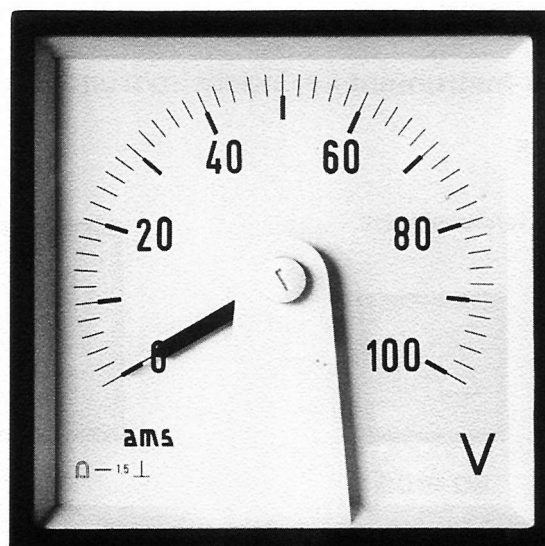
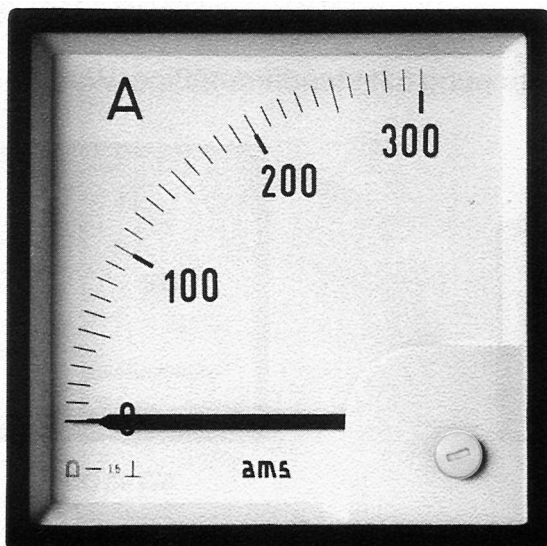


## Square Panel Meters



### Moving coil meters

- "Ratioserie"
- Steel-sheet series

- ☐ Ratioserie in polycarbonate housing with interchangeable scale.
- ☐ Steel-sheet series with steel housing body and aluminium front frame (scale not interchangeable).
- ☐ Pointer deflection 90° or 240°.
- ☐ Ratioserie with snap-in fixing.

**SQUARE MOVING COIL METERS**

# Square Panel Meters

## "Ratioiserie"

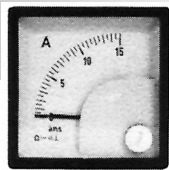
### Moving Coil Meters

for direct current and direct voltage  
with interchangeable scale

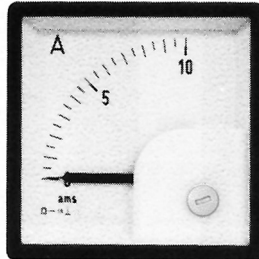
**accuracy class 1.5**

housing according to **DIN 43700**

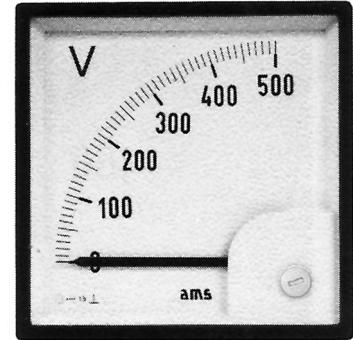
Available housing types:



**SQ 48 DS**



**SQ 72 DS**



**SQ 96 DS**

**SQUARE MOVING COIL METERS**

|                             | <b>SQ 48 DS</b> | <b>SQ 72 DS</b> | <b>SQ 96 DS</b> |
|-----------------------------|-----------------|-----------------|-----------------|
| <b>Front frame</b>          | 48 x 48 mm      | 72 x 72 mm      | 96 x 96 mm      |
| <b>Scale length approx.</b> | 40 mm           | 62 mm           | 97 mm           |
| <b>Weight approx.</b>       | 0.1 kg          | 0.15 kg         | 0.2 kg          |

#### Movement

#### Bearing

#### Pointer

#### Housing

#### Front frame colour

#### Measuring ranges

moving coil with core magnet (immune to magnetic fields)

pivots with spring mounted jewel

beam-type knife-edge pointer

polycarbonate casing, self-extinguishing and drip-proof

black, grey on request

#### Ammeters

#### Internal resistance / $\Delta U$

#### Voltmeters

#### Internal resistance

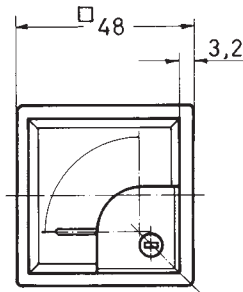
|             |               |        |                  |
|-------------|---------------|--------|------------------|
| 100 $\mu$ A | 4000 $\Omega$ | 100 mV | 200 $\Omega$ /V  |
| 150 $\mu$ A | 4000 $\Omega$ | 150 mV | 200 $\Omega$ /V  |
| 250 $\mu$ A | 1300 $\Omega$ | 400 mV | 1000 $\Omega$ /V |
| 400 $\mu$ A | 1100 $\Omega$ | 600 mV | 1000 $\Omega$ /V |
| 600 $\mu$ A | 380 $\Omega$  | 1 V    | 1000 $\Omega$ /V |
| 1 mA        | 80 $\Omega$   | 1.5 V  | 1000 $\Omega$ /V |
| 1.5 mA      | 30 $\Omega$   | 2.5 V  | 1000 $\Omega$ /V |
| 2.5 mA      | 13 $\Omega$   | 4 V    | 1000 $\Omega$ /V |
| 4 mA        | 11 $\Omega$   | 6 V    | 1000 $\Omega$ /V |
| 6 mA        | 5.5 $\Omega$  | 10 V   | 1000 $\Omega$ /V |
| 10 mA       | 3 $\Omega$    | 15 V   | 1000 $\Omega$ /V |
| 15 mA       | 2.8 $\Omega$  | 25 V   | 1000 $\Omega$ /V |
| 20 mA       | 2.3 $\Omega$  | 40 V   | 1000 $\Omega$ /V |
| 25 - 600 mA | 60 mV         | 60 V   | 1000 $\Omega$ /V |
| 1 A         | 60 mV         | 100 V  | 1000 $\Omega$ /V |
| 1.5 A       | 60 mV         | 150 V  | 1000 $\Omega$ /V |
| 2.5 A       | 60 mV         | 250 V  | 1000 $\Omega$ /V |
| 4 A         | 60 mV         | 400 V  | 1000 $\Omega$ /V |
| 6 A         | 60 mV         | 500 V  | 1000 $\Omega$ /V |
| 10 A        | 60 mV         | 600 V  | 1000 $\Omega$ /V |
| 15 A        | 60 mV         |        |                  |
| 25 A        | 60 mV         |        |                  |
| 40 A        | 60 mV         |        |                  |
| 60 A        | 60 mV         |        |                  |
| 60 mV x)    | 12 $\Omega$   |        |                  |

Type SQ 48 DS  
for direct connection  
only up to 25 A

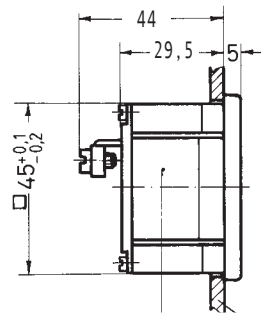
x) For operation with  
separate shunts

# Square Panel Meters

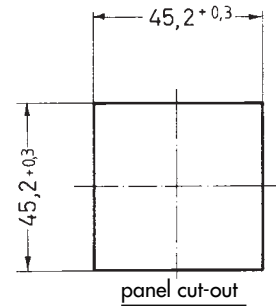
## "Ratioserie"



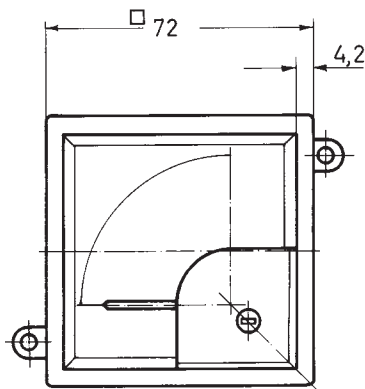
**SQ 48 DS**



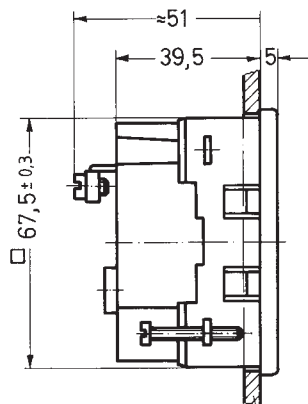
snap-in fixing for panel thickness up to 2.5 mm



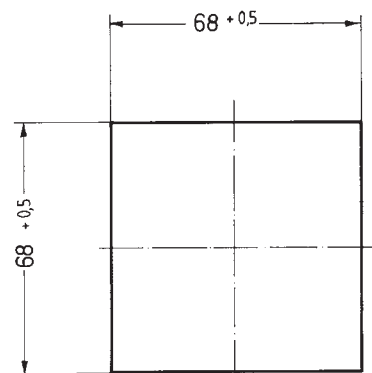
panel cut-out



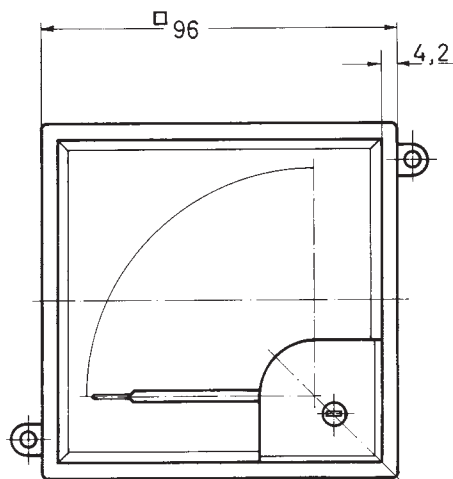
**SQ 72 DS**



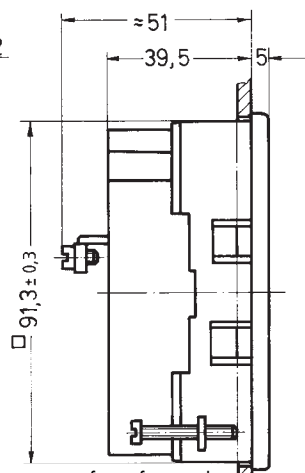
snap-in fixing for panel thickness up to 2.5 mm



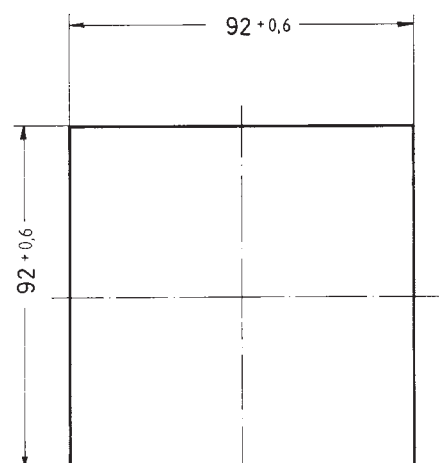
panel cut-out



**SQ 96 DS**



snap-in fixing for panel thickness up to 2.5 mm



panel cut-out

Connections: voltmeters and ammeters up to 15 A M 4  
ammeters from 25 A to 40 A M 6  
ammeters from 60 A M 8

Protective covers acc. to VGB 4 for connection terminals available

Type SQ 48 DS on request also available with screw fixing

**SQUARE MOVING COIL METERS**

# Square Panel Meters

## "Ratioserie"

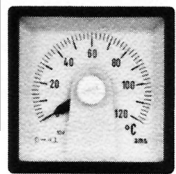
### Moving Coil Meters

for direct current and direct voltage  
with interchangeable scale

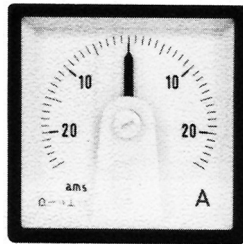
**accuracy class 1.5, pointer deflection 240°**

housing according to **DIN 43700**

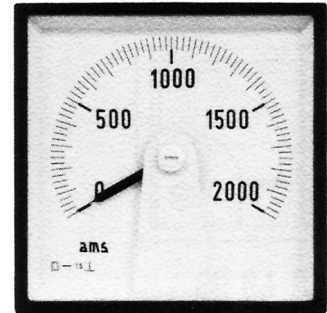
Available housing types:



**LQ 48 DS**



**LQ 72 DS**



**LQ 96 DS**

|                             | <b>LQ 48 DS</b> | <b>LQ 72 DS</b> | <b>LQ 96 DS</b> |
|-----------------------------|-----------------|-----------------|-----------------|
| <b>Front frame</b>          | 48 x 48 mm      | 72 x 72 mm      | 96 x 96 mm      |
| <b>Scale length approx.</b> | 70 mm           | 105 mm          | 150 mm          |
| <b>Weight approx.</b>       | 0.2 kg          | 0.25 kg         | 0.3 kg          |

also available in size 144 x 144 mm, same dimensions as RQ 144 (see page QU/13)

**Movement**

**Bearing**

**Pointer**

**Housing**

**Front frame colour**

**Measuring ranges**

moving coil with 240° pointer deflection

pivots with spring mounted jewels

beam-type knife-edge pointer

polycarbonate casing, self-extinguishing and drip-proof

black, grey on request

**Ammeters**

Internal resistance/ $\Delta U$

**Voltmeters**

Internal resistance

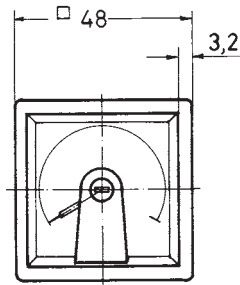
|             |               |        |                 |
|-------------|---------------|--------|-----------------|
| 100 $\mu A$ | 4400 $\Omega$ | 100 mV | 200 $\Omega/V$  |
| 150 $\mu A$ | 4000 $\Omega$ | 150 mV | 200 $\Omega/V$  |
| 250 $\mu A$ | 2500 $\Omega$ | 400 mV | 1000 $\Omega/V$ |
| 400 $\mu A$ | 2000 $\Omega$ | 600 mV | 1000 $\Omega/V$ |
| 600 $\mu A$ | 1400 $\Omega$ | 1 V    | 1000 $\Omega/V$ |
| 1 mA        | 300 $\Omega$  | 1.5 V  | 1000 $\Omega/V$ |
| 1.5 mA      | 250 $\Omega$  | 2.5 V  | 1000 $\Omega/V$ |
| 2.5 mA      | 120 $\Omega$  | 4 V    | 1000 $\Omega/V$ |
| 4 mA        | 80 $\Omega$   | 6 V    | 1000 $\Omega/V$ |
| 6 mA        | 60 mV         | 10 V   | 1000 $\Omega/V$ |
| 10 mA       | 60 mV         | 15 V   | 1000 $\Omega/V$ |
| 15 mA       | 60 mV         | 25 V   | 1000 $\Omega/V$ |
| 20 mA       | 60 mV         | 40 V   | 1000 $\Omega/V$ |
| 25 - 600 mA | 60 mV         | 60 V   | 1000 $\Omega/V$ |
| 1 A         | 60 mV         | 100 V  | 1000 $\Omega/V$ |
| 1.5 A       | 60 mV         | 150 V  | 1000 $\Omega/V$ |
| 2.5 A       | 60 mV         | 250 V  | 1000 $\Omega/V$ |
| 4 A         | 60 mV         | 400 V  | 1000 $\Omega/V$ |
| 6 A         | 60 mV         | 500 V  | 1000 $\Omega/V$ |
| 10 A        | 60 mV         | 600 V  | 1000 $\Omega/V$ |
| 15 A        | 60 mV         |        |                 |
| 25 A        | 60 mV         |        |                 |
| 40 A        | 60 mV         |        |                 |
| 60 A        | 60 mV         |        |                 |
| 60 mV x)    | 12 $\Omega$   |        |                 |
| 150 mV x)   | 30 $\Omega$   |        |                 |

x) For operation with  
separate shunts

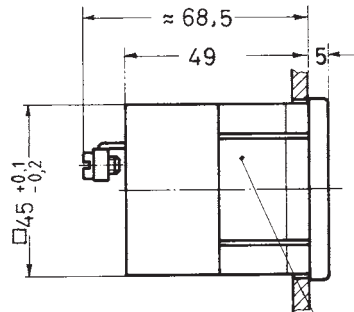
SQUARE MOVING COIL METERS

# Square Panel Meters

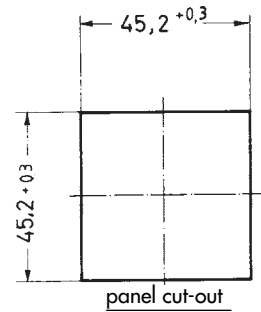
## "Ratioserie"



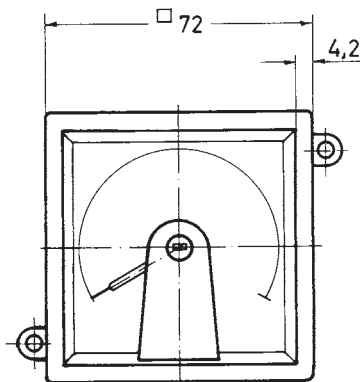
**LQ 48 DS**



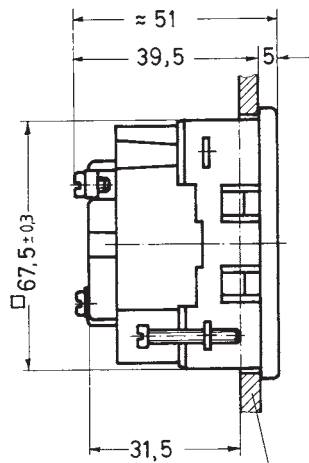
snap-in fixing for panel  
thickness up to 2.5 mm



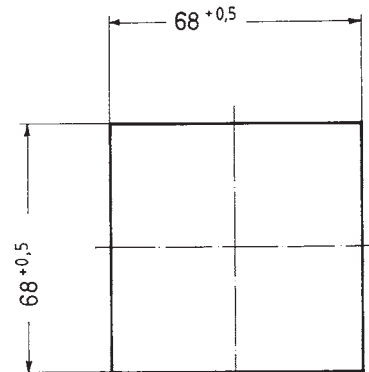
panel cut-out



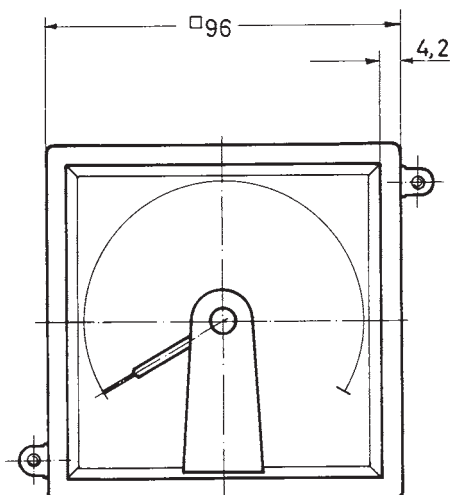
**LQ 72 DS**



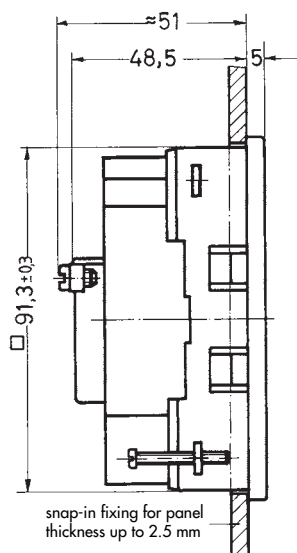
snap-in fixing for panel  
thickness up to 2.5 mm



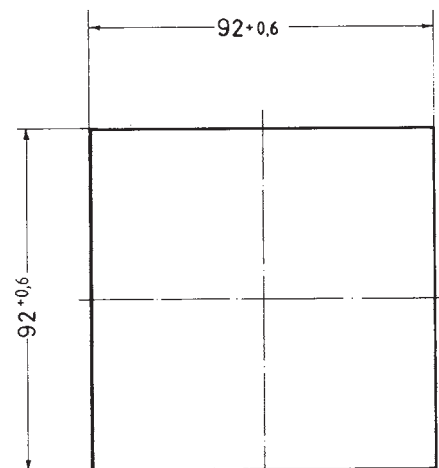
panel cut-out



**LQ 96 DS**



snap-in fixing for panel  
thickness up to 2.5 mm



panel cut-out

Connections: voltmeters and ammeters up to 15 A  
ammeters from 25 A to 40 A  
ammeters from 60 A

M 4  
M 6  
M 8

Protective covers acc. to VGB 4 for  
connection terminals available

**SQUARE MOVING COIL METERS**

# Square Panel Meters

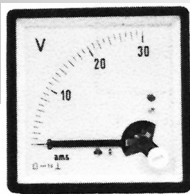
## Steel-Sheet Series

### Moving Coil Meters

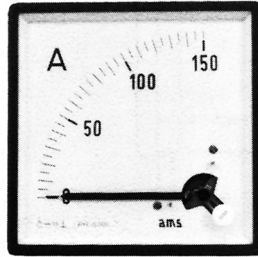
for direct current and direct voltage  
**accuracy class 1.5**

housing acc. to **DIN 43700**

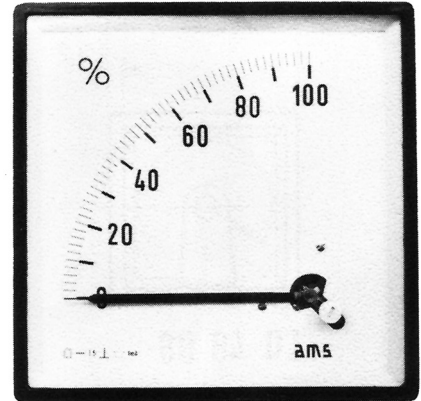
Available housing types:



**RQ 72 DS**



**RQ 96 DS**



**RQ 144 DS**

**SQUARE MOVING COIL METERS**

|                             | <b>SQ 48 DS</b> | <b>RQ 96 DS</b> | <b>RQ 144 DS</b> |
|-----------------------------|-----------------|-----------------|------------------|
| <b>Front frame</b>          | 48 x 48 mm      | 96 x 96 mm      | 144 x 144 mm     |
| <b>Scale length approx.</b> | 40 mm           | 97 mm           | 142 mm           |
| <b>Weight approx.</b>       | 0.1 kg          | 0.3 kg          | 0.6 kg           |

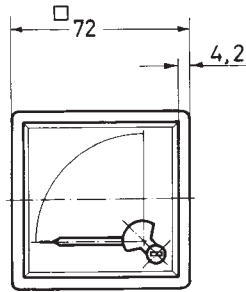
|                           |  |
|---------------------------|--|
| <b>Movement</b>           | moving coil with core magnet (immune to magnetic fields) |
| <b>Bearing</b>            | pivots with spring mounted jewel                         |
| <b>Pointer</b>            | beam-type knife-edge pointer                             |
| <b>Housing</b>            | steel-sheet casing, plastic base plate                   |
| <b>Front frame colour</b> | black, grey on request                                   |

| Measuring ranges                         | Ammeters    | Internal resistance /ΔU |        | Voltmeters | Internal resistance |
|--|-------------|-------------------------|--------|------------|---------------------|
|  |             | RQ 72 + 96              | RQ 144 |            |                     |
|  | 100 μA      | 4000 Ω                  | 6300 Ω | 100 mV     | 200 Ω/V             |
|  | 150 μA      | 4000 Ω                  | 6300 Ω | 150 mV     | 200 Ω/V             |
|  | 250 μA      | 1300 Ω                  | 2600 Ω | 400 mV     | 1000 Ω/V            |
|  | 400 μA      | 1100 Ω                  | 1300 Ω | 600 mV     | 1000 Ω/V            |
|  | 600 μA      | 380 Ω                   | 380 Ω  | 1 V        | 1000 Ω/V            |
|  | 1 mA        | 80 Ω                    | 85 Ω   | 1.5 V      | 1000 Ω/V            |
|  | 1.5 mA      | 30 Ω                    | 47 Ω   | 2.5 V      | 1000 Ω/V            |
|  | 2.5 mA      | 13 Ω                    | 16 Ω   | 4 V        | 1000 Ω/V            |
|  | 4 mA        | 11 Ω                    | 10 Ω   | 6 V        | 1000 Ω/V            |
|  | 6 mA        | 5.5 Ω                   | 5.5 Ω  | 10 V       | 1000 Ω/V            |
|  | 10 mA       | 3 Ω                     | 3 Ω    | 15 V       | 1000 Ω/V            |
|  | 15 mA       | 2.8 Ω                   | 2.8 Ω  | 25 V       | 1000 Ω/V            |
|  | 20 mA       | 2.3 Ω                   | 2.3 Ω  | 40 V       | 1000 Ω/V            |
|  | 25 - 600 mA | 60 mV                   | 60 mV  | 60 V       | 1000 Ω/V            |
|  | 1 A         | 60 mV                   | 60 mV  | 100 V      | 1000 Ω/V            |
|  | 1.5 A       | 60 mV                   | 60 mV  | 150 V      | 1000 Ω/V            |
|  | 2.5 A       | 60 mV                   | 60 mV  | 250 V      | 1000 Ω/V            |
|  | 4 A         | 60 mV                   | 60 mV  | 400 V      | 1000 Ω/V            |
|  | 6 A         | 60 mV                   | 60 mV  | 500 V      | 1000 Ω/V            |
|  | 10 A        | 60 mV                   | 60 mV  | 600 V      | 1000 Ω/V            |
|  | 15 A        | 60 mV                   | 60 mV  |            |                     |
|  | 25 A        | 60 mV                   | 60 nV  |            |                     |
|  | 40 A        | 60 mV                   | 60 mV  |            |                     |
|  | 60 A        | 60 mV                   | 60 mV  |            |                     |
| x) For operation with<br>separate shunts | 60 mV x)    | 5 Ω                     | 5 Ω    |            |                     |

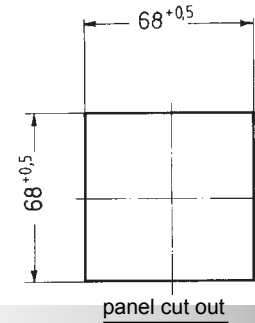
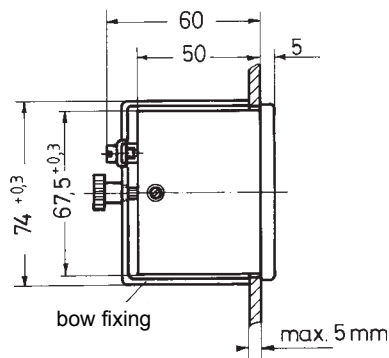
x) For operation with  
separate shunts

# Square Panel Meters

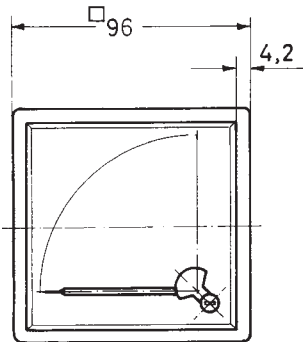
## Steel-Sheet Series



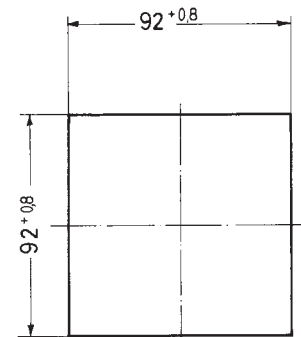
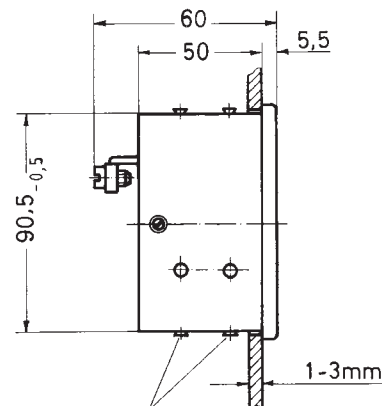
**RQ 72 DS**



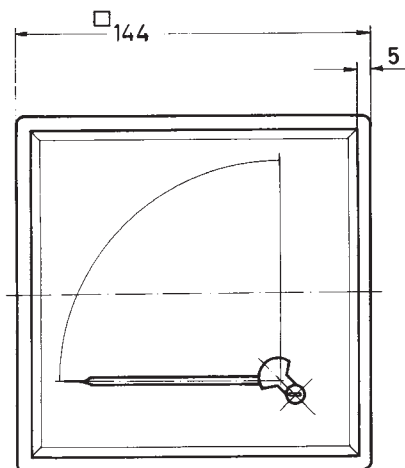
panel cut out



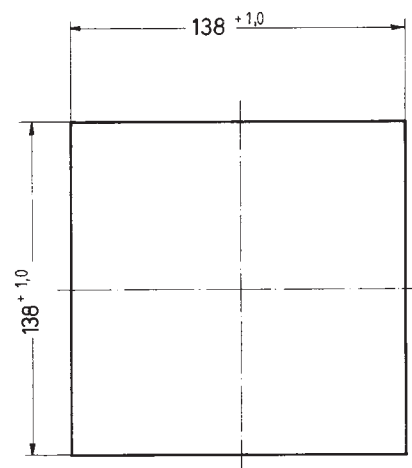
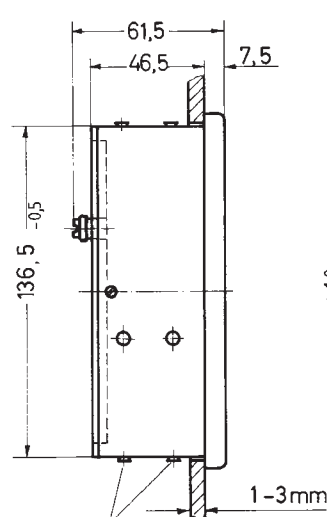
**RQ 96 DS**



panel cut out



**RQ 144 DS**



panel cut out

Connections: voltmeters and ammeters up to 15 A      M 4  
 ammeters from 25 A      M 6  
 ammeters from 60 A      M 8

**SQUARE MOVING COIL METERS**



# Square Panel Meters

## Special Designs

## Square Moving Coil Meters

### SQUARE MOVING COIL METERS

#### Housing

##### Front frame colours

standard: black  
special version: grey  
other colours on request

##### Front glass

standard: silicate glass  
special version: anti-glare glass, double layer safety glass

##### Splash protection

standard: IP 52  
special version: IP 54  
sizes Q 72 and Q 96 with sealing and protective glass  
sizes Q 48, Q 72 and Q 96 with rubber sealing  
(panel cut-out about 1 mm bigger)  
for sizes Q 72, Q 96, Q 144

##### Illumination

#### Scales

##### Coloured scales

scale background black, scale division and numbering white or yellow  
other colours on request

##### Divisions

coloured scale divisions or marks  
two or more scale divisions possible  
calibration according to a curve or table  
calibration in a different measurement variable

#### Movement

##### Internal resistance voltmeter

standard approx. 1000  $\Omega/V$   
special versions: 2000  $\Omega/V$   
5000  $\Omega/V$   
10.000  $\Omega/V$

##### Initial part of deflection stretched

approx. 25% of the full-scale value at the center of the scale  
(not for LQ and LDS)

##### Measuring rectifier (for measuring AC)

voltmeter 6 - 600 V installed in housing  
ammeter up to 20 mA installed in housing  
from 1 to 25 A with separate current transformer n/0.01 A  
current transformer for types SQ 96, LQ 96, RQ 144 and LDS 144  
installed in housing

##### Accuracy class

class 1 on request

##### 2nd measuring range

for ammeters or voltmeters on request

##### Live-zero

4 - 20 mA (electrically suppressed zero)