

Vario-Series • Square Panel Meters

For Alternating Current



Moving-iron movement and bimetal movement, 90° scale
Narrow front frame per DIN 43 718, matt black

Technical Data

| Front Dimensions mm Type | 72 x 72 V-MAQS 72 | 96 x 96 V-MAQS 96 | 144 x 144 AMQS 144 |
|--------------------------------|----------------------|----------------------|-----------------------|
| Scale Length mm | | | |
| Bimetal | 66 | 94 | 107 |
| Moving-iron | 60 | 81 | 143 |
| Class | | | |
| Bimetal | 3 | 3 | 3 |
| Moving-iron | 1.5 | 1.5 | 1.5 |
| Weight approx. (kg) | 0.3 | 0.35 | 1.3 |
| Operating Voltage | 300 V | 600 V | 600 V |
| Test Voltage | 3.5 kV | 5.8 kV | 5.8 kV |
| Front Housing-Panel Protection | IP 50 | IP 50 | IP 50 |
| Fasteners | screw clip S | screw clip S | screw clip S |
| Housing Material | polycarbonate | polycarbonate | polycarbonate |
| Interchangeable Scales | yes | yes | yes |



AMQS 144



V-MAQS 96

Description

Analog panel meter with moving-iron movement and bimetal movement

Display

Scale Division Coarse-fine
Pointer Beam pointer with knife-edge

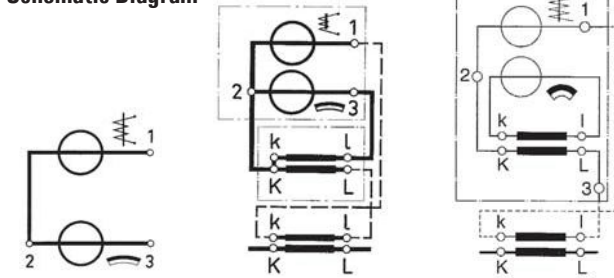
Mechanical Design

Housing Material Polycarbonate, self-extinguishing and drip-proof per UL 94 V - 0.
Replaceable Glass window, front frame and scale
⇒ May only be replaced under voltage-free conditions!
Terminals M4 screw terminals with self-lifting terminal clips. Screws can be turned with a cross-head or standard screw drivers
Contact Protection Available as option

Power Consumption

| | Type | | |
|-----------------------|-----------|-----------|----------|
| | V-MAQS 72 | V-MAQS 96 | AMQS 144 |
| Connection to transf. | | | |
| sec. 1 A | | | |
| Bimetal approx. | 1.1 VA | 1.1 VA | 1.1 VA |
| Moving-iron approx. | 0.25 VA | 0.25 VA | 0.25 VA |
| sec. 5 A | | | |
| Bimetal approx. | 1.9 VA | 1.9 VA | 1.9 VA |
| Moving-iron approx. | 0.3 VA | 0.3 VA | 0.3 VA |

Schematic Diagram



Without current transformer

With separate current transformer

With built in current transformer

Reference Conditions

| Reference Quantities | Reference Conditions |
|----------------------|-----------------------------|
| Ambient Temperature | 23 °C ± 2 °C |
| position of Use | control panel vertical ± 1° |
| Other | DIN EN 60 051 |

Overload Capacity of Bimetal Movement

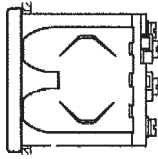
| | |
|------------|--|
| Continuous | 120% of rated value |
| Short-term | 10 x of rated value; 1 s (I _{max} = 10 A) |

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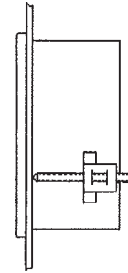


Leaf Spring



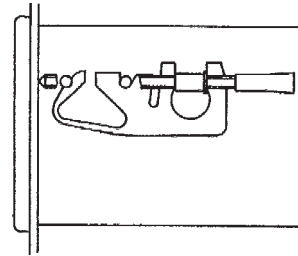
Control panel thickness 1 to 3 mm.
Also available as option for sizes of 72 x 72 and 96 x 96 mm.

Screw Clip S



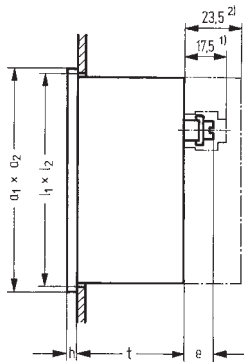
Control panel thickness 1 to 25 mm.
Special screw clamp M4 for sizes 72 x 72 and 96 x 96 mm.

Fastener B DIN 43 835



Control panel thickness 1 to 40 mm.
Screw clamp M4 as option for sizes 72 x 72 and 96 x 96 mm.

Basic Dimensions



Dimensions for Current Transformers

1 A: 67 x 45 x 90 (B x T x H)
5 A: 67 x 51 x 90 (B x T x H)

Drawings to Scale (on request)

1303 A 2005 H

Ordering Example

Panel meter 96 x 96 mm, with bimetal and moving-iron movement
Connection to current transformer 25/5 A
Overload 1.2 x of rated value for bimetal movement, 2 x of rated value for moving-iron movement
Response time 15 min.

Drawings to scale (on request)

0101A259

| | | |
|------------------|----------------------------------|----------------------------|
| Techn. Data | | Order No. 1606C |
| V-MAQS 96 | Movement I (Bimetal) | 1BE11, 1BU5, 1CG25 |
| | Movement II (Moving-iron) | 2BE11, 2BW10, 2CG25 |

| Front in mm | Nominal Dimensions | | Cutout Dimensions, mm | Installation Depth | Terminals M4 e |
|-------------|---------------------------------|---|---|--------------------|----------------------|
| | a ₁ x a ₂ | h | | | |
| 72 x 72 | 72 x 72 | 5 | 68 ^{+0.7} x 68 ^{+0.7} | 43.5 | 12.5 |
| 96 x 96 | 96 x 96 | 5 | 92 ^{+0.8} x 92 ^{+0.8} | 43.5 | 12.5 |
| 144 x 144 | 144 x 144 | 8 | 138 ⁺¹ x 138 ⁺¹ | 95.0 | 12.5 |

- 1) Single terminal cover
2) Overall terminal cover

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Note:

Choose only one of the listed measuring inputs.

'A' = Extra Charge · '+' = Available without extra Charge · '-' = Not available

| | Type Order No. ⇒ | V-MAQS 72 ²⁾ 1603C | V-MAQS 96 ²⁾ 1606C | AMQS 144 1622C |
|---|------------------------|----------------------------------|----------------------------------|-------------------|
| Alternating Current¹⁾ | + ↓ | | | |
| Movement I (bimetal) | 1 | | | |
| Movement II (moving-iron) | 2 | | | |
| | + ↓ | | | |
| Direct Connection | | | | |
| Range: | | | | |
| 0 ... 1 A | ...CCA1 ³⁾ | + | + | + |
| 0 ... 5 A | ...CCA5 ³⁾ | + | + | + |
| Con. to Current Transformer sec. 1 A | ...BEA10 ³⁾ | + | + | + |
| Con. to Current Transformer sec. 5 A | ...BEA11 ³⁾ | + | + | + |
| Scale: | | | | |
| 0 ... 1 A | ...CG1 | + | + | + |
| 0 ... 5 A | ...CG5 | + | + | + |
| 0 ... 10 A | ...CG10 | + | + | + |
| 0 ... 15 A | ...CG15 | + | + | + |
| 0 ... 20 A | ...CG20 | + | + | + |
| 0 ... 25 A | ...CG25 | + | + | + |
| 0 ... 30 A | ...CG30 | + | + | + |
| 0 ... 40 A | ...CG40 | + | + | + |
| 0 ... 50 A | ...CG50 | + | + | + |
| 0 ... 60 A | ...CG60 | + | + | + |
| 0 ... 75 A | ...CG75 | + | + | + |
| 0 ... 100 A | ...CG100 | + | + | + |
| 0 ... 150 A | ...CG150 | + | + | + |
| 0 ... 200 A | ...CG200 | + | + | + |
| 0 ... 250 A | ...CG250 | + | + | + |
| 0 ... 300 A | ...CG300 | + | + | + |
| 0 ... 400 A | ...CG400 | + | + | + |
| 0 ... 500 A | ...CG500 | + | + | + |
| 0 ... 600 A | ...CG600 | + | + | + |
| 0 ... 750 A | ...CG750 | + | + | + |
| 0 ... 800 A | ...CG800 | + | + | + |
| 0 ... > 1 A < 1 kA ⁴⁾ | ...CG... | + | + | + |
| 0 ... 1 kA | ...CH1 | + | + | + |
| 0 ... 5 kA | ...CH5 | + | + | + |
| 0 ... 10 kA | ...CH10 | + | + | + |
| 0 ... > 1 kA ⁴⁾ | ...CH... | + | + | + |

1) Specify each movement when ordering –

please complement with: 1 for Movement I (bimetal)

2 for Movement II (moving-iron)

2) For sheet metal housings with cone head rivets please see "Housing Variants"

3) Upper scale value = 120% of rated value

4) Specify in clear text

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Only one Identification No. with the same letter sequence may be chosen.

Order No. with Identification No. N (standard model) can be left out.

'N' = Standard Version · 'A' = Extra Charge · '+' = Available without extra Charge · '-' = Not available

| | Type Order No. ⇒ | V-MAQS 72 1603C | V-MAQS 96 1606C | AMQS 144 1622C |
|---|------------------------------|--------------------|--------------------|-------------------|
| GENERAL VARIANTS | Identification + ↓ | | | |
| Response Time | | | | |
| Response time 15 min. | IB1 | N | N | N |
| Response time 8 min. | IB2 | + | + | + |
| Overload for Bimetal Movement | | | | |
| Overload 1.2 x of rated value | BU5 | N | N | N |
| Overload 1.2 x of rated value with built in prot. cur. transf. 100 x of rated value / 1s | 2BU26 | - | - | + |
| Overload 1.2 x of rated value with separated prot. cur. transf 100 x of rated value / 1s | 1BU27 | + | + | - |
| Overload for Moving-Iron Movement | | | | |
| Overload 1.2 x of rated value | BW5 | N | N | N |
| Overload 2 x of rated value | BW10 | + | + | + |
| Position of Use | | | | |
| Control panel vertical | LA1 | N | N | N |
| Control panel horizontal | LA2 | + | + | + |
| Other (Please specify angle between scale and horizontal) | LA999 | + | + | + |
| SCALE VARIANTS | | | | |
| Scale | | | | |
| In accordance with measuring input | GF99 | N | N | N |
| Blank scale (lower and upper value markings, company logos, symbols) | GF24 | + | + | - |
| Additional Imprint | | | | |
| Second numbering (specify in clear text) | SK992 | - | A | - |
| Inscription: | | | | |
| Without additional inscription | SM99 | N | N | N |
| Inscription ≤ 15 characters German | SM991 | A | A | A |
| > 15 characters German | SM992 | A | A | A |
| ≤ 15 characters other language | SM993 | A | A | A |
| > 15 characters other language | SM994 | A | A | A |
| (Other language in Latin lettering, specify in clear text) | | | | |
| Coloured mark red RAL 2002 (specify in clear text) | ST991 | A | A | A |
| Coloured sector yellow RAL 1021, green RAL 6018 or red RAL 2002 (specify in clear text) | SU991 | A | A | A |
| Scale / Pointer Colours | | | | |
| Scale white; imprint und pointer black | SG99 | N | N | N |
| Scale black; imprint und pointer white | SG1 | A ¹⁾ | A ¹⁾ | A ¹⁾ |
| Scale black; imprint und pointer yellow | SG2 | A ¹⁾ | A ¹⁾ | A ¹⁾ |
| Without scale; pointer black | SG10 | + | + | - |
| Without scale; pointer white | SG11 | A | A | - |
| Without scale; pointer yellow | SG12 | A | A | - |

1) Additional one-off costs for special scale printing on request

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Order No. with Identification No. N (standard model) can be left out.

'N' = Standard Version · 'A' = Extra Charge · '+' = Available without extra Charge · '-' = Not available

| Type Order No. ⇒ | V-MAQS 72 1603C | V-MAQS 96 1606C | AMQS 144 1622C |
|--|--------------------|--------------------|-------------------|
| HOUSING VARIANTS | | | |
| Identification + ↓ | | | |
| Front Frame Colours | | | |
| Matt black | MA2 | N | N |
| Matt grey RAL 7037 | MA11 | A | A |
| Matt stone grey RAL 7032 | MA12 | A | A |
| Matt light grey RAL 7035 | MA14 | A | — |
| Matt dark beige approx. RAL 1019 | MA21 | A | A |
| Intermediate Frame. Height 3 mm | | | |
| Without intermediate frame | MC99 | N | N |
| Intermediate frame shiny black | MC1 | A | A |
| Intermediate frame shiny grey RAL 7037 | MC2 | A | A |
| <i>Intermediate frame available only in combination with screw clip S or fastener B DIN 43 835</i> | | | |
| Glass Window | | | |
| Standard version | MG99 | N | N |
| Anti-glare glass | MG1 | A | A |
| Housing | | | |
| Standard housing | ML99 | N | N |
| Sheet metal housing with cone head rivets | ML4 | A | N ¹⁾ |
| Mounting | | | |
| 2 Leaf springs | MN2 | + | + |
| 4 Leaf springs | MN1 | A | A |
| Screw Clip S | MN14 | N | N |
| Fastener B DIN 43835 | MN11 | A ²⁾ | A ²⁾ |
| Identification | | | |
| Without identification | MZ99 | N | N |
| Identification on the back (specify in clear text) | MZ998 | A | A |
| Constant Display | | | |
| Without constant display | PK99 | N | N |
| Constant display 1-1.5-2-2.5-3-4-5-6-7.5-8-10 | PK5 | — | A |
| Contact Protection | | | |
| Without terminal cover | VB99 | N | N |
| Overall terminal cover | VB2 | A | A |
| Single terminal cover | VB1 | + | + |

1) Standard version without extra charge

2) Available only in combination with Order No. ML4 (sheet metal housing with cone head rivets)