Autocall: Calibration with ProCall Software - see software brochure for full details

**SOFTWARE**

**Internal Options**
- Cal3200 UKAS Calibration Certificate
- Hiacc high accuracy insulation resistance option
- 10G extended insulation resistance option to 10GOhms
- Auto/loop automated loop (line/earth measurement)
- Euro European front panel socket / line power plug
- Aust Australian front panel socket / line power plug
- Line customer specified region support
- Flash Pat Flash test adapter (Class 1 & Class 2)
- Ext15KV 15kV insulation tester adapter
- Bdown Hipot / breakdown tester adapter
- Probe external 12kV high voltage probe

**General Accessories**
- 3200SCASE soft carry case
- 3200TCASE hard transit case

**External Options**
- PC-SU ProCall Professional Calibration Software
- ProSite On-Site Database Management Software for ProCal
- Providers Web service data exporter for ProCal
- PCT-SU ProCal-Track Laboratory Management Software

**Evaluation Versions of all Software Packages are available from www.transmille.com**

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**FUNCTION SUMMARY**

<table>
<thead>
<tr>
<th>Function</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity resistance source</td>
<td>Hiacc Option Available</td>
</tr>
<tr>
<td>Continuity current measurement</td>
<td></td>
</tr>
<tr>
<td>Insulation resistance source</td>
<td>15kV tester adapter option</td>
</tr>
<tr>
<td>Insulation test voltage measurement</td>
<td>16&quot; &amp; 17&quot; edition compliant</td>
</tr>
<tr>
<td>Ac voltage output</td>
<td>Continuously monitored</td>
</tr>
<tr>
<td>RCD test time measurement</td>
<td>Auto waveform analysis</td>
</tr>
<tr>
<td>RCD test current measurement</td>
<td></td>
</tr>
<tr>
<td>RCD test duration measurement</td>
<td></td>
</tr>
<tr>
<td>Loop resistance source</td>
<td>Auto/loop option available</td>
</tr>
<tr>
<td>Pat earth bond resistance</td>
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</tr>
<tr>
<td>Pat earth bond current</td>
<td></td>
</tr>
<tr>
<td>Pat insulation resistance</td>
<td></td>
</tr>
<tr>
<td>Pat leakage</td>
<td></td>
</tr>
<tr>
<td>Pat leakage test voltage</td>
<td>Optional adapter</td>
</tr>
<tr>
<td>Pat load testing</td>
<td></td>
</tr>
<tr>
<td>Pat flash voltage testing</td>
<td>Optional adapter</td>
</tr>
<tr>
<td>Pat flash current testing</td>
<td>Optional adapter</td>
</tr>
<tr>
<td>Line voltage measurement</td>
<td>Continuously monitored</td>
</tr>
<tr>
<td>Breakdown voltage and currents</td>
<td>6 voltage ranges / 4 current ranges</td>
</tr>
</tbody>
</table>

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**COMPLETE TESTING**

**3200 SERIES**

**ELECTRICAL TEST EQUIPMENT CALIBRATOR**

**FUNCTIONS & ORDERING**

- **Model 3200**
- **Cal3200**
- **Internal Options**
  - Ukas Calibration Certificate
  - Hiacc high accuracy insulation resistance option
  - Option 10G extended insulation resistance option to 10GOhms
  - Option Auto/Loop automated loop (line/earth measurement)
  - Option Euro European front panel socket / line power plug
  - Option Aust Australian front panel socket / line power plug
  - Option Line customer specified region support
  - Option Flash Pat Flash test adapter (Class 1 & Class 2)
  - Option Ext15KV 15kV insulation tester adapter
  - Option Bdown Hipot / breakdown tester adapter
  - Option Probe external 12kV high voltage probe

- **General Accessories**
  - 3200SCASE soft carry case
  - 3200TCASE hard transit case

---

**SOFTWARE**

- **3200CCP** 3200 Calibration Control Panel Software
- **PC-SU** ProCall Professional Calibration Software
- **ProSite** On-Site Database Management Software for ProCal
- **Providers** Web service data exporter for ProCal
- **PCT-SU** ProCall-Track Laboratory Management Software

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**Agent**

**Unit 4 Select Business Centre, Lodge Road, Staplehurst, Kent. TN12 0QW, United Kingdom. Tel: +44 (0) 1580 890700 Fax: +44 (0) 1580 890711 Email: sales@transmille.com**

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Transmille has over a decade’s experience in calibration and instrumentation design & manufacture. Our products are in use throughout the world in both commercial and military laboratories, service centers and production facilities. Our reputation for innovation, reliability & value is second to none with complete solutions including instrumentation, software, support & training.

UKAS calibration is available for all Transmille products as a optional service.

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3200 CCP 3200 Calibration Control Panel Software
PC-SU ProCall Professional Calibration Software
ProSite On-Site Database Management Software for ProCall
Providers Web service data exporter for ProCal
PCT-SU ProCall-Track Laboratory Management Software
The industry established 3200 Series provides by far the fastest solution for the calibration of Loop & RCD Testers, PATs and Insulation Testers, and also one of the safest solutions for calibrating Hi-Pot/Breakdown testers. Traditional testing practices required many items of test equipment and potential exposure to hazardous voltages with a typical multi function tester taking up to 45 minutes to calibrate.

Using the 3200 Series, calibration can be dramatically reduced to typically 15 minutes enabling safe, cost effective calibration to be put into practice offering fast return on investment.

For flash voltage measurement the external adapter allows the HV probe from the PAT to be pushed down onto a measurement point on the adapter.

The 3200 has been designed from the outset as a high accuracy reference for testing of electrical test equipment. Its accuracy provides a superior stand-off ratio better than 4.1 - essential for accurate, repeatable testing.

Dedicated mains sockets for Loop, RCD & PAT testers on the 3200 front panel avoids the need to make connection of mains/line voltages using 4mm type test leads. This important safety feature eliminates any risk of shock to the engineer as connections are made with standard mains / line plugs - regional sockets available.

Loop and RCD testers can simply be plugged directly into the dedicated front panel mains/line socket - the advantages of this are:

- **ELIMINATES THE RISK OF SHOCK TO THE OPERATOR**
- **REMOVES THE POSSIBILITY OF INCORRECT CONNECTION CAUSING UUT DAMAGE.**
- **FASTER CALIBRATION WITH EASIER CONNECTION, LESS TRAINING FOR OPERATORS.**
- **REDUCED UNCERTAINTY WITH FEWER CONNECTIONS FOR LOOP IMPEDANCE CALIBRATION.**

PAT testers plug directly into the 3200 IEC inlet socket using the calibrated lead supplied. The earth bond lead clips on to the earth bond post. This terminal is electrically floating with respect to mainsearth allowing calibration of PATs which cannot be used on earthed appliances.

Queen’s Award Winning Products
The 3200 complements the 3000 Series multi product calibrators, 8000 Series precision multimeters and ProCal Calibration software. This comprehensive range of Queen’s award winning products provides the complete laboratory solution.
The 3200 SERIES 17th EDITION ELECTRICAL TEST EQUIPMENT CALIBRATOR

- CLEAR LED INDICATION OF ACTIVE TERMINALS
- Region specific dedicated socket built into front panel for safe, convenient connection to testers.
- Tactile soft-keys linked to on-screen function-specific menus for clear, concise user operation.
- Clear, bright LCD for display of selected functions, settings and measurements.
- Full range control and individual digit adjust via output control section.
- Easy manual entry of test values using built-in numeric keypad.
- Intuitive interface - dedicated buttons for each function.
- Digital control for quick selection of ranges & outputs.
- Provides all the necessary functionality required to calibrate a wide range of insulation testers.
- Continuously variable insulation resistance to 10GΩms (200 GΩms as standard).
- Test voltage measurement.
- AC voltage output.
- 5 AC voltage outputs at 50V, 100V, 200V, 230V, 300V, 400V for calibrating voltage ranges.

**Insulation Testers**

- Provides all the necessary functionality required to calibrate a wide range of insulation testers.
- Resistance to 10GΩms:
  - Continuously variable insulation resistance to 10GΩms @ 1kV.
  - Resistance multiplier option to 10TΩms / 15kV available.
- Test voltage measurement:
- Continuity resistance & current:
  - 3 ranges to 1kΩ (variable from 0.1Ω to 200Ω) and current measurement to 32mA (10Ω).
- AC voltage output:
  - 5 AC voltage outputs at 50V, 100V, 200V, 230V, 300V, 400V for calibrating voltage ranges.

**PATS & Earth Bond Testers**

- A rapid testing solution for calibrating all PAT functions.
- Earth Bond Resistance & Current:
  - 10 precision resistance values with current measurement from 100mA to 30A.
- Insulation Resistance:
  - Adjustable resistance to 10GΩms - ideal for checking pass/fail levels.
- Flash Voltage & Leakage Current:
  - Class 1 & 2 flash voltage & current measurement plus 3 AC leakage ranges to 7mA.
- Load Testing:
  - Open circuit, short circuit and 0.13kVA load checks PAT operation / run tests.

**RCD Testers**

- Simply plug in the RCD tester to the RCD test socket and start calibrating.
- RCD Current Measurement to 3A:
  - RMS and peak current measurements for all types of tester using digital waveform capture & analysis.
  - Graphical indication of phase start.
- RCD Trip Time 20ms to 5s:
  - Accurate & repeatable trip times entered simply via the keyboard provide easy calibration.
- **Loop Testers**

- Calibrate these instruments quickly and safely.
- Auto loop option for accurate correction of the supply line impedance.

**Breakdown / Hipot Testers**

- External adapter for calibration of breakdown / hipot testers.
- Measures AC/DC to 12kV and output current to 20mA.
- **Optional Adapters**

- 15kV insulation adapter.
- Pat Flash Test Adapter.
- Breakdown / Hipot Adapter.
CONTINUITY & INSULATION TESTERS
The 3200 provides all the necessary functionality required to support calibration of a wide range of insulation testers.

CONTINUITY RESISTANCE & CURRENT
Continuity resistance & current testing ranges include:
- 0.02 Ohms (zero) test point
- 0.2 to 20 Ohms (continuously variable)
- 100 Ohms test point
- 1kOhm test point
- Current measurement to 320mA @ 1Ohm
A high accuracy option (0.25%) is available to support the new generation of higher accuracy insulation testers.

INSULATION RESISTANCE TO 2Gohms (10GOhms / 1TOhm OPTIONS)
Continuously variable Insulation resistance to 2GOhms @ 1000V.
A high accuracy option (0.1%) is available to support the new generation of higher accuracy insulation testers.
An extended 10GOhm option is available to support testers measuring higher resistance values. The high resistance adapter supports high voltage (to 15kV) testers with measurement capabilities up to 1TOhm.

TEST VOLTAGE MEASUREMENT (16™/17™ EDITION COMPLIANCE)
With the introduction of 17th Edition regulations, the minimum insulation resistance values have been changed from the 16th Edition requirements. The 3200 provides compliance to both sets of regulations, with 16th and 17th Edition modes available at the press of a button.
Insulation test voltage measurement is performed using the following 16th & 17th Edition settings:

10 GOhm: INSULATION RESISTANCE OPTION
Extends the resistance range of the standard 2 Gohms to 10 GOhms to support the new generation of insulation testers with extended insulation ranges.
This internally fitted option is retro-fittable to allow upgrade to meet changing user workloads.

AC VOLTAGE OUTPUT
5 AC voltage outputs @ 50V • 100V • 200V • 230V • 300V • 400V are available for checking the AC measurement function on testers. These outputs are monitored from the supply, with the measured value displayed on 3200 in real-time.
When used with ProCal software, the monitored value is automatically read back from the 3200 via the interface.

HIGH RESISTANCE INSULATION ADAPTER OPTION
The high resistance insulation adapter for the 3200 provides a low cost solution for the resistance calibration of some makes of high voltage (above 1kV) insulation testers avoiding the problem of obtaining calibrated high value, high voltage resistors.
The adapter both increases the test voltage at which calibration can be performed*, and also increases the resistance range of the 3200 by a factor of 100. This allows the standard 3200 to be used for resistance calibration of testers up to 15kV at up to 200 GOhms. With the 10G option fitted to the 3200 values up to 10 TOhm can be simulated.

SUPERIOR ACCURACY: COMPREHENSIVE TESTER SUPPORT
The 3200 has been designed from the outset as a high accuracy reference for testing of electrical test equipment. Its accuracy provides a superior stand-off ratio better than 4:1 - essential for complete and accurate testing.
Increasingly in modern installations, earth leakage circuit breakers are used to provide protection in addition to conventional fuses and circuit breakers. These devices are referred to by a variety of names including RCD (Residual Current Devices), RCCB (Residual Current Circuit Breaker), ELCB (Earth Leakage Circuit Breaker) and GFI (Ground Fault Interrupt). The devices operate by sensing when the current in the phase and neutral conductors within an installation are not equal and opposite. Any imbalance would imply that an additional path existed for the current to flow, invariably through the earth due to excessive leakage and/or fault situation.

RCD testers are designed to simulate a range of fault currents, with restrictions on the duration of the fault current, and to time the operation of the equipment. RCD testers work by applying a heavy load, usually 23 Amps, for a short duration and measuring the drop in voltage when the load is applied, then using ohms law display the loop resistance.

To calibrate a loop tester first the loop impedance of the supply must be known. Several known values of resistance must then be inserted in the loop to increase the loop resistance so the tester can be calibrated at several points. The resistance can either be in the live or earth return (it is common practice to place the resistors in the earth return for safety reasons). The values displayed on the tester can then be compared to that of the known value of the resistor plus the loop resistance of the supply.

A common fault with RCD and loop testers is to fail with short circuit between live and earth. Connection of such a faulty tester directly to mains power may result in blown fuses or calibrator damage. To overcome this problem the 3200 is designed with a built in fault detection system which ramps the loop impedance down, aborting the test should a faulty tester be detected.
PORTABLE APPLIANCE TESTER CALIBRATION

A rapid testing solution for calibrating all PAT functions. Also ideal for earth/ground bond testers up to 30A test current.

The 3200 combines all the necessary functions to provide comprehensive portable appliance tester calibration.

Before the availability of a combined electrical test calibrator, techniques for calibrating PATs involved many separate items of test equipment including high current meters to 30A, high voltage measurement capabilities for flash test functions and high resistance boxes with potentially lethal voltages present.

The 3200 packages all these elements into a single box solution including high / low resistances, current measurement to 30A and flash test voltage and current measurement. These measurement functions use dedicated terminal connections on the front panel of the 3200, providing safe and convenient operation.

EARTH BOND RESISTANCE

The 3200 provides easy connection for earth bond resistance tests using a front panel mounted ‘floating’ earth stud. The 3200 is supplied with a calibrated PAT lead to connect to the PAT mains socket for the best accuracy.

The earth bond resistance function includes 10 precision resistance values from 0.05 Ohms to 1kOhm. Additional values are supported using the rear terminal option for connection of user’s own custom resistors.

COMPREHENSIVE PAT SUPPORT

The 3200 supports older portable appliance testers which cannot be calibrated with the earth bond lead connected to earth - the bond resistors must be floating with respect to the earth supply current.

EARTH BOND CURRENT MEASUREMENT

Fully featured with 3 ranges to match the most common test current, the 3200 includes 100mA, 10A and 30A ranges with 30% over range capability. The test current is measured over the 5 second period as required for earth bond testing and the value stored and displayed on the 3200. Earth bond current can be measured into 20 mOhms or 0.1 Ohm as required by the specifications of the PAT (UUT).

LEAKAGE CURRENT

The 3200 provides preset leakage points enabling the 3200 to test the PAT leakage function at three nominal values.

Using the optional adapter, touch leakage can also be tested using the 3200 calibrator for the complete solution.

FLASH VOLTAGE & CURRENT CALIBRATION (OPTION)

The flash test option provides a safe and easy method for measuring PAT flash voltage and current at Class 1 and Class 2 settings.

The design of the flash test adapter allows direct connection of the PAT flash probe, holding it down safely on the voltage input connector of the adapter.

INSULATION RESISTANCE

Variable resistance to 2 GOhms (10 GOhms option) - ideal for checking pass/fail levels. Connection is made to the dedicated PAT IEC socket for this type of measurement.

HIPOT / BREAKDOWN TESTER CALIBRATION (OPTION)

The Hipot / Breakdown tester adapter offers a unique solution to the safe, fast calibration of both voltage output and leakage current measurements on hipot & breakdown testers. Designed to sit flat on the worktop the high voltage probes, with a switch in the handle often used with breakdown testers, can be safely pressed down on the adapter terminals.

The breakdown adapter provides 3kV & 12kV voltage measurement ranges for both AC and DC. LED’s indicate which terminal should be used.

To calibrate the output / leakage current display of the hipot / breakdown tester the adapter provides 9 high power resistors to provide current loads of up to 20mA @1000V - a function not available on other calibrators.
TRANSMILL

EASY TO USE SOFTWARE FOR FAST & ACCURATE TESTING

Transmille ProCal software provides easy control of the 3200, with pre-set test points for each model of tester. The software takes care of setting the 3200 to the correct function and output - the user simply follows on-screen prompts and confirms measurements or enters readings from the tester.

ProCal software provides an easy to use package, with simple function select using drop down boxes and is focused on providing a complete solution for the laboratory or service center, with an easy learning curve for new users ensuring rapid return on investment.

The use of software is the key to realising a cost-effective electrical test solution, whether it is for in-house / maintenance support or for commercial calibration services. Built-in procedure wizards for each type of tester allow procedures to be created in minutes, with a library of procedures also available for popular testers.

CONTINUITY TESTING

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity Variable Range</td>
<td>0.1Ω to 200Ω</td>
<td>0.01Ω</td>
<td>± 1%</td>
</tr>
<tr>
<td>Continuity Fixed Outputs</td>
<td>100Ω to 1kΩ</td>
<td>0.1Ω</td>
<td>± 1%</td>
</tr>
<tr>
<td>Standard Accuracy</td>
<td>1%</td>
<td>± 1Ω</td>
<td>± 1%</td>
</tr>
<tr>
<td>High Accuracy (Option)</td>
<td>0.25%</td>
<td>± 1Ω</td>
<td>± 1%</td>
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</table>

Continuity Current Measurement (Into 1Ω)

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<thead>
<tr>
<th>Range</th>
<th>0 to 320mA (0.1mA Resolution)</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>± 1.3%</td>
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INSULATION TESTING

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<thead>
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<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
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<tbody>
<tr>
<td>Earth Bond Resistance</td>
<td>See Loop Values</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Earth Bond Current Resistance</td>
<td>1mA, 10mA, 100mA</td>
<td>± 0.5%</td>
<td>± 0.5%</td>
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PAT Testing

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Earth Bond Current Resistance</td>
<td>1kΩ, 10kΩ</td>
<td>± 0.5%</td>
<td>± 0.5%</td>
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PAT Leakage Test Voltage

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<th>100V to 300V RMS (0.1V Resolution)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>± 1.5%</td>
<td>± 0.5%</td>
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</table>

RCD TESTING

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<th>Resolution</th>
<th>Accuracy</th>
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<tbody>
<tr>
<td>Voltage</td>
<td>1kV to 1.8kV (1V Resolution)</td>
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<td>± 0.5%</td>
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BREAKDOWN TESTING (OPTION)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>100V to 3kV</td>
<td>± 0.5%</td>
<td>± 0.5%</td>
</tr>
</tbody>
</table>

LINE VOLTAGE MEASUREMENT

<table>
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<tr>
<th>Parameter</th>
<th>Range</th>
<th>Resolution</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage</td>
<td>200V to 260V</td>
<td>± 0.5%</td>
<td>± 0.5%</td>
</tr>
</tbody>
</table>

GENERAL SPECIFICATIONS

- Line Power: 230V/110V 50Hz/60Hz
- Dimensions: 45 x 44 x 14cm
- Weight: 10kgs
- Warm-up Time: Double the time last used to 20 minutes max.