

# METRAHit® 16I and 16T

## Analog-Digital Multimeter with Insulation Measurement

- **Insulation resist. measurement:** 16I: 500 V/1000 V, 16T: 100 V
- **Multifunctional multimeter** (V,  $\Omega$ ,  $\mu$ F, Hz)
- **AC and AC+DC TRMS measurement**
- **Input resistance** for voltage measurement adjustable between 10 M $\Omega$  and 1 M $\Omega$
- **Scaled current measurement** from 10 mA to 100 A with accessory clip-on current sensor
- **Precision temperature meter** °C, °F, for Pt100 and Pt1000 sensors
- **Acoustic signals** for:
  - Continuity testing
  - Dangerous contact voltages
  - Violation of overrange limits
  - Falling below generally valid limit values for insulation resistance measurement
- **Storage of min/max values**
- **Rugged, reliable design, protective rubber cover as standard equipment and ABS** (Automatic Blocking System for 16I)
- **Windows software** for graphic representation of meas. values and calibration via accessory RS232 interface



### Multimeter with Insulation Measurement

METRAHit® 16I and 16T multimeters allow for insulation resistance measurement with a test voltage of 500 V or 1000 V for the METRAHit® 16I, or 100 V for the METRAHit® 16T in addition to multimeter functions. The METRAHit® 16I includes the V<sub>1M $\Omega$</sub>  selector switch position. Capacitive DUTs can be discharged with this function, and display errors due to capacitive coupling during voltage measurements can be curtailed.

### RMS Value with Distorted Waveform

The measuring process allows for TRMS measurement independent of the waveform for periodic quantities (AC) and pulsating quantities (AC and DC).

### Display of Negative Values at the Analog Scale

Negative values are also displayed at the analog scale for zero-frequency quantities, so that fluctuations of the measured quantity at the zero point can be observed.

### Automatic Measurement Value Storage

The stabilized measurement value is automatically retained by the DATA HOLD function. A patented process assures that the actual measurement value is stored rather than a random value, even when rapid changes to the measured quantity occur. The stored measurement value appears at the digital display. The display of current measurement values is continued at the analog scale.

### Automatic/Manual Measuring Range Selection

Quantities to be measured are selected with the rotary switch. The measuring range can either be matched automatically to the measurement value, or selected manually.

### Calibration

METRAHit® 16I and 16T multimeters are shipped with DKD calibration certificates. In addition to standard electrical quantities, our DKD calibration laboratory is also accredited for high value resistance of up to 30 G $\Omega$ /1000 V.

Multimeters can be re-calibrated in our DKD calibration laboratory after expiration of the customer selected calibration interval (manufacturer recommended interval of 1 year).

### Guarantee

3 years material and workmanship.

### Standards for Use as Insulation Measuring Instrument

|  |  |
|--|--|
| <p>EN 61557-1<br/>VDE 0413 Part 1<br/>EN 61557-2<br/>VDE 0413 Part 2</p> | <p>Equipment for testing, measuring or monitoring of protective measures<br/>– Insulation resistance</p> |
|--|--|

# METRAHit® 16I and 16T

## Analog-Digital Multimeter with Insulation Measurement

### Characteristic Values

| Measuring Function                    | Measuring Range                    | Resolution | Input Impedance                  |                                  | Digital Display Inherent Deviation<br>±(...% of rdg. +... digit) at reference conditions | Overload Capacity <sup>3)</sup> |            |
|---------------------------------------|------------------------------------|------------|----------------------------------|----------------------------------|--|---------------------------------|------------|
|                                       |                                    |            |                                  |                                  |  | Value                           | Duration   |
| <b>V<sub>DC</sub></b>                 | 30.00 mV                           | 10 μV      | >10 GΩ // < 40 pF                |                                  | 0.5 + 3 <sup>4)</sup>  | 1000 V <sup>9)</sup>            | continuous |
|                                       | 300.0 mV                           | 100 μV     | >10 GΩ // < 40 pF                |                                  | 0.5 + 3  |                                 |            |
|                                       | 3.000 V                            | 1 mV       | 11 MΩ // < 40 pF                 |                                  | 0.25 + 1   |                                 |            |
|                                       | 30.00 V                            | 10 mV      | 10 MΩ // < 40 pF                 |                                  | 0.25 + 1   |                                 |            |
|                                       | 300.0 V                            | 100 mV     | 10 MΩ // < 40 pF                 |                                  | 0.25 + 1   |                                 |            |
|                                       | 1000 <sup>9)</sup> V               | 1 V        | 10 MΩ // < 40 pF                 |                                  | 0.35 + 1   |                                 |            |
| <b>V<sub>AC</sub></b> <sup>1)</sup>   | 3.000 V                            | 1 mV       | 11 MΩ // < 40 pF                 |                                  | 1.0 + 3 (> 10 digits)  | DC                              | continuous |
|                                       | 30.00 V                            | 10 mV      | 10 MΩ // < 40 pF                 |                                  |  | AC eff sine                     |            |
|                                       | 300.0 V                            | 100 mV     | 10 MΩ // < 40 pF                 |                                  |  |                                 |            |
|                                       | 1000 <sup>9)</sup> V               | 1 V        | 10 MΩ // < 40 pF                 |                                  |  |                                 |            |
| <b>V<sub>TRMS</sub></b> <sup>1)</sup> | 3.000 V                            | 1 mV       | 11 MΩ // < 40 pF                 |                                  | 1.0 + 3 (> 10 digits)  | DC                              | continuous |
|                                       | 30.00 V                            | 10 mV      | 10 MΩ // < 40 pF                 |                                  |  |                                 |            |
|                                       | 300.0 V                            | 100 mV     | 10 MΩ // < 40 pF                 |                                  |  |                                 |            |
|                                       | 1000 <sup>9)</sup> V               | 1 V        | 10 MΩ // < 40 pF                 |                                  |  |                                 |            |
| <b>A<sub>AC</sub></b> <sup>2)</sup>   | 30/100 A                           | 10/100 mA  | —                                |                                  | 2.5 + 3 (> 10 digits)  | 120 A                           | continuous |
|                                       |                                    |            | open-circuit voltage             |                                  |  |                                 |            |
| <b>Ω</b>                              | 30.00 Ω                            | 10 mΩ      | max. 3.2 V                       |                                  | 0.5 + 3 <sup>4)</sup>  | 500 V                           | max. 10 s  |
|                                       | 300.0 Ω                            | 100 mΩ     | max. 3.2 V                       |                                  | 0.5 + 3  |                                 |            |
|                                       | 3.000 kΩ                           | 1 Ω        | max. 1.25 V                      |                                  | 0.4 + 1  |                                 |            |
|                                       | 30.00 kΩ                           | 10 Ω       | max. 1.25 V                      |                                  | 0.4 + 1  |                                 |            |
|                                       | 300.0 kΩ                           | 100 Ω      | max. 1.25 V                      |                                  | 0.4 + 1  |                                 |            |
|                                       | 3.000 MΩ                           | 1 kΩ       | max. 1.25 V                      |                                  | 0.6 + 1  |                                 |            |
|                                       | 30.00 MΩ                           | 10 kΩ      | max. 1.25 V                      |                                  | 2.0 + 1  |                                 |            |
| <b>→</b>                              | 2.000 V                            | 1 mV       | max. 3.2 V                       |                                  | 0.25 + 1   |                                 |            |
|                                       |                                    |            | discharge resistance             | U <sub>0 max</sub>               |  |                                 |            |
| <b>F</b>                              | 30.00 <sup>10)</sup> nF            | 10 pF      | 250kΩ                            | 2,5 V                            | 1.0 + 3 <sup>5)</sup>  | 500 V<br>DC / AC<br>eff<br>sine | max. 10 s  |
|                                       | 300.0 nF                           | 100 pF     | 250kΩ                            | 2,5 V                            | 1.0 + 3  |                                 |            |
|                                       | 3.000 μF                           | 1 nF       | 25 kΩ                            | 2,5 V                            | 1.0 + 3  |                                 |            |
|                                       | 30.00 <sup>10)</sup> μF            | 10 nF      | 25 kΩ                            | 2,5 V                            | 3.0 + 3  |                                 |            |
|                                       |                                    |            | f <sub>min</sub> V <sub>DC</sub> | f <sub>min</sub> V <sub>AC</sub> |  |                                 |            |
| <b>Hz</b>                             | 300.0 Hz                           | 0.1 Hz     | 1 Hz                             | 45 Hz                            | 0.5 + 1 <sup>6)</sup>  | ≤ 1000 V <sup>9)</sup>          | continuous |
|                                       | 3.000 kHz                          | 1 Hz       | 1 Hz                             | 45 Hz                            |  |                                 |            |
|                                       | 30.00 kHz                          | 10 Hz      | 10 Hz                            | 45 Hz                            |  |                                 |            |
|                                       | 100.0 kHz                          | 100 Hz     | 100 Hz                           | 100 Hz                           |  |                                 |            |
| <b>°C</b>                             | Pt 100<br>-200.0 ...<br>+200.0 °C  | 0.1 °C     | —                                | —                                | 2 Kelvin + 5 digits <sup>8)</sup>  | 500 V                           | max. 10 s  |
|                                       | +200.0 ...<br>+800.0 °C            | 0.1 °C     | —                                | —                                | 1.0 + 5 <sup>8)</sup>  | DC                              |            |
|                                       | Pt 1000<br>-100.0 ...<br>+200.0 °C | 0.1 °C     | —                                | —                                | 2 Kelvin + 5 digits <sup>8)</sup>  | AC<br>eff<br>sine               |            |
|                                       | +200.0 ...<br>+800.0 °C            | 0.1 °C     | —                                | —                                | 1.0 + 5 <sup>8)</sup>  |                                 |            |
| <b>°F</b>                             | Pt 100<br>-300.0 ...<br>+400.0 °C  | 0.1 °F     | —                                | —                                | 4 Kelvin + 10 digits <sup>8)</sup>   | 500 V                           | max. 10 s  |
|                                       | +400.0 ...<br>+999.0 °C            | 0.1 °F     | —                                | —                                | 1.0 + 10 <sup>8)</sup>   | DC                              |            |
|                                       | Pt 1000<br>-145.0 ...<br>+400.0 °C | 0.1 °F     | —                                | —                                | 4 Kelvin + 10 digits <sup>8)</sup>   | AC<br>eff<br>sine               |            |
|                                       | +400.0 ...<br>+999.0 °C            | 0.1 °F     | —                                | —                                | 1.0 + 10 <sup>8)</sup>   |                                 |            |

<sup>1)</sup> TRMS measurement

<sup>2)</sup> Measurement with type WZ12B clip-on current sensor

<sup>3)</sup> At -20 °C ... +40 °C

<sup>4)</sup> Without zero setting + 35 digits

<sup>5)</sup> Without zero setting + 50 digits

<sup>6),7)</sup> Range <sup>6)</sup> 3 V ≙: U<sub>E</sub> = 1.5 V<sub>eff/rms</sub> ... 100 V<sub>eff/rms</sub> <sup>7)</sup> U<sub>E</sub> = 2.5 V<sub>eff</sub> ... 30 V<sub>eff</sub>

<sup>6)</sup> 30 V ≙: U<sub>E</sub> = 15 V<sub>eff/rms</sub> ... 300 V<sub>eff/rms</sub> <sup>7)</sup> U<sub>E</sub> = 25 V<sub>eff</sub> ... 30 V<sub>eff</sub>

<sup>6)</sup> 300 V ≙: U<sub>E</sub> = 150 V<sub>eff/rms</sub> ... 1000 V<sub>eff/rms</sub> —

<sup>8)</sup> Without probe

<sup>9)</sup> METRAHit® 16T: 600 V

<sup>10)</sup> METRAHit® 16I only

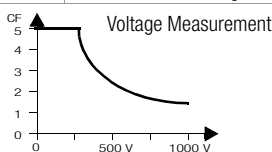
# METRAHit® 16I and 16T Analog-Digital Multimeter with Insulation Measurement

## Insulation Measurement

| Measuring Function<br>Switch Position          | Measuring Range                               | Resolution                                | Digital Display<br>Inherent Deviation at<br>Reference Conditions |  |                       |                       |                      |
|--|---|---|--|--|-----------------------|-----------------------|----------------------|
| 16I  | V <sub>1MΩ</sub>                              | 0 ... 1000 V $\approx$                    | 1 V<br>±(1% of rdg. + 10 d)                                      |  |                       |                       |                      |
|  | MΩ <sub>ISO</sub>                             | 0 ... 1000 V $\approx$                    | 1 V<br>±(1% of rdg. + 10 d)                                      |  |                       |                       |                      |
|  | MΩ <sub>ISO</sub><br>(U <sub>N</sub> = 500 V) | 0.100 ... 1.600 MΩ                        | 1 kΩ   | ±(3% of rdg. + 2 d)                        |                       |                       |                      |
|  |   | 01.40 ... 16.00 MΩ                        | 10 kΩ  |  |                       |                       |                      |
| 014.0 ... 160.0 MΩ                             |   | 100 kΩ                                    |  |  |                       |                       |                      |
| 0140 ... 1600 MΩ                               | 1 MΩ  |   |  |  |                       |                       |                      |
| MΩ <sub>ISO</sub><br>(U <sub>N</sub> = 1000 V) | 0.100 ... 3.100 MΩ                            | 1 kΩ                                      | ±(3% of rdg. + 2 d)  |  |                       |                       |                      |
|  | 02.80 ... 31.00 MΩ                            | 10 kΩ                                     |  |  |                       |                       |                      |
|  | 028.0 ... 310.0 MΩ                            | 100 kΩ                                    |  |  |                       |                       |                      |
|  | 0280 ... 3100 MΩ                              | 1 MΩ                                      |  |  |                       |                       |                      |
| 16T  | MΩ  | 0 ... 100 V $\approx$                     | 0.1 V<br>±(1% of rdg. + 10 d)                                    |  |                       |                       |                      |
|  | MΩ<br>(U <sub>N</sub> = 100 V)                | 000.0 ... 310.0 kΩ                        | 0.1 kΩ<br>±(3% of rdg. + 10 d)                                   |  |                       |                       |                      |
|  |   | 0.280 ... 3.100 MΩ                        | 1 kΩ   | ±(3% of rdg. + 2 d)                        |                       |                       |                      |
|  |   | 02.80 ... 31.00 MΩ                        | 10 kΩ  |  |                       |                       |                      |
| 028.0 ... 310.0 MΩ                             | 100 kΩ  |   |  |  |                       |                       |                      |
| Meas. Function<br>Switch Position              | Nom. Voltage<br>U <sub>N</sub>                | Open-Circuit<br>Voltage<br>U <sub>0</sub> | Nom. Current<br>I <sub>N</sub>                                   | Short-Circuit<br>Current<br>I <sub>k</sub> | Acoustic<br>Signal at | Overload<br>Value     | Capacity<br>Duration |
| 16I  | V <sub>1MΩ</sub>                              | —   | —  | —  | U > 1000 V            | 1000 V $\approx$      | cont.                |
|  | MΩ <sub>ISO</sub>                             | —   | —  | —  | U > 50 V              | 1000 V $\approx$      | max.<br>10 s         |
|  |   | 500 V                                     | < 1.15 x U <sub>N</sub>  | > 1.0 mA                                   | < 2.5 mA              | R <sub>x</sub> < 1 MΩ |                      |
| 1000 V   | < 1.15 x U <sub>N</sub>                       | > 1.0 mA                                  | < 2.5 mA   | R <sub>x</sub> < 2 MΩ                      | 1000 V $\approx$      |                       |                      |
| 16T  | MΩ  | —   | —  | —  | U > 50 V              | 100 V $\approx$       | cont.                |
|  | MΩ  | 100 V                                     | < 1.15 x U <sub>N</sub>  | > 1.0 mA                                   | < 1.5 mA              | R <sub>x</sub> < 1 MΩ | max.<br>10 s         |

## Influencing Quantities and Influence Errors

| Influenc. Quantity          | Sphere of Influence  | Meas. Quantity/<br>Measuring Range   | Influence Error <sup>1)</sup><br>±(... % of rdg. + ... digit) |
|-----------------------------|--|--|---|
| Temperature                 | 0 °C ... +21 °C<br>and<br>+25 °C ... +40 °C  | 30/300 mV $\approx$  | 1.0 + 3   |
|                             |  | 3 ... 300 V $\approx$  | 0.15 + 1  |
|                             |  | 1000 V <sup>5)</sup> $\approx$   | 0.2 + 1   |
|                             |  | V $\sim$   | 0.4 + 2   |
|                             |  | 30 Ω <sup>2)</sup>   | 0.15 + 2  |
|                             |  | 300 Ω  | 0.25 + 2  |
|                             |  | 3 kΩ ... 3 MΩ  | 0.15 + 1  |
|                             |  | 30 MΩ  | 1.0 + 1   |
|                             |  | 30 nF <sup>2)</sup> ... 3 μF   | 0.5 + 2 <sup>6)</sup>   |
|                             |  | 30 μF  | 2.0 + 2   |
|                             |  | Hz   | 0.5 + 1   |
|                             |  | -200 ... +200 °C   | 0.5 K + 2   |
|                             |  | +200 ... +800 °C   | 0.5 + 2   |
|                             |  | -300 ... +400 °F   | 1.0 K + 4   |
|                             |  | +400 ... +999 °F   | 0.5 + 2   |
| Frequency of Meas. Quantity | 15 Hz ... < 30 Hz<br>30 Hz ... < 45 Hz<br>> 65 Hz ... 400 Hz<br>> 400 Hz ... 1 kHz | 3 ... 1000 V <sup>5)</sup> $\sim$  | 1.0 + 3   |
|                             |  |  | 0.5 + 3   |
|                             |  |  | 2.0 + 3   |
|                             |  |  | 3.0 + 3   |
| Waveform of Meas. Quantity  | crest factor CF<br>1 ... 3<br>> 3 ... 5  | V $\sim$ <sup>4)</sup>   | ±1 % of rdg.<br>±3 % of rdg.                                  |
|                             |  |  |   |
| 3)                          |  | The allowable crest factor CF for the periodic quantity to be measured depends upon the displayed value: |   |



- For temperature: indicated error values apply per 10 K change in temperature. For frequency: indicated error values valid as of display of 300 digits.
- With zero setting
- For unknown waveform (CF > 2): Measure with manual range selection.
- Except for sinusoidal waveforms
- METRAHit® 16T: 600 V
- METRAHit® 16T: 2+2

| Measuring Function | U <sub>N</sub> | Nominal Range of Use | Operating Error |
|--------------------|----------------|----------------------|-----------------|
| 16I                | 500 V          | 100 kΩ ... 1600 MΩ   | ± 10 %          |
|                    | 1000 V         | 100 kΩ ... 3100 MΩ   |                 |
| 16T                | 100 V          | 100 kΩ ... 310 MΩ    | ± 10 %          |

| Influencing Qty.  | Influence Range                      | Measuring Ranges                                    | Influence Error       |
|-------------------|--------------------------------------|---|-----------------------|
| Battery Voltage   | -1 ... < 7.9 V<br>> 8.1 V ... 10.0 V | V $\approx$   | ±2 digits             |
|                   |                                      | V $\sim$  | ±4 digits             |
|                   |                                      | 30 Ω/300 Ω/°C/°F                                    | ±4 digits             |
|                   |                                      | 3 kΩ ... 30 MΩ                                      | ±3 digits             |
|                   |                                      | MΩ <sub>ISO</sub> , MΩ                              | ±2 digits             |
| Relative Humidity | 75%, 3 days,<br>device off           | nF, μF  | ±1 digit              |
|                   |                                      | Hz  | ±1 digit              |
| DATA              | —                                    | V $\approx$ , Ω, MΩ <sub>ISO</sub> , MΩ, Hz, °C, °F | 1x inherent deviation |
| MIN / MAX         | —                                    | V $\approx$   | ±1 digit              |
|                   |                                      |   | ±2 digits             |

\* As of display of the  $\rightarrow$  symbol.

| Influencing Quantity             | Influence Range  | Measuring Ranges            | Damping  |
|----------------------------------|--|-----------------------------|----------|
| Common-Mode Interference Voltage | interference max. 1000 V $\sim$ <sup>5)</sup><br>interference max. 1000 V $\sim$ <sup>5)</sup><br>50 Hz, 60 Hz sine  | V $\approx$                 | > 120 dB |
|                                  |  | 3 V $\sim$ , 30 V $\sim$    | > 80 dB  |
|                                  |  | 300 V $\sim$                | > 70 dB  |
| Series-Mode Interference Voltage | interference V $\sim$ ,<br>respective meas. range nom. value,<br>max. 1000 V $\sim$ <sup>5)</sup> 50 Hz, 60 Hz sine<br>interference max. 1000 V $\sim$ <sup>5)</sup> | 1000 V $\sim$ <sup>5)</sup> | > 60 dB  |
|                                  |  | V $\approx$                 | > 50 dB  |
|                                  |  | V $\sim$                    | > 110 dB |

<sup>5)</sup> METRAHit® 16T: 600 V

## Response Time (after manual range selection)

| Measured Qty./<br>Meas. Range | Response Time  |                 | Measured Quantity<br>Jump Function         |
|-------------------------------|----------------|-----------------|--|
|                               | Analog Display | Digital Display |  |
| V $\approx$ , V $\sim$        | 0.7 s          | 1.5 s           | from 0 to 80 % of upper range limit        |
| 30 Ω ... 3 MΩ                 | 1.5 s          | 2 s             | from $\infty$ to 50 % of upper range limit |
|                               |                | 4 s             |  |
| 30 MΩ                         | 4 s            | 5 s             |  |
| $\rightarrow$                 | 0.7 s          | 1.5 s           |  |
| nF, μF, °C, °F                |                | max. 1... 3 s   | from 0 to 50 % of upper range limit        |
| 300 Hz, 3 kHz                 |                | max. 2 s        |  |
| 30 kHz                        |                | max. 0.7 s      |  |

## Reference Conditions

|                   |                 |
|-------------------|-----------------|
| Ambient Temp.     | +23 °C ± 2 K    |
| Relative Humidity | 45 % ... 55 %   |
| Measured Quantity |                 |
| Frequency         | 45 Hz ... 65 Hz |
| Measured Quantity |                 |
| Waveform          | sine            |
| Battery Voltage   | 8 V ± 0.1 V     |

## Display

LCD display field (65 mm x 30 mm) with analog and digital display including display of unit of measure, voltage type and various special functions.

## Analog

|              |  |
|--------------|--|
| Display      | LCD scale with pointer                               |
| Scale Length | 55 mm for V $\approx$ ;<br>47 mm in all other ranges |

## Scaling

± 5 ... 0 ... ±30 with 35 scale graduations for  $\approx$ , 0 ... 30 with 30 scale graduations for all other ranges

# METRAHit® 16I and 16T

## Analog-Digital Multimeter with Insulation Measurement

Polarity Display with automatic reversal  
 Overflow Display with triangle  
 Measurement Rate 20 measurements per second,  
 for  $\Omega$ : 10 measurements per second

**Digital**  
 Display/Char. Height 7 segment characters / 15 mm  
 Number of Places  $3\frac{3}{4}$  places  $\approx$  3100 steps  
 Overflow Display "OL" is displayed  
 Polarity Display "-" sign is displayed with plus pole at "1"  
 Measurement Rate 2 measurements per second,  
 for  $\Omega$  and  $^{\circ}\text{C}$ : 1 measurement per second

**Power Supply**  
 Battery 9 V flat cell battery;  
 alkali-manganese cell per IEC 6 LR 61  
 Autom. Shut-Down if measurement value remains constant  
 and no operating elements are activated  
 for approx. 10 minutes. Can also be  
 switched to continuous operation.

| Meas. Function            | Nom. Voltage $U_N$ | DUT Resistance | Service Life in Hours | No. of Measurements Possible with Nom. Curr. per VDE 0413 <sup>2)</sup> |
|---------------------------|--------------------|----------------|-----------------------|---|
| V $\overline{\text{---}}$ |                    |                | 750 <sup>1)</sup>     |   |
| V $\sim$                  |                    |                | 150 <sup>1)</sup>     |   |
| $M\Omega$                 | 100 V              | 1 $M\Omega$    | 50                    |   |
|                           | 100 V              | 100 $k\Omega$  |                       | 3000  |
| $M\Omega_{\text{ISO}}$    | 500 V              | 500 $k\Omega$  |                       | 600   |
|                           | 1000 V             | 1 $M\Omega$    |                       | 200   |

<sup>1)</sup> Times 0.7 for interface operation

<sup>2)</sup> Battery control: automatic display of the  $\text{+}$  symbol if battery voltage falls below 7 V.

### Electrical Safety

Protection Class II per IEC 1010-1:1990, IEC 1010-1/  
 A2: 1995  
 EN 61010-1:1993, EN 61010-1 / A2:1995

Overvoltage Category II \* III  
 Nominal Voltage 1000 V \* 600 V  
 Fouling Factor 2 2  
 Test Voltage 5.55 kV $\sim$  per IEC 61010-1/EN 61010-1

### EMC

Product standard EN 61326-1: 1997, EN 61326: 1997/  
 A1: 1998  
 Interference Emission EN 55022: 1998 – class B  
 Interference Immunity EN 61000-4-2: 1995  
 – 4 kV/8 kV contact/atmosph. discharge  
 – power feature A  
 EN 61000-4-3: 1996+A1: 1998  
 – 3 V/m  
 – power feature B

### Interface

Type RS232C, serial, per DIN 19241  
 Data Transmission optical with infrared light  
 Baud Rate 18192 bit/s

### Ambient Conditions

Operating Temp.  $-20^{\circ}\text{C} \dots +50^{\circ}\text{C}$   
 Storage Temperature  $-25^{\circ}\text{C} \dots +70^{\circ}\text{C}$  (without battery)  
 Relative Humidity  $\leq 75\%$ , no condensation allowed  
 Elevation to 2000 m  
 Deployment indoors; outdoors: only in the specified  
 ambient conditions

### Mechanical Design

Protection case: IP 50, connector jacks: IP 20  
 per EN 60529 VDE 0470 Part 1  
 Dimensions 84 mm x 195 mm x 35 mm  
 Weight approx. 0.35 kg with battery

### Order Information

| Designation   | Type                          | Article Number     |
|---|-------------------------------|--------------------|
| Multimeter with insulation measurement including protective rubber cover, carrying strap and KS 17 cable set for test voltage: 500/1000 V for test voltage: 100 V | METRAHit 16I<br>METRAHit 16T* | M216B<br>M216A     |
| METRAHit® 16I, HC20 carrying case, KS17 cable set, TF220 temperature sensor   | METRAHit 16I-Set 1            | M216E              |
| METRAHit® 16I, HC20 carrying case, TF220 temperature sensor, WZ12B clip-on current sensor   | METRAHit 16I-Set 2            | M216F              |
| Single-channel memory pack with SI232-II memory adapter, cable and METRAwin®10/METRAHit® software   | 1-CH. Pack                    | GTZ 3231 020 R0001 |
| 4-channel memory pack with four SI232-II memory adapters, cable and METRAwin®10/METRAHit® software  | 4-CH. Pack                    | GTZ 3234 020 R0001 |
| Memory adapter for METRAHit®S   | SI232-II <sup>D)</sup>        | GTZ 3242 020 R0001 |
| 2 meter long RS232 interface cable (included with Z3231)  | Z3241                         | GTZ 3241 000 R0001 |
| METRAwin®10/METRAHit® software update   | Z3240                         | GTZ 3240 000 R0001 |
| Pt100 temp. sensor for surface and immersion measurements, $-40 \dots +600^{\circ}\text{C}$   | Z3409                         | GTZ 3409 000 R0001 |
| Pt1000 temperature sensor for measurements in gases and liquids, $-50 \dots +220^{\circ}\text{C}$ (for service applications and household appliances)             | TF220                         | Z102A              |
| Pt100 oven sensor, $-50 \dots +550^{\circ}\text{C}$   | TF550                         | GTZ 3408 000 R0001 |
| 10 adhesive PT100 temperature sensors, from $-50 \dots +550^{\circ}\text{C}$  | TS-Chipset                    | GTZ 3406 000 R0001 |
| Ri adapter: 200 $k\Omega$ /230 V  | R200K                         | Z101A              |
| Carrying bag  | F829                          | GTZ 3301 000 R0003 |
| Ever-ready bag  | F836                          | GTZ 3302 000 R0001 |
| Hard case   | HC20                          | Z113A              |
| Clip-on current sensor 10 mA ... 100 A, 1 mV/10 mA, jaw opening: 15 mm dia.   | WZ12B <sup>D)</sup>           | Z219B              |

<sup>D)</sup> Data Sheet available

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