

## Demonstration Meters



Electronic Multimeter



Electronic Power Meter

- To be used in demonstration racks or as table instruments
- Application in all fields of technology
- With big dual scales
- Protected against overload
- With built-in power supply

The Demonstration Meters can be used for measuring values when experimenting with hps Training Systems.

They have the same dimensions as the Demonstration Boards and can be suspended in hps bench racks or demonstration racks during experimenting.

All measuring ranges of the Demonstration Meters are protected against overload by internal circuits or fuses.

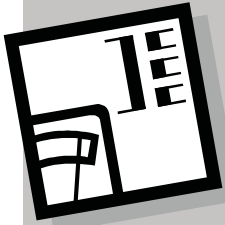
Large dual scales with figures up to 19 mm height make accurate reading possible even at far distances.

The front panel of the Demonstration Meters is made of 5 mm thick laminate, matt blue in colour with white printing representing the built-in function groups.

The rear of the Meters is protected with a grey plastic cover.

Connections are made via 4 mm safety sockets which are integrated in the front panel.

The following pages contain further technical data and illustrations of the Demonstration Meters.



## Demonstration Meters

### Electronic Multimeter



Type 1070 (zeropoint left)



Type 1071 (centre zeropoint)

#### Measuring ranges

- DC and AC  
voltage: 0 ... 0.03 / 0.1 / 0.3 / 1 / 3 / 10 / 30 / 100 / 300 / 1000 V  
input impedance: 10 M $\Omega$   
input capacitance: 33 pF  
frequency range: 10 Hz ... 100 kHz
- DC and AC  
current: 0 ... 0.1 / 0.3 / 1 / 3 / 10 / 30 mA  
0 ... 0.1 / 0.3 / 1 / 3 / 10 A  
voltage drop: < 50 mV  
(150 mV in 10 A range)  
frequency range: 10 Hz ... 100 kHz

#### Other

- Current and voltage input via 4 mm safety jacks
- Error limit: < +/- 3 %

#### Mains connection

- 230 V AC / 115 V AC (110 V AC); 50 ... 60 Hz; 15 VA

#### Dimensions (Type 1070/Type 1071)

- Casing: 266 x 297 x 150 mm (w x h x d)
- Meter: 230 x 185 mm (w x h)

#### Weight (Type 1070/Type 1071)

- 3.2 kg

### RMS Multimeter



Type 1075

#### Measuring ranges

- Voltage (AC/DC): 0 ... 3 / 10 / 30 / 100 / 300 / 1000 V
- Current (AC/DC): 0 ... 0.1 / 0.3 / 1 / 3 / 10 A
- Resistance: 0 ... 100 / 300  $\Omega$  / 1 / 3 / 10 / 30 / 100 / 300 k $\Omega$  / 1 / 3 / 10 M $\Omega$

#### Other

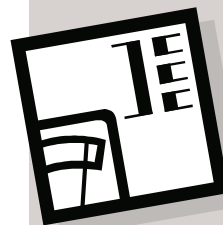
- Input impedance: 10 M $\Omega$
- Frequency range: 10 Hz ... 10 kHz
- Crest factor: 10
- Error limit: 5 % (5 kHz ... 10 kHz)

#### Mains connection

- 230 V AC / 115 V AC (110 V AC); 50 ... 60 Hz; 4 VA

#### Dimensions/weight

- 266 x 297 x 150 mm (w x h x d) / 2.8 kg



## Demonstration Meters

### Electronic Power Meter



Type 1077

#### Measuring ranges

- Voltage (AC/DC): 0 ... 3 / 10 / 30 / 100 / 300 / 1000 V
- Current (AC/DC): 0 ... 0.1 / 0.3 / 1 / 3 / 10 A
- Active power: 0 ... 10 kW (crest factor 4)
- Reactive power: 0 ... 10 kVar (capacitive and inductive)
- Apparent power: 0 ... 10 kVA

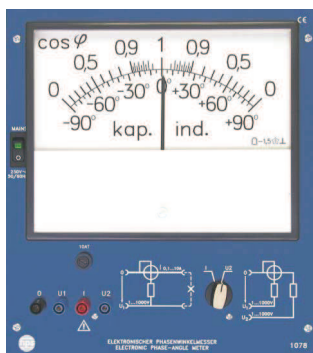
#### Mains connection

- 230 V AC/115 V AC (110 V AC); 50 ... 60 Hz; 20 VA

#### Dimensions / weight

- 266 x 297 x 150 mm (w x h x d) / 3.3 kg

### Electronic Phase-Angle Meter



Type 1078

#### Measuring ranges

- Voltage: 1 V ... 1000 V (rms)
- Current: 0.1 A ... 10 A (rms)
- Frequency: 10 Hz ... 100 kHz

#### Meter

- Phase angle: -90° ... 0 ... +90°
- Power factor: 0 ... 1 (leading); 1 ... 0 (lagging)

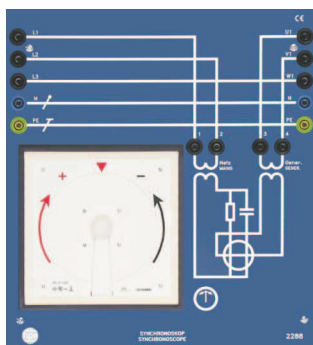
#### Mains connection

- 230 V AC/115 V AC (110 V AC); 50 ... 60 Hz; 4 VA

#### Dimensions / weight

- 266 x 297 x 150 mm (w x h x d) / 2.7 kg

### Synchronoscope



Type 2288

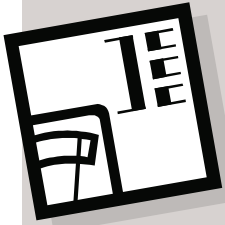
For synchronisation of a generator to the mains

#### Rated Voltage

- 230 V AC/400 V AC; 50 ... 60 Hz

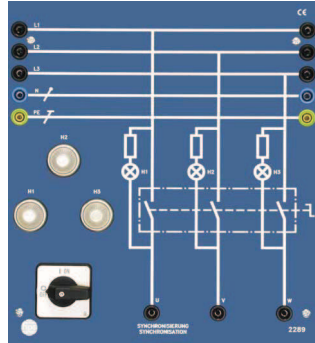
#### Dimensions / weight

- Casing: 266 x 297 x 135 mm (w x h x d)
- Meter: 144 x 144 mm (w x h)
- Weight: 2.3 kg



## Demonstration Meters

### Synchronisation



Type 2289

For synchronisation of a generator to the mains

#### Voltage

- For three-phase connection:  
220 V ... 240 V AC/380 V ... 415 V AC; 50 ... 60 Hz

#### Indication

- Through three lamps

#### Dimensions/weight

- 266 x 297 x 120 mm (w x h x d)/1.25 kg

### Speed Indicator



Type 5511

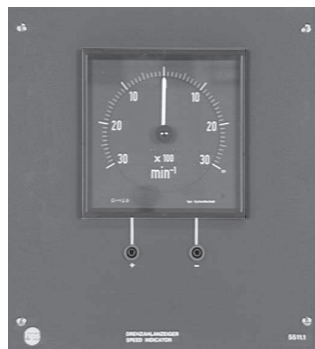
#### Measuring range

- Speed: 0 ... 1500 min<sup>-1</sup> (for both directions of rotation)
- Voltage: 10 V DC (full-scale deflection)

#### Dimensions / weight

- Casing: 266 x 297 x 90 mm (w x h x d)
- Meter: 144 x 144 mm (w x h)
- Weight: 1.55 kg

### Speed Indicator



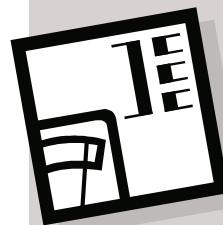
Type 5511.1

#### Measuring range

- Speed: 0 ... 3000 min<sup>-1</sup> (for both directions of rotation)
- Voltage: 10 V DC (full-scale deflection)

#### Dimensions / weight

- Casing: 266 x 297 x 90 mm (w x h x d)
- Meter: 144 x 144 mm (w x h)
- Weight: 1.55 kg



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## Demonstration Meters

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### Further Demonstration Meters (without illustration)

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#### **Dual Voltmeter** Type 2257

- With two moving iron instruments
- 2 x 500 V AC/DC
- Dimensions of casing: 266 x 297 x 90 mm (w x h x d)
- Dimensions of meter: 144 x 144 mm (w x h)

#### **Dual Frequency Meter** Type 2280.1

- Frequency: 46 ... 54 Hz
- Voltage: 230 V AC/400 V AC
- Dimensions of casing: 266 x 297 x 90 mm (w x h x d)
- Dimensions of meter: 144 x 144 mm (w x h)

#### **Phase-Sequence Indicator** Type 2283

- 220 V ... 240 V AC/380 V ... 415 V AC; 50 ... 60 Hz
- With lamp indication
- Dimensions: 95 x 297 x 90 mm (w x h x d)

#### **Power Factor Meter** Type 2284.1

- For symmetrical three-phase load
- 230 V AC/400 V AC; 1 A; 50 ... 60 Hz
- Scale: 0.3 inductive, 0.7 capacitive
- Dimensions of casing: 266 x 297 x 90 mm (w x h x d)
- Dimensions of meter: 144 x 144 mm (w x h)

Subject to technical modification.