<table>
<thead>
<tr>
<th>Main function:</th>
<th>Measurement of DC currents and DC voltages.</th>
<th>Measurement of AC currents and AC voltages.</th>
<th>Measurement of AC currents and AC voltages, adjusted for other frequency range 16..65 Hz. The instruments measure true RMS.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size (mm):</td>
<td>Q48…Q144</td>
<td>Q72…Q144</td>
<td>Q48…Q144</td>
</tr>
<tr>
<td>Pointer deflection:</td>
<td>90°, 240°</td>
<td>90°, 240°</td>
<td>90°</td>
</tr>
<tr>
<td>Customised and exchangeable scale available for 90°:</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Protection IP52:</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Protection IP54 on request:</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Accuracy class:</td>
<td>1.5</td>
<td>1.5</td>
<td>1.5</td>
</tr>
<tr>
<td>Measuring range:</td>
<td>60 mV…300 V 1 mA…5…10…15…40 A, 4…20 mA (except from Q48: 1 mA…600 mA, 4…20 mA)</td>
<td>25…300 V, 1…600 mA 40…800 V (Q48: 40…300 V) 1…60 A (Q48: 1…40 A)</td>
<td></td>
</tr>
<tr>
<td>Approved by classification societies:</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Panel Meters, Accessories

#### Moving Coil, DQ

- **Main function:** Measurement of DC currents and DC voltages.
- **Size (mm):** Q48…Q144
- **Pointer deflection:** 90°, 240°
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** 60 mV…300 V 1 mA…5…10…15…40 A, 4…20 mA (except from Q48: 1 mA…600 mA, 4…20 mA)
- **Approved by classification societies:** ✓

#### Moving Coil, VDQ

- **Main function:** Measurement of AC currents and AC voltages.
- **Size (mm):** Q72…Q144
- **Pointer deflection:** 90°, 240°
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** 25…300 V, 1…600 mA 40…800 V (Q48: 40…300 V) 1…60 A (Q48: 1…40 A)
- **Approved by classification societies:** ✓

#### Moving Iron, EQ

- **Main function:** Measurement of AC currents and AC voltages, adjusted for other frequency range 16..65 Hz. The instruments measure true RMS.
- **Size (mm):** Q48…Q144
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** 40…800 V (Q48: 40…300 V) 1…60 A (Q48: 1…40 A)
- **Approved by classification societies:** ✓

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#### Ammeters w/built-in switch, VDQ96-sw

- **Main function:** Measurement of AC currents. Selected with built-in switch, measurement of current in a 3-phase network is possible.
- **Size (mm):** Q96
- **Pointer deflection:** 90°
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** 0…1 A, 0…5 A or from current transformer(s) Scale: According to the used current transformer Frequency: 45…65 Hz
- **Approved by classification societies:** ✓

#### Voltmeters w/built-in switch, EQ96-sw7

- **Main function:** Measurement of AC voltages. Selection of measurement of phase to phase voltage or phase to zero voltage in a 3-phase network is possible by means of built-in switch.
- **Size (mm):** Q96
- **Pointer deflection:** 90°
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** Phase to phase voltages up to 600 V or phase to zero voltages up to 350 V Scale: 0…300 V, 0…500 V, 0…600 V, 0…800 V, 120 V for VT - x/100 V, 132 V for VT - x/110 V, Frequency: 40…80 Hz
- **Approved by classification societies:** ✓

#### Voltmeters w/built-in switch, EQ96-sw4

- **Main function:** Measurement of AC voltages. Measurement of phase to phase voltage in a 3-phase network is possible by means of built-in switch.
- **Size (mm):** Q96
- **Pointer deflection:** 90°
- **Protection:** IP52
- **Accuracy class:** 1.5
- **Measuring range:** Phase to phase voltages up to 600 V or phase to zero voltages up to 350 V Scale: 0…300 V, 0…500 V, 0…600 V, 120 V for VT - x/100 V, 132 V for VT - x/110 V, Frequency: 40…60 Hz
- **Approved by classification societies:** ✓
### Bimetallic Instruments, BQ

**Main function:** Measurement of currents. Provided with a maximum-reading pointer.

**Size (mm):** Q48, Q72, Q96

**Pointer deflection:** 90°

**Customised and exchangeable scale available for 90°:** –

**Protection IP52:** ✓

**Protection IP54 on request:** –

**Accuracy class:** 3

**Measuring range:** Measuring range: 0...6 A or 0...1.2 A Overload: 1.2 × nominal current (-/5 A or -/1 A) continuously Scale: Always 120% of the current transformer Setting time: BQ48: 4 or 8 min, BQ72-x/BQ96-x: 8 or 15 min

### Combined Ammeters, BEQ

**Main function:** Measurement of currents. Combined bimetallic system and moving iron system for maximum and momentary reading. Provided with a maximum-reading pointer.

**Size (mm):** Q72, Q96

**Pointer deflection:** 90°

**Customised and exchangeable scale available for 90°:** –

**Protection IP52:** ✓

**Protection IP54 on request:** –

**Accuracy class:** 3 (1.5 for moving iron)

**Measuring range:** Measuring range: 0...6 A or 0...1.2 A Overload: 1.2 × nominal current (-/5 A or -/1 A) continuously Scale: Always 120% of the current transformer Setting time: Bimetallic system: 8 or 15 min

### Watt or VAr Meters, WQ

**Main function:** Measurement of power or reactive power.

**Size (mm):** Q96, Q144

**Pointer deflection:** 90°, 240°

**Customised and exchangeable scale available for 90°:** ✓

**Protection IP52:** ✓

**Protection IP54 on request:** ✓

**Accuracy class:** 1.5

**Measuring range:** Frequency: 45...65 Hz Measuring current: Direct or from CT -/1 A or -/5 A Measuring voltage: 100...110...127...220...230...240...380...400...415...440...450...480V AC 0.5 cap. ...1...0.5 ind., 0.7 cap. ...1...0.3 ind., 0...1 cap., 0...1 ind. Voltage: 57.7...63.5...100...110...124...220...230...240...380...400...415...440V AC ±20% Current (Inom): -/1 A and -/5 A from external current transformer
<table>
<thead>
<tr>
<th></th>
<th>Pointer Frequency Meters, FQ</th>
<th>Reed Frequency Meters, FTQ</th>
<th>Shunt Resistors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main function:</td>
<td>Measurement of frequency.</td>
<td>Measurement of frequency with 13 or 21 reeds.</td>
<td>Dimensions: To DIN 43703 Ranges: 1…2500 A, 60/150 mV Form A and B: 60/150 mV Form C: 50 mV</td>
</tr>
<tr>
<td>Size (mm):</td>
<td>Q72, Q96</td>
<td>Q72, Q96</td>
<td></td>
</tr>
<tr>
<td>Pointer deflection:</td>
<td>90°</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>Customisable and exchangeable scale available for 90°:</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>Protection IP52:</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>Protection IP54 on request:</td>
<td>✓</td>
<td>✓</td>
<td>–</td>
</tr>
<tr>
<td>Accuracy class:</td>
<td>0.5</td>
<td>0.5</td>
<td>0.5</td>
</tr>
<tr>
<td>Measuring range:</td>
<td>Measuring voltage: 100…230V AC ±15% or 440V AC ±15% Scale/meas. range: 45…55 Hz, 55…65 Hz, 360…440 Hz (Others on request)</td>
<td>Measuring voltage: 100…110…220…230…240…380…400…415…440V AC ±15% Scale/meas. range: 47…53 Hz, 45…55 Hz, 57…63 Hz, 55…65 Hz</td>
<td>–</td>
</tr>
</tbody>
</table>
### Multi-instrument, MIB

<table>
<thead>
<tr>
<th>Size (mm):</th>
<th>Q96</th>
<th>Q96</th>
<th>Q96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main function:</td>
<td>Measurement of voltage, current, active-, reactive- and apparent power, frequency, energy kWh/kVArh (import, export, net, total), min./max. values, PF, THD.</td>
<td>Measurement of voltage, current, active-, reactive- and apparent power, frequency, energy kWh/kVArh (import, export, net, total), PF, THD.</td>
<td>Measurement of voltage, current, active-, reactive- and apparent power, frequency, energy kWh/kVArh (import, export, net, total), PF, THD, demand, min./max. values with time stamp.</td>
</tr>
<tr>
<td>Connection:</td>
<td>Suitable for all 3-phase network topologies</td>
<td>Suitable for all 3-phase network topologies</td>
<td>Suitable for all 2- and 3-phase network topologies</td>
</tr>
<tr>
<td>Accuracy class:</td>
<td>0.5% on measured values 1.0% on calculated values</td>
<td>0.2% measured values 0.5% calculated values</td>
<td>0.2% on measured values 0.5% on calculated values</td>
</tr>
<tr>
<td>Measuring current:</td>
<td>-/1 A or -/5 A</td>
<td>-/1 A or -/5 A</td>
<td>-/1 A or -/5 A</td>
</tr>
<tr>
<td>Measuring voltage:</td>
<td>400V AC Ph-N/690V AC Ph-Ph 50/60 Hz</td>
<td>230V AC N-Ph (400V AC Ph-Ph) 50/60 Hz</td>
<td>400V AC Ph-N/690V AC Ph-Ph 50/60 Hz</td>
</tr>
<tr>
<td>Auxiliary supply:</td>
<td>100…415V AC 50/60 Hz 100…300V DC</td>
<td>85…264V AC 50/60 Hz/ 24…48, 100…280V DC</td>
<td>100…415V AC 50/60 Hz 100…300V DC</td>
</tr>
</tbody>
</table>

### Multi-instrument, MIC

<table>
<thead>
<tr>
<th>Size (mm):</th>
<th>Q96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main function:</td>
<td>Measurement of voltage, current, active-, reactive- and apparent power, frequency, energy kWh/kVArh (import, export, net, total), PF, THD, MD (max. demands).</td>
</tr>
<tr>
<td>Connection:</td>
<td>Suitable for all 3-phase network topologies</td>
</tr>
<tr>
<td>Accuracy class:</td>
<td>0.5% on measured values 1.0% on calculated values</td>
</tr>
<tr>
<td>Measuring current:</td>
<td>-/1 A or -/5 A</td>
</tr>
<tr>
<td>Measuring voltage:</td>
<td>400V AC Ph-N/690V AC Ph-Ph 50/60 Hz</td>
</tr>
<tr>
<td>Auxiliary supply:</td>
<td>100…415V AC 50/60 Hz 100…300V AC 50/60 Hz</td>
</tr>
</tbody>
</table>

### Multi-instrument, MIQ96-3

<table>
<thead>
<tr>
<th>Size (mm):</th>
<th>Q96</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main function:</td>
<td>Measurement of voltage, current, active-, reactive- and apparent power, frequency, energy kWh/kVArh, export (kWh, kVArh), PF, THD, MD (max. demands).</td>
</tr>
<tr>
<td>Connection:</td>
<td>Single phase 3-phase 3 wire balanced load 3-phase 4-wire balanced load 3-phase 3-wire unbalanced load 3-phase 4-wire unbalanced load</td>
</tr>
<tr>
<td>Accuracy class:</td>
<td>0.5 of most values 1.0 of a few values</td>
</tr>
<tr>
<td>Output:</td>
<td>RS485 serial + 2 relays Pulse output/limit switches</td>
</tr>
<tr>
<td>Measuring current:</td>
<td>-/1 A or -/5 A</td>
</tr>
<tr>
<td>Measuring voltage:</td>
<td>230V AC N-Ph (400V AC Ph-Ph) 50/60 Hz</td>
</tr>
<tr>
<td>Auxiliary supply:</td>
<td>Universal AC/DC power supply 40…276V AC, 40…65 Hz &lt;5 VA or 19…300V DC &lt;5 W</td>
</tr>
</tbody>
</table>
### Panel Meters, Accessories

#### Insulation Monitor, ADL-111Q96
- **Main function:** Supervision of the insulation resistance between an insulated low-voltage distribution network and earth cable/safety cable.
- **Size (mm):** Q96
- **Selectable modes:** –
- **Protection:** IP52
- **Accuracy class:**
  - 1.0 Mohm scale ±5% of scale length
  - 10.0 Mohm scale ±2% of scale length
- **Relay output:** Built-in relay can be selected as NE or ND. Alarm setpoint adjustable from the rear.
- **Input:**
  - Meas. voltage: ±12V DC ±5% (24 V), ±28V DC ±5% (110, 220 V)
  - Mains voltage: 24V DC, 110V DC, 220V DC +30% -25%
- **Mains voltage/leakage cap.:** Selectable for either max. 1µF or max. 20µF
- **Approved by classification societies:** –

#### Selectable Insulation Monitor, SIM-Q/LF
- **Main function:** Supervision of the insulation resistance between an insulated low-voltage distribution network and earth cable/safety cable.
- **Size (mm):** Q96
- **Selectable modes:** Monitoring, fault finding, test
- **Protection:** IP52
- **Accuracy class:**
  - 1.0 Mohm scale ±5% of scale length
  - 10.0 Mohm scale ±2% of scale length
- **Relay output:** Built-in relay can be selected as NE or ND. Alarm setpoint adjustable from the rear.
- **Input:**
  - Meas. voltage: ±28V DC ±5%
  - Mains voltage: Max. 690V AC +20% continuously
  - SIM-Q: 20 Hz…500 Hz
  - SIM-Q LF: 5 Hz…500 Hz
- **Mains voltage/leakage cap.:** Selectable for either max. 50µF or max. 500µF
- **Auxiliary supply:** 24V DC, 110V DC, 220V DC +30% -25%
  - 100…110…127 or 220…230…240 or 400…415…440V AC ±20% 45…65 Hz (appr. 4 VA)
  - 110…220…380…415…440V AC ±20%, 45…65 Hz (appr. 4 VA)
- **Protection:** IP52
- **Accuracy class:**
  - AC: 1/100 hour (36 s)
  - DC: 1/10 hour (6 min)
- **Measuring range:** Nominal voltages: 4…48…110…230V AC/DC

#### Insulation Monitor, AAL-111Q96
- **Main function:** Supervision of the insulation resistance between an insulated low-voltage distribution network and earth cable/safety cable.
- **Size (mm):** Q96
- **Selectable modes:** –
- **Protection:** IP52
- **Accuracy class:**
  - 1.0 Mohm scale ±5% of scale length
  - 10.0 Mohm scale ±2% of scale length
- **Relay output:** Built-in relay can be selected as NE or ND. Time delay of 4 s can be selected. Alarm setpoint adjustable from the rear.
- **Input:**
  - Meas. voltage: ±28V DC ±5%
  - Mains voltage: Max. 690V AC +20% continuously
  - SIM-Q: 20 Hz…500 Hz
  - SIM-Q LF: 5 Hz…500 Hz
- **Mains voltage/leakage cap.:** Selectable for either max. 50µF or max. 500µF
- **Protection:** IP52
- **Accuracy class:**
  - AC: 1/100 hour (36 s)
  - DC: 1/10 hour (6 min)
- **Measuring range:** Nominal voltages: 4…48…110…230V AC/DC

#### Remote Position Indicators, PIR25-1, PIR25-2
- **Main function:** Indication of circuit breaker position or tie breaker position.
- **Size (mm):** Q25
- **Black focusing screen ("round"):** ✔
- **White focusing screen ("square"):** ✔
- **Frequency 50 Hz or 60 Hz:** ✔
- **Protection IP40:** –
- **Accuracy class:**
  - AC: 1/100 hour (36 s)
  - DC: 1/10 hour (6 min)
- **Measuring range:** Nominal voltages: 4…48…110…230V AC/DC

#### Running Hours Counters, HC48, HC36/24
- **Main function:** For AC or DC measuring voltage.
- **Size (mm):** Q48
- **Adapter frames 55 × 55 or 72 × 72:** 36 × 24
- **Black focusing screen ("round"):** ✔
- **White focusing screen ("square"):** ✔
- **Protection:** (Special IP65 available)
- **Accuracy class:**
  - AC: 1/100 hour (36 s)
  - DC: 1/10 hour (6 min)
- **Measuring range:** Nominal voltages: 4…48…110…230V AC/DC
- **Counting range:** AC: 99999.99 hours/DC: 999999.9 hours
- **Voltage:** 24-110-230V AC ±10% and 10-48V DC, 110V DC ±10%
- **Resolution:** For AC - 1/100 hours, for DC - 1/10 hours

### Switchboard Instrumentation

DEIF A/S, Frisenborgvej 33, DK-7800 Skive, Tel.: +45 9614 9614, Fax: +45 9614 9615, E-mail: info@deif.com, URL: www.deif.com
### DIN Rail Instruments, D45
- **Main function:** Moving coil DC instrument for DIN rail mounting (35 × 15 mm).
- **Size (mm):** Q45
- **Pointer deflection:** 90°
- **Customised and exchangeable scale available for 90°:** ✓
- **Protection IP52:** ✓
- **Protection IP54 on request:** –
- **Accuracy class:** 1.5
- **Measuring range:** 1 V...300 V (incl. 0...60 mV/5 mA)
  1 mA...600 mA and (4...20 mA)

### DIN Rail Instruments, E45
- **Main function:** Moving iron AC instrument for DIN rail mounting (35 × 15 mm).
- **Size (mm):** Q45
- **Pointer deflection:** 90°
- **Customised and exchangeable scale available for 90°:** ✓
- **Protection IP52:** ✓
- **Protection IP54 on request:** –
- **Accuracy class:** 1.5
- **Measuring range:** 1 V...300 V (incl. 0...60 mV/5 mA)
  1 mA...600 mA and (4...20 mA)
  6 V...400 V, 100 mA...25 A
  Standard ranges: 1...5...10...15...25 A, incl. -1 A and -5 A for external CT
  Nominal current -5 A. Overload: 1.2 × nominal current continuously.

### DIN Rail Instruments, B45
- **Main function:** Bimetallic instrument with maximum reading pointer. For DIN rail mounting (35 × 15 mm).
- **Size (mm):** Q45
- **Pointer deflection:** 90°
- **Customised and exchangeable scale available for 90°:** ✓
- **Protection IP52:** ✓
- **Protection IP54 on request:** –
- **Accuracy class:** 1.5
- **Measuring range:** 1 V...300 V (incl. 0...60 mV/5 mA)
  1 mA...600 mA and (4...20 mA)
  6 V...400 V, 100 mA...25 A
  Standard ranges: 1...5...10...15...25 A, incl. -1 A and -5 A for external CT
  Nominal current -5 A. Overload: 1.2 × nominal current continuously.

### Alarm Panels, AL8-2
- **Main function:** Suitable for switchboards in industrial and marine plants for alarm and control purposes.
- **Size (mm):** Q96
- **Selectable modes:** –
- **Customised and exchangeable scale available:** –
- **Protection:** IP54
- **Accuracy class:** –
- **Relay output:** Two user-configurable output relays
  One output for horn (alarm)
- **Input:** 8 alarm inputs
- **Mains voltage/leakage cap.:** –
- **Auxiliary supply:** 12...24...48...110V DC ±25% (min. 10V DC)
- **Approved by classification societies:** ✓