CheckSystem 2.1 S
Single-phase test system with class 0.05 reference standard and integrated single-phase current source up to 120 A

The CheckSystem 2.1 S portable test system consists of an integrated single-phase current source and a single-phase electronic reference standard of accuracy class 0.05. Characteristic features of the CheckSystem 2.1 are its wide measuring range, high accuracy and high tolerance to unwanted external influences.

The CheckSystem 2.1 S allows the monitoring of meter installations as well as analysis of the local mains conditions.

Advantages
- Easy verification of meters under precise load conditions, using the built-in, compact, current source
- Automatic operation using predefined load points without the need for an external PC
- Internal memory for storage of measurement results and customer data
- Display of vector diagram for analysis of the supply conditions
- User-friendly system for data input and operation of source and reference meter
- The system may be used either as a stand-alone reference standard meter, or together with the integrated power source

Functions
- Independent generation of single-phase current loading conditions for verification of meters using the incoming supply voltage
- Active, reactive and apparent energy measurement with integrated error calculator and pulse output
- Vector diagram, harmonics spectrum and wave form display for analysis of the mains conditions
- Voltage measurement
- Current measurement directly or with UCT clamp-on CT
- Active, reactive and apparent power measurement
- Phase angle, power factor and frequency measurement

Options
- Software CALSOFT for memory readout, online data logging, presentation and printout of results and customer data and for automatic test sequences.
- UCT120.3 clamp-on CT 120A (active error compensated)
## Technical Data Check System 2.1 S (class 0.05)

### General
- **Auxiliary supply:** Power may be taken from the auxiliary supply or the measuring circuit at: 88 VACmin ... 264 VACmax / 47 ... 63 Hz 125 VDCmin ... 372 VDCmax Protection: up to 440VACmax
- **Voltages Operation and Synchronisation**
  - 10 V ... 480 V
  - 10 V ... 480 V
- **Power consumption:** max. 150 VA
- **Housing:** Hard Plastic
- **Dimensions:** W 273 x H 247 x D 178 mm
- **Weight:** approx. 5.6 kg
- **Operation temperature:** -10 °C ... +50 °C
- **Storage temperature:** -20 °C ... +60 °C
- **Relative humidity:** ≤ 85% at Ta ≤ 21°C
- **Degree of protection:**
  - Isolation protection: IEC 61010-1:2001
  - Safety: 300V CAT III / 600V CAT II
- **Power consumption:**
  - Internal voltage ranges Un [V]:
    - 1 kVA: 0.4 V ... 26.6 V
  - Internal current ranges In [A]:
    - 1.2 A: 0.004...0.012
    - 12 A: 0.012...0.4
  - Power Factor (PF) = 100 ... +1000 [VA/h]
- **Temperature coefficient (TC):**
  - ± E [%/°C]
  - ±0.005...0.002
  - ±0.00...0.004

### Current Source
- **Current Range**
  - 1 mA ... 120 A
- **Output power**
  - 60 VA

<table>
<thead>
<tr>
<th>Internal Ranges</th>
<th>S&lt;sub&gt;max&lt;/sub&gt; / U&lt;sub&gt;max&lt;/sub&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 mA ... 12 mA</td>
<td>60 mA / 5 V</td>
</tr>
<tr>
<td>12 mA ... 120 A</td>
<td>600 mA / 5 V</td>
</tr>
<tr>
<td>120 mA ... 12 A</td>
<td>60 VA / 0.012</td>
</tr>
<tr>
<td>120 mA ... 12 A</td>
<td>60 VA / 0.012</td>
</tr>
<tr>
<td>12 A ... 120 A</td>
<td>60 VA / 0.012</td>
</tr>
<tr>
<td>80 A ... 120 A</td>
<td>60 VA / 0.012</td>
</tr>
</tbody>
</table>

### Power/energy
- **Voltage:** 30 V ... 480 V (L - N)
- **Measuring Quantity/Current**
  - Range / Class 0.05
  - Direct 12 A or 120 A
    - 12 mA ... 120 A
    - 10 mA ... 100 mA
  - Current CT 120 A UCT 120.1
    - 100 mA ... 120 A
    - 10 mA ... 100 mA

### Reference Standard - Measurement Range
- **Measuring Quantity**
  - Voltage (phase - neutral)
    - Range U, N: 10 V ... 480 V
  - Current
    - 1 mA ... 12 A
    - 12 mA ... 120 A
    - 10 mA ... 120 A
- **Mode NUM (synch. to input voltage)**
  - 40 Hz - 70 Hz
  - 40 Hz - 70 Hz

### Reference Standard - Measurement Accuracy
- **Measuring Quantity**
  - Voltage (U, N)
    - Range
    - Class 0.05
  - Current direct 12 A or 120 A
    - 12 mA ... 120 A
    - 10 mA ... 120 A
  - Current CT 120 A UCT 120.1
    - 100 mA ... 120 A
    - 10 mA ... 100 mA

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**Notes**
1. x.x: Related to the measuring value
2. x: Related to the measuring range final value (full scale, FS)
3. E(M) = FS/M * ± E
4. Fundamental frequency in the range 45 ... 66 Hz
5. E: x, P, Q: x / P, Q (related to apparent power), 3- and 4-wire networks

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**Pulse Input / Output**
- **REDEL 8-pole common input / output connector, suitable for scanning head SH 2003**
  - Input level: 4 ... 12 VDC (24 VDC)
  - Input frequency: max. 200 kHz
  - Input supply: 12 VDC (I < 60 mA)
  - Output level: 5 V
  - Pulse length: ≥ 10 µs

**Meter constant**
- **Active, Reactive, Apparent [mpWh/vars, Vas]**
  - C = 36'000'000 / (In * Un)
  - The meter constant depends on the selected internal current (in) and voltage (Un) ranges

### Frequency / Phase Angle / Power Factor
- **Measuring Quantity**
  - Range
  - Frequency (f)
    - 40 Hz ... 70 Hz
    - 10'000 [imp/s]
  - Phase Angle (Φ)
    - 0.00° ... 359.99°
    - 0.1°
  - Power Factor (PF)
    - -1.000 ... +1.000
    - 10'000 [imp/s]

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**Example:**
1. In = 12A, Un = 240V
2. C = 36'000'000 / (12 * 240) = 1250 [impWh]