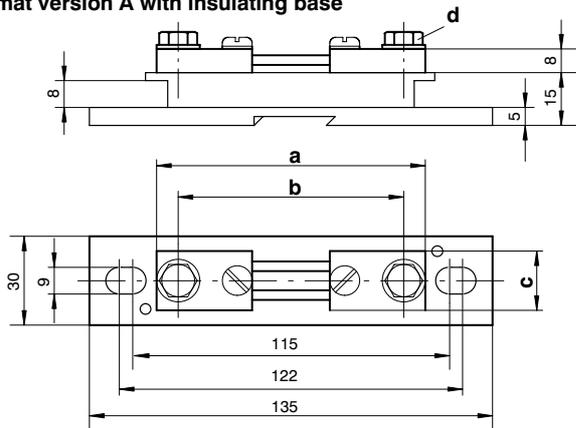
Shunts Class 0.5

Accessory

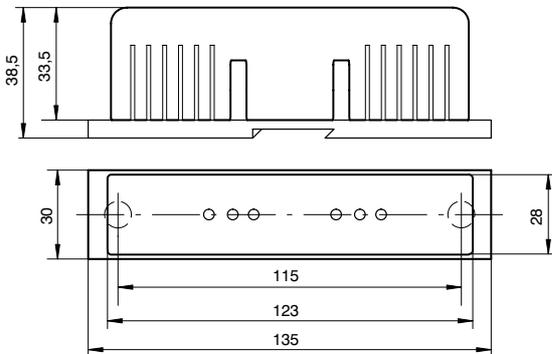
cover for shunts with insulating base
1 ... 25 A / 60 mV – 100 mV – 150 mV
30 ... 150 A / 60 mV

Dimensions

format version A with insulating base

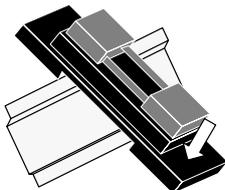


format version A with insulating base and cover

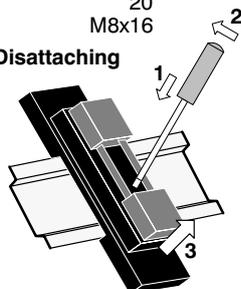


| rated voltage drop | 60 ... 300 mV | 60 mV |
|--------------------|---------------|--------------|
| dimensions (in mm) | 1 ... 25 A | 30 ... 150 A |
| a | 90 | 100 |
| b | 78 | 80 |
| c | 20 | 20 |
| d | M5x12 | M8x16 |

Attaching



Disattaching

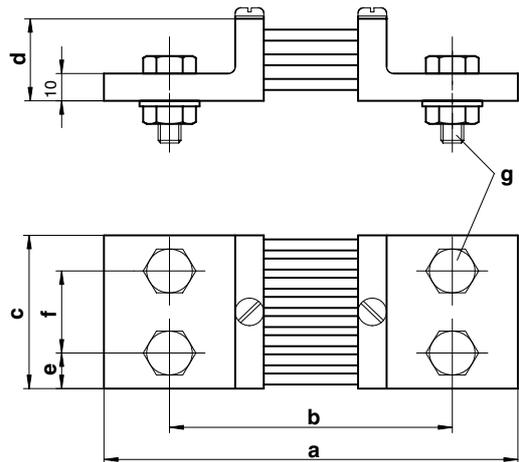


format version A without insulating base

| rated voltage drop | 100 mV | 150 mV | 300 mV |
|--------------------|--------------|--------------|--------------|
| dimensions (in mm) | 30 ... 150 A | 30 ... 150 A | 30 ... 150 A |
| a | 145 | 225 | 384 |
| b | 125 | 205 | 364 |
| c | 25 | 25 | 25 |
| d | M8x16 | M8x16 | M8x16 |

Dimensions

format version B



rated voltage drop 60 mV

| dimensions (in mm) | 200 A 250 A | 400 A 600 A | 1.000 A | 1.500 A | 2.500 A |
|-------------------------------|----------------|----------------|---------|---------|---------|
| a | 145 | 145 | 165 | 165 | 165 |
| b | 105 | 105 | 115 | 115 | 115 |
| c | 30 | 40 | 60 | 90 | 120 |
| d | 30 | 30 | 30 | 30 | 30 |
| e | 15 | 20 | 30 | 21 | 30 |
| f | – | – | – | 48 | 60 |
| g | M12x40 | M16x45 | M20x50 | M16x45 | M20x50 |
| number of current connections | 2x 1 | 2x 1 | 2x 1 | 2x 2 | 2x 2 |

rated voltage drop 100 mV

| dimensions (in mm) | 200 A 250 A | 400 A 600 A | 1.000 A | 1.500 A |
|-------------------------------|----------------|----------------|---------|---------|
| a | 190 | 190 | 210 | 210 |
| b | 150 | 150 | 160 | 160 |
| c | 30 | 40 | 60 | 120 |
| d | 30 | 30 | 30 | 30 |
| e | 15 | 20 | 30 | 30 |
| f | – | – | – | 60 |
| g | M12x40 | M16x45 | M20x50 | M20x50 |
| number of current connections | 2x 1 | 2x 1 | 2x 1 | 2x 2 |

rated voltage drop 150 mV

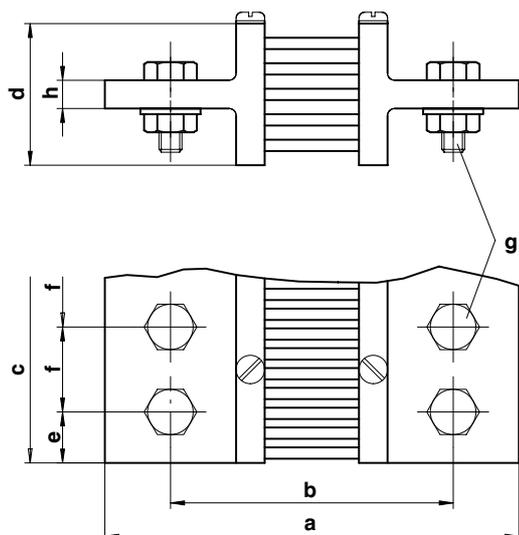
| dimensions (in mm) | 200 A 250 A | 400 A 600 A | 1.000 A |
|-------------------------------|----------------|----------------|---------|
| a | 270 | 270 | 290 |
| b | 230 | 230 | 240 |
| c | 30 | 40 | 70 |
| d | 50 | 50 | 60 |
| e | 15 | 20 | 35 |
| g | M12x40 | M16x45 | M20x50 |
| number of current connections | 2x 1 | 2x 1 | 2x 1 |

rated voltage drop 300 mV

| dimensions (in mm) | 200 A 250 A | 400 A 600 A | 1.000 A |
|-------------------------------|----------------|----------------|---------|
| a | 429 | 429 | 449 |
| b | 389 | 389 | 399 |
| c | 30 | 40 | 70 |
| d | 50 | 50 | 60 |
| e | 15 | 20 | 35 |
| g | M12x40 | M16x45 | M20x50 |
| number of current connections | 2x 1 | 2x 1 | 2x 1 |

Dimensions

format version C



rated voltage drop 60 mV

| dimensions (in mm) | 4.000 A | 6.000 A | 10.000 A | 15.000A | 20.000A |
|-------------------------------|---------|---------|----------|---------|---------|
| a | 165 | 175 | 185 | 185 | 185 |
| b | 115 | 125 | 135 | 135 | 135 |
| c | 120 | 154 | 206 | 310 | 362 |
| d | 60 | 130 | 170 | 170 | 170 |
| e | 30 | 25 | 25 | 25 | 25 |
| f | 60 | 52 | 52 | 52 | 52 |
| g | M20x50 | M20x75 | M20x80 | M20x80 | M20x80 |
| h | 15 | 25 | 30 | 30 | 30 |
| number of current connections | 2x 2 | 2x 3 | 2x 4 | 2x 6 | 2x 7 |

rated voltage drop 100 mV

| dimensions (in mm) | 2,500 A | 4,000 A | 6,000 A |
|-------------------------------|---------|---------|---------|
| a | 210 | 220 | 220 |
| b | 160 | 170 | 170 |
| c | 120 | 120 | 154 |
| d | 60 | 130 | 130 |
| e | 30 | 30 | 25 |
| f | 60 | 60 | 52 |
| g | M20x50 | M20x50 | M20x75 |
| h | 15 | 25 | 25 |
| number of current connections | 2x 2 | 2x 2 | 2x 3 |

rated voltage drop 150 mV

| dimensions (in mm) | 1,500 A | 2,500 A | 4,000 A | 6,000 A | 10,000A |
|-------------------------------|---------|---------|---------|---------|---------|
| a | 290 | 290 | 300 | 300 | 310 |
| b | 240 | 240 | 250 | 250 | 260 |
| c | 90 | 120 | 120 | 154 | 206 |
| d | 60 | 60 | 130 | 130 | 170 |
| e | 21 | 30 | 30 | 25 | 25 |
| f | 48 | 60 | 60 | 52 | 52 |
| g | M16x60 | M20x60 | M20x75 | M20x75 | M20x80 |
| h | 15 | 15 | 25 | 25 | 30 |
| number of current connections | 2x 2 | 2x 2 | 2x 2 | 2x 3 | 2x 4 |

rated voltage drop 300 mV

| dimensions (in mm) | 1,500 A | 2,500 A | 4,000 A | 6,000 A |
|-------------------------------|---------|---------|---------|---------|
| a | 449 | 449 | 459 | 459 |
| b | 399 | 399 | 409 | 409 |
| c | 90 | 120 | 120 | 154 |
| d | 60 | 60 | 130 | 130 |
| e | 21 | 30 | 30 | 25 |
| f | 48 | 60 | 60 | 52 |
| g | M16x60 | M20x60 | M20x75 | M20x75 |
| h | 15 | 15 | 25 | 25 |
| number of current connections | 2x 2 | 2x 2 | 2x 2 | 2x 3 |

Ordering Information

| type | shunt |
|--------------------|---|
| rated voltage drop | 60 mV 100 mV 150 mV 300 mV purpose built on request **) |
| rated current | please refer to table inside purpose built on request **) |
| accuracy | class 0.5 *) class 0.2 |
| insulating base | included (up to 25 A *) not included (more than 25 A *) included (more than 25 A) |
| cover | none *) for shunts with insulating base |
| purpose built | on request **) |

*) standard

**) Please clearly add the desired specifications.

ordering example

shunt, rated voltage drop 60 mV, rated current 1,000 A, accuracy class 0.5

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– specifications subject to change without notice; date of issue 06/07 –

