A2000
Multifunctional Power Meter

Applications

The measuring instrument is used for the analysis of alternating current systems, in particular where conventional analog measuring instruments included in distribution systems no longer fulfill continuously growing demands. This is especially applicable where harmonic distortion and harmonics are crucial in addition to current, voltage and power.

As a further range of applications, the meter is also capable of eliminating combined use of measuring instruments which are operated simultaneously along with conventional recorders and fault indicators. In combination with current and voltage transformers, the instrument performs the most important measurements required in low and medium-voltage systems.

Analog outputs, limit values and interfaces are available for the monitoring and processing of measured values. A time curve is simultaneously recorded for up to 12 measured values in a fail-safe system if the instrument version with integrated memory is utilized. Important measured values can be monitored continuously over a long period of time, or recording can be triggered for a specified duration by an event. In the case of event controlled recording, it is also possible to record the pre-history which lead up to the event at the same speed. This provides the user with a comprehensive overview of the pre-history which has resulted in an error. The instrument thus fulfills the function of a fault recorder significantly better than conventional paper chart recorders.

Applicable Regulations and Standards

IEC/EN 61010-1 / VDE 0411 Part 1
Safety requirements for electrical equipment for measurement, control and laboratory use

DIN 43864
Current interface for pulse transmission between impulse meters and tariff devices (for pulse output)

DIN EN 61326
VDE 0843 Part 20
Electrical equipment for measurement, control and laboratory use – EMC requirements

IEC/EN 60529/VDE 0470 Part 1
Protection provided by enclosures (IP code)

Function and Operational Principle

The measuring instrument acquires instantaneous values for star-connected voltages and currents at three-phase electrical systems. If no neutral is available, the instrument automatically creates a virtual neutral point. The speed at which measured values are logged depends upon the respective line frequency. Each measured value is updated 32 times per period, which allows for the acquisition of measuring signals of up to the 15th harmonic. After these values have been stored to memory, analysis and calculation of data such as delta and star-connected currents and voltages begin, as well as the determination of parameters for power, power factor, energy, harmonic distortion and harmonics. The values are calculated in accordance with DIN 40110 Part 1 and 2.

All calculated values are available to the display, the serial interface, the analog outputs and the limit value monitoring system.
Data Storage
Up to 12 measured values can be selected for storage to memory. The measuring instrument acquires these measured values once every 300 ms and stores them first to intermediate memory. These values are then averaged in accordance with the selected sampling rate and are stored to permanent memory as mean values. The sampling rate is adjustable from 300 ms to max. 24 hours. Recording is triggered by means of internally selected limit values. The duration of the recording can be set within a range of 1 minute to 31 days. Several events can thus be stored to memory, one after the other. The trigger level which starts the recording can be set to either 0%, 25%, 50% or 75% for the duration of any given recording. This provides the user with an overview of the pre-history of the event which triggered recording, including time and date.

Continuous recording is also possible.
The memory has a capacity for up to 250,000 values. The maximum possible duration of a recording depends upon the number of recorded measured values (1 to 12), and the sampling rate at which they are to be recorded (0.3 s to 24 h).
The memory module is a buffered CMOS RAM. Data integrity is assured for at least 8 years.
**Energy Display**

The instrument is equipped with eight energy meters for the display of energy values. The following energy values appear at these displays upon shipment from the factory:

- Active energy for phases 1, 2 and 3, as well as for the overall system
- Reactive energy for phases 1, 2 and 3, as well as for the overall system

The meters can be reconfigured to display the following energy values during instrument configuration:

<table>
<thead>
<tr>
<th>Type of Energy</th>
<th>Configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active Energy</td>
<td>high tariff, import for the overall system</td>
</tr>
<tr>
<td>Active Energy</td>
<td>low tariff, export for the overall system</td>
</tr>
<tr>
<td>Reactive Energy</td>
<td>high tariff, export for the overall system</td>
</tr>
<tr>
<td>Reactive Energy</td>
<td>low tariff, export for the overall system</td>
</tr>
</tbody>
</table>

Switching from high to low tariff can be accomplished either by means of the synchronization input, an external contact or the data logger’s internal clock (only possible if the instrument version with data logger is utilized).

**Harmonic Analysis**

Harmonic analysis is performed approximately once per second using the 32 averaged, sampled values per signal and mains period. FFT (fast Fourier transformation) provides components up to the 15th harmonic to this end. These are used to calculate the RMS values of the fundamental harmonic (HD 1) and the individual higher harmonics (HD 2 ... 15), as well as total harmonic distortion (THD). These effective values are displayed for the phase currents, and harmonic distortion is displayed for the phase voltages (RMS values with reference to the RMS value for the overall signal).

Due to the fact that the A2000 is not equipped with a special anti-aliasing filter, distortion in excess of the 17th order may influence measurement results for the higher harmonics.

**Serial Interfaces**

As standard equipment, the measuring instrument is provided with an RS 232 and an RS 485 interface. Both interfaces use the same protocol, which can be selected as desired.

The GMC device bus per DIN draft 19244, protocol per EN 60870 and Modbus RTU are available. A baud rate of 1200, 2400, 4800, 9600 or 19,200 can be selected. The address can be set within a range of 0 to 254, and parity can be set to even, odd, none or space.

Several measured values are always transmitted with one data word, allowing for especially fast transmission.

In the versions with LONWORKS interface the serial interface RS 485 has been dimensioned for the LONWORKS interface. No additional settings are required for LON.

In the versions with Profibus DP the serial interface RS 485 has been dimensioned for the Profibus DP. The selected address is used to connect these measuring instruments to the Profibus DP.

**Programming**

The instrument can be programmed either with the keys at the front panel or via serial interface. All selected values remain in memory, even if mains failure should occur.

All programmed parameters, except for the limit values, can be protected against inadvertent change with a switch (LOCK) at the instrument’s rear panel.

This assures that the instrument configuration is not changed during limit value selection.

Alternatively, the LOCK switch can be programmed to protect all parameters, including the limit values, against unauthorized modification.

The following values can be set during programming:

**Type of Electrical System**

4-wire unbalanced load or 3-wire unbalanced load or 3-wire balanced load

The energy meters can be configured to display active and reactive energy for phases L1, L2 and L3, as well as for the overall system, or active and reactive energy for the overall system subdivided into energy import and export, and high and low tariff.

**Inputs**

<table>
<thead>
<tr>
<th>Type of Transformer</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Secondary Transformer Current</td>
<td>5 A or 1 A</td>
</tr>
<tr>
<td>Primary Transformer Current</td>
<td>1 A</td>
</tr>
<tr>
<td>Secondary Transformer Voltage</td>
<td>From 100 V to 500 V in 1 V steps</td>
</tr>
<tr>
<td>Primary Transformer Voltage</td>
<td>From 100 V to 100 kV in 100 V steps to 800 kV in 1 kV steps</td>
</tr>
<tr>
<td>Time Period for Mean Power Values</td>
<td>External via synchronizing input or internally adjustable from 1 to 60 minutes</td>
</tr>
<tr>
<td>Synchronizing Input</td>
<td>External, or operation with internal mean value generation, adjustable from 1 to 60 minutes</td>
</tr>
</tbody>
</table>
**A2000 Multifunctional Power Meter**

<table>
<thead>
<tr>
<th>Synchronizing Input Function</th>
<th>Type of Electrical System</th>
</tr>
</thead>
<tbody>
<tr>
<td>Synchronization of mean values, tariff switching or external control of the limit values relays</td>
<td>Configuration</td>
</tr>
<tr>
<td>2 Analog Inputs</td>
<td>4-wire unbalanced</td>
</tr>
<tr>
<td>– Type of input signal: standard signal (20 mA/10 V) or Pt1000</td>
<td>(The energy meters display active and reactive energy for phases L1, L2 and L3, as well as for the overall system.)</td>
</tr>
<tr>
<td>– Input range for standard: 4 ... 20 mA; 0 ... 20 mA; ±10 mA or 2 ... 10 V; 0 ... 10 V; ±10 V; ±5 V</td>
<td></td>
</tr>
<tr>
<td>– Scaling of measured value for standard signal (range Lo/Hi)</td>
<td></td>
</tr>
<tr>
<td>– Display dimension at Pt1000 (°C/°F)</td>
<td></td>
</tr>
<tr>
<td>– Offset (°C/°F) at Pt1000</td>
<td></td>
</tr>
<tr>
<td>– Position of decimal point</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Outputs</th>
<th>Limit Value Monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>– Monitored measured values (sources)</td>
<td>– Limit Value 1</td>
</tr>
<tr>
<td>– Min-max characteristics</td>
<td>Measured value: ( I_{L1} ) set to: 5 A</td>
</tr>
<tr>
<td>– Hysteresis</td>
<td>No hysteresis</td>
</tr>
<tr>
<td>– Alarm message storage, on/off</td>
<td>Relay closes when exceeded</td>
</tr>
<tr>
<td>– Limit value</td>
<td>No storage of alarm messages</td>
</tr>
<tr>
<td>2 or 4 Analog Outputs</td>
<td>Limit Value 2</td>
</tr>
<tr>
<td>– Measured values which influence the analog outputs</td>
<td>Measured value: ( U_{L1} ) set to: 240 V</td>
</tr>
<tr>
<td>– Output range: 4 ... 20 mA, 0 ... 20 mA, ±10 mA, 0 ... 10 V, 2 ... 10 V, ±10 V or ±5 V</td>
<td>No hysteresis</td>
</tr>
<tr>
<td>– Analog range with lower and upper range values (independent of measuring range)</td>
<td>Relay closes when exceeded</td>
</tr>
<tr>
<td>Pulse Outputs for Active or Reactive Energy</td>
<td>No storage of alarm messages</td>
</tr>
<tr>
<td>– Export, Import</td>
<td>Meas. value: Overall active power</td>
</tr>
<tr>
<td>– Overall energy or energy from the individual phase conductors</td>
<td>Range: Import 0 ... 2000 W</td>
</tr>
<tr>
<td>– Active or reactive energy</td>
<td>Output Value: 4 ... 20 mA</td>
</tr>
<tr>
<td>– Pulse rate: 1 ... 1000 pulses per kWh in steps of 10</td>
<td>Meas. value: Overall reactive power</td>
</tr>
<tr>
<td>The same pulse rates can be used for MWh as well.</td>
<td>Range: Import 0 ... 1000 Var</td>
</tr>
<tr>
<td>Serial Interfaces</td>
<td>Output Value: 4 ... 20 mA</td>
</tr>
<tr>
<td>Either GMC device bus, EN 60870 or Modbus RTU protocol</td>
<td>Meas. value: Active Energy Import</td>
</tr>
<tr>
<td>Attention: RS 232 and RS 485 use the same protocol.</td>
<td>10 pulses per kWh</td>
</tr>
<tr>
<td>Addresses with values ranging from 0 to 254</td>
<td>Meas. value: Active Energy Export</td>
</tr>
<tr>
<td>Baud rate: 1200, 2400, 4800, 9600 or 19,200</td>
<td>10 pulses per kWh</td>
</tr>
<tr>
<td>Parity: even, odd, none or space</td>
<td>The measuring instrument is configured with the following parameters at the factory:</td>
</tr>
<tr>
<td>All parameters can be subsequently changed by the user.</td>
<td>The encoding switch for securing selected parameters against change is set at the factory to allow for parameter changes.</td>
</tr>
</tbody>
</table>
A2000
Multifunctional Power Meter

Characteristic Values

Measurement Inputs

Voltage Inputs
- Phase – Phase: 0 ... 500 ... 550 V, 40 ... 70 Hz
- Phase – N (ground): 0 ... 290 ... 320 V, 40 ... 70 Hz
- Overload: 1.2-fold
- Intrinsic Impedance: > 290 kΩ
- Power Consumption: < 1.1 W

Current Inputs
- Measuring Ranges: 0 ... 1 ... 1.2 A, 0 ... 5 ... 6 A
- Overload: 1.4-fold cont. for MV > 2 % of NV
- Power Consumption: < 150 mW

Sampling Rate
- 32 samples per period and measured value

Measuring Error
- Current: ± (0.25 % of NV + 1 digit) for MV
- Power, Energy: ± (0.5 % of NV + 1 digit)
- Frequency: ± 0.02 Hz

4-Quadrant Operation
- Measurement: import and export, inductive and capacitive

Analog Inputs
- MR = Measuring Range
- Standard
  - Standard signal: (20 mA: 4 ... 20 mA, 0 ... 20 mA, ± 20 mA, ± 10 mA) or (10 V: 2 ... 10 V, 0 ... 10 V, ± 10 V, ± 5 V)
  - Skaling: (range Lo / Hi)
- Temperature
  - Pt1000 – skaling: dimension (°C, °F), offset, decimal point
- Signal Frequency
- Sampling Interval
- Current
  - Measuring Ranges: 0 ... 20 mA, 4 ... 20 mA, ± 20 mA, ± 10 mA
  - Load: 45 Ω
  - Measuring Error: ± (0.2 % MV + 0.1 % of MR)
  - Overload permanent: 50 mA
- Voltage
  - Measuring Ranges: 0 ... 10 V, 2 ... 10 V, ± 10 V, ± 5 V
  - Input Resistance: 112 kΩ
  - Measuring Error: ± (0.3 % MV + 0.1 % of MR)
  - Overload permanent: 100 V
- Pt1000 (according to EN 60751)
  - Connection: 2-wire
  - Measuring Range: 185 ... 3905 Ω (~200 ... 850 °C)
  - Measuring Error: ± (0.5 % MV + 1 °K)
- Display Values
  - for Standard Signal
    - Lower/Upper Range Limit: -1999 ... +9999 configurable depending on range and position of decimal point
    - Resolution
    - at Pt1000: 0.1 or 1 °C/F
    - Offset adjustable from -100 to +100 °C

Synchronizing input
- On: short-circuited with R < 10 Ω
- Off: open with R > 10 MΩ

Interfaces

- Interfaces: RS-232 and RS-485
  - Alternatively: RS-232 and LON or RS-232 and Profibus-DP
- Baud Rate: 1200, 2400, 4800, 9600, 19200 baud
- Parity: even, odd, space, no
- Protocol for RS-232 and RS-485: selectable: GMC device bus (DIN draft 19244), EN 60870 or Modbus (RTU)

Pulse Outputs

- Contact: open collector
- Current: ON: 10 mA ... 27 mA
  - OFF: < 2 mA
- External Voltage: 8 ... 30 V
- Pulse Duration: adjustable: 100 ms ... 800 ms
- Interpulse Period: ≥ 10 ms

Analog Outputs

- Output Quantity: configurable
- Current
  - Ranges: 0 – 20 mA, 4 – 20 mA, ± 20 mA, ± 10 mA
  - Load max. 500 Ω
  - Load Effect: < 0.8 μA / Ω (0 ... 250 ... 500 Ω)
  - Resolution: 0.1 % of control range
  - Error Limit: ± 0.5 % of final value
- Voltage
  - Ranges: 0 – 10 V, 2 – 10 V, ± 10 V, ± 5 V
  - Load: < 20 mA
  - Load Effect: no effect to > 10 kΩ
  - Resolution: 0.1 % of control range
  - Error Limit: ± 1.0 % of final value

Relay Outputs

- Switching Capacity: ~ / m 250 V, 2 A, 500 VA / 50 W (nominal load)
- Service Life: > 500000 switching cycles

Display

- Type: 7-Segment LED
- Display Color: red
- Character Height: 13.2 mm
- Display Range: 999999999
- Energy: 9999999999
- Power Factor: 1.00
- Other Quantities: 9999

GMC-I Messtechnik GmbH

5
A2000
Multifunctional Power Meter

Internal Clock
(only for version with data logger, LON or Profibus)
Accuracy  < 2.5 s/day
Power Supply  lithium cell, service life > 8 years

Power Supply
Supply Voltage
Feature H0  230 V / 115 V ± 10%, 45 ... 65 Hz
Feature H1  20 ... 69 V  ± 10%, 45 ... 450 Hz
Feature H2  73 ... 264 V  ± 10%, 45 ... 450 Hz
Feature H3  20 ... 27 V  ± 10%, 45 ... 450 Hz
Power Consumption  max. 15 VA
The instrument is not equipped with an integrated circuit breaker. Therefore, during installation, care should be taken to ensure that
– the building where the instrument is installed includes a circuit breaker,
– the circuit breaker is positioned in close proximity to the instrument and is easily accessible to the operator,
– it is clearly marked as a circuit breaking device for the instrument.

Electrical Safety
Variants  IEC 61010-1 / EN 61010-1
Protection Class  II
Measurement Category  inputs: III, relays: II
Pollution Degree  2
Operating Voltage  300 V ➔
Test Voltage  measuring inputs: 3.7 kV
Protection  IEC 60529 / EN 60529
Front Panel  IP 52
Housing  IP 30
Terminals  IP 20
Fuses
The supply circuit is protected by an internally soldered fuse.
Feature H0  T160mA/250V
Feature H1  T1A/250V
Feature H2  T250mA/250V
Feature H3  T1.25A/250V

EMC
Interference Emission/Interference Immunity  IEC 61326 / EN 61326

Ambient Conditions
Operating Temp.  0 ... 50 °C
Storage Temp.  – 25 ... 70 °C
Relative Humidity  75%, no condensation allowed

Terminal Assignments

Current Inputs

Connection with 3 Current Transformers in 3 or 4-Phase Mains System (4L)

Connection with 2 Current Transformers in 3-Phase Mains System (3L)

Connection with 1 Current Transformer in 4-Phase Mains System (identical load, \( I_N = 0 \))

Connection with 1 Current Transformer in 3-Phase Mains System (identical load)
Multifunctional Power Meter

Terminals
Screw clamps for wires/cords up to 2.5 mm² and/or two-core wire-end ferrules for 2 x 1.0 mm²

Design with 2 or 4 analog outputs and serial interface RS-232 and RS-485 or LON

Design with 2 analog inputs and 2 outputs and serial interface RS-232 and RS-485 (Feature A3)

Design with Profibus-DP and RS-232 Serial Interface
A2000
Multifunctional Power Meter

Mechanical Design

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Front dimensions</td>
<td>144 x 144 mm</td>
</tr>
<tr>
<td>Panel cutout</td>
<td>138 + 1 x 138 + 1 mm</td>
</tr>
<tr>
<td>Bezel height</td>
<td>8 mm</td>
</tr>
<tr>
<td>Installation depth</td>
<td>59.1 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>1 kg (without packaging)</td>
</tr>
<tr>
<td>Mounting</td>
<td>DIN screw clamps</td>
</tr>
<tr>
<td>Terminals</td>
<td>Screw clamp terminal blocks</td>
</tr>
</tbody>
</table>

Accessory Software

METRAwin®/A2000
Software for read-out and processing of measured values as they occur, or values from the data logger in the A2000 multifunctional power meter, and for configuring parameters at the A200. This software runs under Microsoft Windows XP SP3, Vista SP1, Windows 7 or 8.

- Read-out of measured values from the power meter’s data logger
- Continuous recording of measured values over a given period of time
- Display of measured values
  - as a function of time in line recorder format,
  - in tabular form,
  - digitally as individual values or
  - analog as bar graphs
- Freely selectable time intervals
- Identification of curves for the recognition of individual measured value sequences
- Simple, clear parameters configuration for the A2000
- Parameters configurations for frequently recurring setups can be saved to memory
- Measured values can be exported to other Windows programs
- Mathematical functions

Software Description

Data Acquisition and Display
METRAwin®/A2000 provides for an unambiguous display of the contents of the data memory from the A2000. Alternatively, measured values can be continuously queried from the measuring instrument by the software, and stored to a data file.

METRAwin®/A2000 summarizes values from the data logger or online recorded values in tabular form, and documents minimum and maximum values with date and time as well.

All measured values can be plainly represented as a function of time with a y-t graph. The time scale can be expanded or contracted to allow for optimal representation. The cursor can be placed at the corresponding position within the time scale for precision readings.

Measured values can also be displayed digitally. Up to four measured values can be displayed at the monitor simultaneously in digital form.

Instrument Configuration with METRAwin®/A2000
METRAwin®/A2000 plainly displays all of the functions and possible settings included in the power meter in various windows. The desired parameter values are entered to the corresponding fields and are subsequently uploaded to the power meter.

Standard Equipment

Power meters without data memory
(without optional data logger):
Measuring instruments without data logger are shipped with operating instructions in German and English.

Power meters with data memory
(with optional data logger):
In addition to the measuring instrument and operating instructions in German and English, power meters with data logger also include METRAwin®/A2000 software for download from our homepage and an adapter with a subminiature plug (for connection to a PC via extension cable).
Multifunctional Power Meter

Order Information

<table>
<thead>
<tr>
<th>Designation</th>
<th>Configuration Options</th>
<th>Article Number / Feature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Serial Interface</td>
<td></td>
<td>L0 — — —</td>
</tr>
<tr>
<td>with RS-232 and RS-485</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>with LON and RS-232</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>with Profibus-DP and RS-232</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>Analog Outputs and Inputs</td>
<td></td>
<td>A0 A0 A0 A0 L0 1) — —</td>
</tr>
<tr>
<td>2 analog outputs</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>4 analog outputs</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>2 analog outputs and 2 analog inputs</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>without analog output</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>Data Logger</td>
<td></td>
<td>R0 R0 R0 R0</td>
</tr>
<tr>
<td>without data logger</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>with data logger 1) 2)</td>
<td></td>
<td>R1 R1 R1 R1</td>
</tr>
<tr>
<td>Pulse Output / Synchronizing Input</td>
<td></td>
<td>P0 P0 P0 P0</td>
</tr>
<tr>
<td>without pulse output and without synchronizing input</td>
<td></td>
<td>P0 P0 P0 P0</td>
</tr>
<tr>
<td>2 pulse outputs and 1 synchronizing input</td>
<td></td>
<td>P1 P1 P1 P1</td>
</tr>
<tr>
<td>Supply Voltage</td>
<td></td>
<td>H0 H0 H0 H0</td>
</tr>
<tr>
<td>230 / 115 V ~</td>
<td></td>
<td>H0 H0 H0 H0</td>
</tr>
<tr>
<td>20 … 69 V ~ / 20 … 72 V ~</td>
<td></td>
<td>H1 H1 H1 H1</td>
</tr>
<tr>
<td>73 … 264 V ~ / 73 … 276 V ~</td>
<td></td>
<td>H2 H2 H2 H2</td>
</tr>
<tr>
<td>20 … 27 V ~ / 20 … 36 V ~</td>
<td></td>
<td>H3 H3 H3 H3</td>
</tr>
<tr>
<td>Manufacturer’s Certificate / Test Report</td>
<td></td>
<td>U0 U0 U0 U0</td>
</tr>
<tr>
<td>without certificate</td>
<td></td>
<td>— — — — —</td>
</tr>
<tr>
<td>with certificate and test report</td>
<td></td>
<td>UT UT UT UT</td>
</tr>
<tr>
<td>Operating Instructions</td>
<td></td>
<td>in print: German and English / on our homepage: German, English, French, Spanish and Italian</td>
</tr>
<tr>
<td>Interface Description</td>
<td></td>
<td>on our homepage: German, English</td>
</tr>
<tr>
<td>Software</td>
<td></td>
<td>METRAwin® 10/A2000: on our homepage</td>
</tr>
</tbody>
</table>

1) only in combination with Feature P1
2) only in combination with Feature A1
3) only in combination with Feature R1

A2000 Mobile Set

<table>
<thead>
<tr>
<th>Designation</th>
<th>Feature Combination</th>
<th>Article Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2000 Mobile Set</td>
<td></td>
<td>A2000 H0 A0P1R1L0U0 A202A</td>
</tr>
</tbody>
</table>

Accessories for A2000 and A2000 Mobile Set

<table>
<thead>
<tr>
<th>Designation</th>
<th>Article Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adapter (Screw clamp A2000 on 9-pin sub-D for PC) with METRAwin® 10/A2000 (software for transmission of meas. values and instrument configuration)</td>
<td>Z305A</td>
</tr>
<tr>
<td>Interface cable RS-232, approx. 2 m long</td>
<td>GTZ3241000R0001</td>
</tr>
</tbody>
</table>

Standard Units

The following measuring instruments can be shipped as standard units. Only the article number needs to be indicated.

<table>
<thead>
<tr>
<th>Designation</th>
<th>Instrument and Features Combination</th>
<th>Article Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>A2000 with 230 V / 115 V ~ supply voltage, with 2 analog outputs, with RS-232 and RS-485 interfaces, with operating instructions, interface descriptions and software</td>
<td>A2000 H0 A0 P0 R0 L0 U0 A2000-V001</td>
<td></td>
</tr>
<tr>
<td>A2000 with 230 V / 115 V ~ supply voltage, with 4 analog outputs, with 2 pulse outputs and 1 synchronizing input, with RS-232 and RS-485 interfaces, with operating instructions, interface descriptions and software</td>
<td>A2000 H0 A1 P1 R0 L0 U0 A2000-V002</td>
<td></td>
</tr>
<tr>
<td>A2000 with 230 V / 115 V ~ supply voltage, with 4 analog outputs, with 2 pulse outputs and 1 synchronizing input, with RS-232 and RS-485 interfaces, with operating instructions, interface descriptions and software</td>
<td>A2000 H0 A1 P1 R1 L0 U0 A2000-V003</td>
<td></td>
</tr>
<tr>
<td>A2000 with 230 V / 115 V ~ supply voltage, with 4 analog outputs, with 2 pulse outputs and 1 synchronizing input, with LON and RS-232 interfaces, with operating instructions, interface descriptions and software</td>
<td>A2000 H0 A0 P1 R0 L1 U0 A2000-V004</td>
<td></td>
</tr>
<tr>
<td>A2000 with 230 V / 115 V ~ supply voltage, with 4 analog outputs, with 2 pulse outputs and 1 synchronizing input, with RS-232, with operating instructions, interface descriptions and software</td>
<td>A2000 H0 A2 P1 R0 L2 U0 A2000-V005</td>
<td></td>
</tr>
</tbody>
</table>
A2000
Multifunctional Power Meter