



ACT METERS LTD



PRODUCT CATALOGUE

specialist test equipment
false alarm solutions



specialist test equipment, false alarm solutions





The Company

Experience, creativity and providing a personal service are what our reputation is built on. We've been supplying specialist test equipment and alarm troubleshooting solutions to the security industry worldwide for more than 20 years. Our test equipment range is also popular with those who work outside of the security industry, such as automotive, healthcare and leisure.

The Solution

Solutions to common causes of false alarms can be found on pages 20 - 45 with battery testing tips on page 46 & 47. If you have a technical question regarding any ACT product you can also phone during normal working hours or email sales@actmeters.com.

The Products

ACT Meters Ltd is a mail order company that supplies and develops unique battery testing and alarm troubleshooting equipment. Our range is available to order through our secure website at www.actmeters.com or by calling 01744 886660.

welcome

ACT Meters Ltd

Placing your order

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WA11 8HD
United Kingdom

Office hours:
Monday to Friday, 9am to 5pm
Closed bank holidays

NEW Delivery Service

There are two cost options for UK delivery on orders placed before 12 noon:

1. Standard 2 - 3 Working Day at £5.00 + VAT
2. Express Next Working Day before 5.00pm at £7.50 + VAT

Goods over the value of £100 will be delivered by Express Next Working Day **FREE OF CHARGE**. Export deliveries will be charged according to destination, size and weight.

How to Pay

All prices quoted in this catalogue exclude VAT. All major credit cards, cheques and cash payments are accepted. Credit accounts available on application.

web: www.actmeters.com tel: 01744 886660



Alarm Installer Multimeters

Please note: Calibration, accessories and special promotions are not subject to discounts

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
ACT3000	Autorangeing Multimeter CAT II	Yes	Yes	6
ACT720	True RMS Datalogging Multimeter CAT IV	Yes	Yes	7

Multimeter Accessories & mA Current Clamp

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
ACT415	Standard Test Leads	n/a	n/a	8
ACT416	Quality Test Leads	n/a	n/a	8
ACT418	Professional Test Leads	n/a	n/a	8
ACT418F	Professional Fused Test Leads	n/a	n/a	8
ACT410	Small Multimeter Carry Case	n/a	n/a	8
ACT430N	Large Multimeter Carry Case	n/a	n/a	8
ACTCA60	mA Current Clamp	n/a	n/a	9

Calibration

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
CALMASTER	InHouse Multimeter Calibration TestBox	Yes	Yes	10
BATMASTER	InHouse Battery Tester Calibration TestBox	Yes	Yes	12

Calibration Labels & Battery Tester CALKITS

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
ACT LB1	InHouse Calibration Labels	n/a	n/a	14
ACT BTL	Battery Tested Labels	n/a	n/a	14
ACT CALKITS	InHouse Recalibration Kits for RED/GOLD IBTs	n/a	n/a	14

Specialist Tools

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
ACT452	Telephone Test Set & Accessories	Yes	Yes	15
VERIFIER	Circuit Cable Tester & Troubleshooter	Yes	Yes	16

Intelligent Battery Testing

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
GOLD-PLUS	6V/12V Intelligent Battery Tester	Yes	Yes	18
ACTD4000	Emergency Lighting Battery Tester	Yes	Yes	20

Alarm Troubleshooting Solutions

CODE	Product Description	NSI/SSAIB 15% Discount	Website 10% Discount	Page
ACT1313	12V Spike Suppressor	Yes	Yes	24
ACT2323	230V Mainspike Suppressor	Yes	Yes	25
ACT1414	24V Spike Suppressor	Yes	Yes	26
ACT1166	Earth Line Choke	Yes	Yes	26
ACT230MSF	230V Mains Suppression Filter	Yes	Yes	27
ACT211 Intruder	EMI Control Panel Suppression Kit (Intruder)	Yes	Yes	28
ACT211 Fire	EMI Control Panel Suppression Kit (Fire)	Yes	Yes	29
ACTCPS-3 Intruder	EMI/RFI Control Panel Suppression Kit (Intruder)	Yes	Yes	30
ACTCPS-3 Fire	EMI/RFI Control Panel Suppression Kit (Fire)	Yes	Yes	31
ACT1376	PIR RFI Stabiliser	Yes	Yes	32
ACT2468	8-Way RFI Filter	Yes	Yes	33
ACT120L	Transistorised Relay	Yes	Yes	33
ACT4425	ID Line Filter	Yes	Yes	34
ACT3010	12V Data Ferrite Tubes	Yes	Yes	34
ACT4201	4 Zone Opto-Isolator	Yes	Yes	35
ACT431	DSL Broadband Filter	Yes	Yes	36

Product Specifications

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Alarm Troubleshooting Guide

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ACT3000 Autoranging Multimeter CATIII

The ACT3000 is *the* digital multimeter that every alarm installer should have. It combines the essential functions you would expect for day to day testing, plus additional features for troubleshooting alarm and other electrical systems.

Features

- Fully autoranging on resistance, voltage and current, enabling a wide range of measurements to be made without adjusting the switch
- Manual 'range' override button allows the user to fix selection on any of its 27 ranges as required
- Extra large 3200 count with bargraph LCD display gives a clear indication of reading as well as polarity, function, over range, data hold and low battery indication
- Ohms, diode/audible continuity and capacitance input overload protection to 500Vrms
- Includes an 'Auto-power-off' function to conserve battery life

Alarm Troubleshooting Features

- Takes accurate measurements of induced AC voltage levels which cause intermittent, unexplained false alarms
- Continuity beeper enables normally closed circuits to be tested audibly
- Handy magnetic back allows meter to be securely mounted on metal boxed control panels and power supplies for hands free use



ACT3000 Autoranging Multimeter

Catalogue List Price	£79.00
Web 10% Discount	£71.00
Web NSI & SSAIB 15% Discount	£67.00
New Meter Calibration	£35.00

ACT720 True RMS

Datalogging Multimeter CATIV

The ACT720 Datalogging Multimeter allows you to hook onto the circuit under test, then remotely test all devices to log normal operation and/or faults. If required, the meter can be left to monitor the circuit under test over a period of time to log intermittent faults.

Features

- Measures AC/DC voltage and current, resistance, frequency, capacitance, temperature, diode and continuity
- Independent datalogger, with 10 selectable sample rates from 0.05 seconds (50ms) to 480 seconds (8 minutes) per sample
- Storage for up to 43,000 data points
- Display logged readings on backlit LCD or download to collect, save or create graphic displays of event data
- Manual and automatic ranging
- High resolution 5000 count backlit LCD display with bargraph

Alarm Troubleshooting Features

- Troubleshoots alarm circuit cables & common detection devices
- Logs operation of normally closed and end-of-line resistance readings
- Verifies good, intermittent & faulty devices
- Allows engineer to quickly analyse, predict and prevent faults from occurring



ACT720 Datalogging Multimeter

Catalogue List Price	£249.00
Web 10% Discount	£224.00
Web NSI & SSAIB 15% Discount	£211.00
New Meter Calibration	£35.00

web: www.actmeters.com tel: 01744 886660



Multimeter Test Leads & Carry Cases

ACT415 Standard Test Leads

PVC moulded leads with 4mm right angle plugs. Insulated test probes and 1m in length.

ACT416 Quality Test Leads

PVC moulded leads with 4mm shrouded right angle plugs. Fully insulated probes with attachable crock-clips and 1m in length. Shrouding can be cut back to suit meter socket recess.

ACT418 Professional Test Leads

Highly flexible, silicone cable leads with retractable 4mm plugs. Fully insulated probes with attachable crock-clips and 1.2m in length.

ACT418F Professional Fused Test Leads

Highly flexible silicone cable leads with retractable 4mm plugs. Fully insulated fused probes with attachable crock-clips and 1.2m in length.

ACT410 Small Multimeter Case

Padded fabric construction with wrist strap. Dimensions: 180(L) x 120(W) x 40(D)mm

ACT430N Large Multimeter Case

Padded fabric construction with wrist strap. Inner transparent pocket for instructions or test leads. Dimensions: 185(L) x 240(W) x 60(D)mm



Pricing

ACT 415 Standard	£9.00
ACT 416 Quality	£15.00
ACT 418 Professional	£20.00
ACT 418F Professional Fused	£30.00
ACT 410 Small	£9.00
ACT 430N Large	£15.00

ACTCA60

mA Current Clamp

When linked to a digital multimeter, the ACTCA60 registers low mA current readings without the need for disconnecting circuit wires. It will also log low current readings, measuring milliamps as well as amps.

Features

- Enables mA current readings to be made without disconnecting circuit wires
- Measures AC/DC current from 10mA to 60Amps
- Features dual hall effect sensors
- Designed to work in narrow spaces and connects to any multimeter with a 200mV or 2V range
- Operates by opening and placing its jaws around the wire, ensuring a secure connection
- Linked to a digital multimeter for mA current measurement to be displayed

Alarm Troubleshooting Features

- Recording such readings for future reference allows detector and cable faults caused by abnormal currents to be identified easily
- Logging of accurate resistance, voltage AND current readings is an absolute requirement by alarm inspectorates in order to identify potential faults on the alarm system
- Ideal for recording mA readings for commissioning and maintenance inspections



ACTCA60 mA Current Clamp

Catalogue List Price	£89.00
Web 10% Discount	£80.00
Web NSI & SSAIB 15% Discount	£75.65

ACT CALMASTER

InHouse Multimeter Calibration TestBox

Fed up of sending multimeters away for re-calibration and paying someone else to perform the task? The ACT CALMASTER allows you to perform in-house testing and recalibration of your own multimeters, simply and quickly, saving you time and money.

Features

- Enables in-house testing and recalibration of multimeters to meet BS ISO9000 requirements
- Works in conjunction with your own calibrated multimeter
- Quickly compares accuracy between calibrated meter and meter under test
- Allows you, if necessary, to adjust and recalibrate the meter under test to match the calibrated meter
- Tests AC/DC voltage, resistance and DC current
- Input sockets provided for calibrated meter and meter under test
- Controls provided for AC/DC and resistance
- Input sockets provided for DC current
- Supplied with mains lead for 115VAC or 230VAC and test leads for the master and meter under test

Cost Effectiveness

- Reduces calibration costs to one meter per year
- Minimises downtime and postage costs – no need to send any other meters away to be calibrated
- A cost effect solution for those who have many multimeters in service that need recalibrating regularly





CALMASTER is used in conjunction with your own calibrated multimeter. It enables you to quickly compare the accuracy between the calibrated meter and the meter under test. If the accuracy is out, CALMASTER allows you to adjust and re-calibrate the meter under test to match the calibrated meter. This limits calibration costs to just one meter per year - perfect for those who have many multimeters that need recalibrating regularly.

ACT CALMASTER

Catalogue List Price	£399.00
Web 10% Discount	£359.00
Web NSI & SSAIB 15% Discount	£339.00

web: www.actmeters.com tel: 01744 886660



ACT BATMASTER InHouse ACT Battery Tester Calibration TestBox

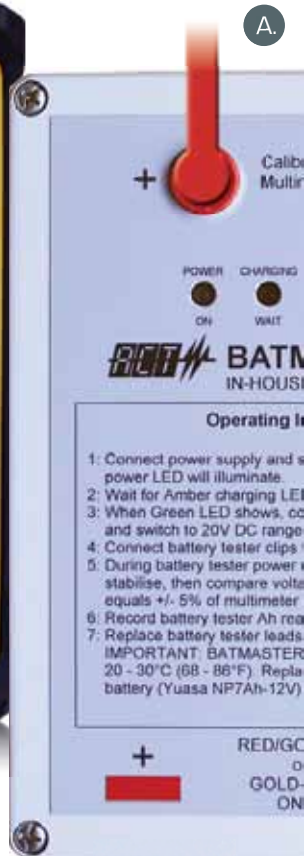
A.
Connect your own calibrated
multimeter to BATMASTER
(top connections)

ACT BATMASTER allows you to perform inhouse testing and recalibration of RED/GOLD-IBT and GOLD-PLUS intelligent battery testers, simply and quickly, saving you time and money.

It is used in conjunction with your own calibrated multimeter and enables you to quickly compare the accuracy between the calibrated multimeter and the battery tester under test. If the battery tester Ah result is low or erratic compared with the multimeter's reading, simply replace the test leads.

Cost Effectiveness

- Reduces calibration costs to one multimeter per year
- Minimises downtime and postage costs – no need to send any other meters away to be calibrated
- A cost effect solution for those who have many ACT Intelligent Battery Testers in service that need recalibrating regularly



**Verifies and recalibrates
ACT RED-IBT, GOLD-IBT & GOLD-PLUS
Intelligent Battery Testers**

B.
 Connect the ACT Battery Tester to
 BATMASTER
 (lower connections)



Features

- Enables inhouse testing and recalibration of RED/GOLD-IBT and GOLD-PLUS intelligent battery testers to meet BS ISO9000 requirements
- Minimises downtime and reduces calibration and postage costs
- Works in conjunction with your own calibrated multimeter
- Quickly compares DCV accuracy between calibrated multimeter and battery tester under test
- Tests and verifies accuracy of Ah Capacity
- Input sockets provided for calibrated meter and battery tester
- Supplied with 12VDC PSU suitable for 110VAC - 230VAC
- Easy to use operating instructions on the panel

ACT BATMASTER

Catalogue List Price	£350.00
Web 10% Discount	£315.00
Web NSI & SSAIB 15% Discount	£279.50

web: www.actmeters.com tel: 01744 886660



ACT LB1

InHouse Calibration Labels



- Insertions for serial number, user initials, calibration date and re-calibration due
- 250 labels supplied per roll

ACT BTL

Battery Tested Labels



- Insertions for temperature, volts, Ah, user initials and date
- 250 labels supplied per roll

ACT Labels

Product Description	1+
ACT LB1 InHouse Calibrations Labels	£8.50
ACT BTL Battery Tested Labels	£8.50



ACT CALKITS

InHouse Calibration for RED, GOLD & PLUS Intelligent Battery Testers

- Kit consists of calibrated leads, clips, replacement labels and instructions. Please note soldering is required.

ACT CALKITS

Product Description	1+
RED & GOLD IBT CALKITS	£25.00
GOLD-PLUS IBT CALKIT	£35.00

ACT452

Telephone Test Set

The ACT452 is a trusted tool for telecom installation and maintenance - ideal for checking potential faults on telephone lines where an alarm communicator is fitted.

The ACT452 operates safely in situations where telephone wiring may be carrying digital traffic, voltage feed to remote electronics or the hazardous voltages that result from fault conditions or misuse of the cable.

Features

- Safe to use on analogue and digital lines
- 'TALK' and 'MONITOR' modes enable lines to be tested without disrupting signals
- Digital Service Protection (DSP) enables safe operation where telephone wiring may carry digital signals, hazardous voltages or fault connections
- 'POL' test button with green/red LEDs indicate correct or reverse A/B polarity connection
- Built-in over current protection against 230VAC and lightning surges
- Active polarity and fault LED indication
- Battery saving auto power on/off
- 3 position volume boost control with easy tone/pulse selection and finger tip microphone mute
- Rugged, drop proof design with belt hook
- Supplied with operating instructions and line cable with red/black crock-clip connectors



ACT452 Telephone Test Set

Catalogue List Price	£85.00
Web 10% Discount	£76.50
Web NSI & SSAIB 15% Discount	£72.25
ACT453 Optional BT Plug-in Lead	£6.95
ACT454 Replacement Crock-clip BT Lead	£6.95

ACT Verifier

Cable Tracer, Resistance Tester & Fault Finder

VERIFIER is a unique cable tester that uses sound to not only find hidden cables, but also test resistance devices and locate faults. It enables the engineer to simply walk-test an installation and 'listen out' for and locate faults in a fraction of the normal time.

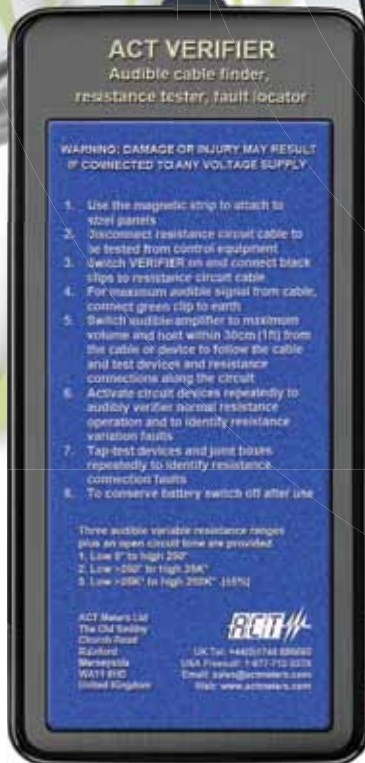
It works by passing an audible tone frequency through the circuit and any of its devices. This tone is picked up by the supplied inductive amplifier, enabling the engineer to listen and follow a hidden cable. Once more, this tone also varies in pitch in accordance to the resistance of the circuit. This means that any fluctuations in tone will identify a fault in a cable or device.

Follow Hidden Cables & Pinpoint Cable Faults, EMI & RFI Interference

Listen to the tone to find and follow hidden cables behind plasterboard, carpet, floorboards and above ceilings. Any cable resistance fault, short or break will be heard by a change of tone. Induced EMI and RFI will also be identified by a sound change.

Identify Devices Connected to Unmarked Cables

The tone can be heard anywhere along the cable AND from the alarm devices. Operating each device in turn will cause the tone to change. Perfect for testing and identification purposes.





Identify Good and Faulty Magnetic Contacts

Variable tones will identify the difference between normal and faulty magnetic contacts. A distorted tone will indicate a faulty contact. By moving the magnet slowly away from the contact, this will verify any normal or faulty contact AND also test the magnet strength.



Test Operation & Sensitivity of PIR Motion Detectors

Positioning the probe near the PIR whilst activating it will verify operation, sensitivity and resistance faults. Tones will change according to the circuit resistance being normally closed or end-of-line. A good PIR when triggered will produce a steady low to high tone. A resistance fault will produce distorted and varying low to high tones. Masking the PIR and tapping the PIR enclosure with a screwdriver will audibly expose wiring connection faults.



Verify the sensitivity adjustment of shock sensors

Placing the amplifier probe near a shock sensor and repeatedly activating it by tap-testing will verify operation, sensitivity and resistance faults. Tones heard will be according to the circuit being normally closed or end-of-line. A good shock sensor will produce a clear, steady low to high tone. A resistance fault will produce a distorted, varying low to high tone.



Verify joint boxes tamper resistance

Placing the probe near junction boxes and tap-testing with a terminal screwdriver will expose resistance tone changes caused by wiring connection faults.

ACT Verifier Kit

Catalogue List Price	£189.00
Web 10% Discount	£170.00
Web NSI & SSAIB 15% Discount	£160.65



ACT GOLD-PLUS

6/12V Intelligent Battery Tester

The ACT GOLD-PLUS is a dual voltage intelligent battery tester, designed for 6V and 12V lead acid batteries from 1.2Ah to 100Ah. It's the only product of its kind to have an Ampere-hour (Ah) calibration control, enabling Ah readings to be adjusted to suit various battery technologies including standby SLA, cyclic GEL and car FLOODED batteries.

The innovative pulse analysis software employed by the GOLD-PLUS enables accurate Ah capacity results based on the battery age, temperature and state of charge.

Quick and easy to use, the GOLD-PLUS is ideal for those who need to test multiple battery technologies effectively.

Features

- Tests 6V and 12V SLA, GEL and Flooded batteries between 1.2Ah and 100Ah
- Max 12V battery that can be tested 150Ah
- Displays DC voltage and actual Ampere-hour (Ah) capacity available in seconds
- Unique 'Ah Calibration Control' feature allows the operator to test various types of lead acid battery technology including standby SLA, cyclic GEL and car FLOODED
- Ultra low heat generation allows continuous battery testing
- State-of-the-art circuit protection against accidental reverse polarity connection
- Ideal for those who need to test a broad range of batteries types in various applications such as alarm systems, UPS, golf, mobility and leisure

Ah RESULTS

When the Ah capacity is displayed on GOLD-PLUS, check the result alongside the Ah capacity table found on the back of the tester. This table shows the most common battery Ah sizes and at what rate they should be recharged or replaced. This makes checking batteries quick and easy. Use our BTL labels to record precise readings for future reference. See page 16.



ACT GOLD-PLUS

INTELLIGENT BATTERY TESTER

Simulates a full (20 hour) battery discharge test
in seconds!

PRESS TO TEST

Tests 6/12V Lead Acid Batteries from 1.2Ah - 100Ah

Can be calibrated to test:

Standby SLA, Cyclic GEL & Car FLOODED batteries

Displays DC Voltage and Ampere-hour (Ah) capacity



+ 0 -
Ah CAL

REVERSE
POLARITY

TEST

Testing new & used Standby SLA batteries

1. Set Ah calibration to zero position
2. Connect to **isolated battery terminals only**
(Note: Do not connect to high resistance bolts)
3. **Make tight connections** Red+ Black-
4. Record battery voltage reading
5. Press test button to obtain Ah capacity
6. Record Ah capacity available in the battery
(Note: The Ah available is determined by battery age, temperature and state of charge)
7. Repeat test to verify capacity if required
8. Recharge or replace if 'FLAT BATTERY' or available Ah capacity falls below 65% of battery stated Ah capacity (see reverse)

Calibrating to Cyclic GEL & Car FLOODED batteries

1. Set Ah calibration to zero position
2. Connect to a **new fully charged battery**
3. **Make tight connections** Red+ Black-
4. Record battery voltage reading
5. Press test button to obtain Ah capacity
6. Adjust Ah calibration as close as possible to match battery stated Ah capacity
7. Repeat test to verify capacity if required
8. Note Ah position to test these types of batteries

Important: To maintain Ah accuracy only use GOLD-PLUS test leads. Part Number: ACT-GPTL

Warning: Input 15VDC MAX

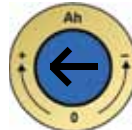


NEW Ah CALIBRATION CONTROL

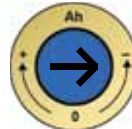
Allows you to calibrate the meter to test standby SLA, cyclic GEL and car FLOODED, quickly and easily. Simply...



Set Calibrate to '0' for standby SLA



to '+' for cyclic GEL



to '-' for car FLOODED

ACT GOLD-PLUS 6/12V Battery Tester

Catalogue List Price	£195.00
Web 10% Discount	£175.50
Web NSI & SSAIB 15% Discount	£165.75

web: www.actmeters.com tel: 01744 886660



ACT D4000

Emergency Lighting Battery Tester

The ACT D4000 will test a wide range of rechargeable battery types, voltages and capacities fitted to emergency lighting systems.

Designed for load testing 'D Cell' rechargeable batteries as well as lead-acid, lithium-ion, nickel-cadmium and nickel metal hydride, the D4000 tests voltages between 2.4V and 12V, with capacities above 4Ah in order to meet the lighting duration requirements of BS 5266-1. It is an ideal tester for batteries used in stand-alone emergency lighting luminaires, security and fire alarm panels, battery powered tools, bicycles and toys etc

Features

- Tests ALL rechargeable batteries between 2.4V and 12V, with capacities above 4Ah
- Ideal for testing various battery types including lead-acid, lithium-ion, nickel-cadmium and nickel metal hydride
- Simulates a 1 hour and full battery duration test in minutes by discharging 1Ah from the battery [single test]
- Identifies flat batteries in seconds
- Fully automatic, simulated load tests with pass and fail LED indication
- Reverse polarity protection fuse
- Quick and easy to use with no switches or complicated settings
- Allows a wide range of batteries types, voltages and capacities to be tested all from the one unit

How it works

Once connected to the battery terminals, the D4000 automatically detects the battery voltage then selects the correct resistance load to discharge 1Ah from the battery.

During the test, if the battery voltage drops below a critical monitored level, a red 'fail' LED will latch on. Provided the battery voltage remains healthy, a green 'pass' LED will show at the end of the test. A yellow LED flashes continuously throughout the test period. The fan-cooled D4000 can be used repeatedly to load test new and used rechargeable batteries with capacities above 4Ah.



How long it takes

The D4000 will identify a healthy battery normally between 7 to 10 minutes, but will only take just 1 minute to identify a defective battery. A low capacity battery will be identified normally within 3 minutes. This makes it possible to quickly identify a good battery without having to wait for the full 1Ah discharge test to be completed.

ACT D4000

Catalogue List Price	£189.00
Web 10% Discount	£170.00
Web NSI & SSAIB 15% Discount	£160.65

web: www.actmeters.com tel: 01744 886660

Troubleshooting Intro

Common Causes of False Alarms

User Error

User error is the biggest cause of false alarms. It is critical for the alarm installer to train their customer on how to operate the system and follow procedure such as closing windows and doors, securing the family pet and following the correct entry/exit route.

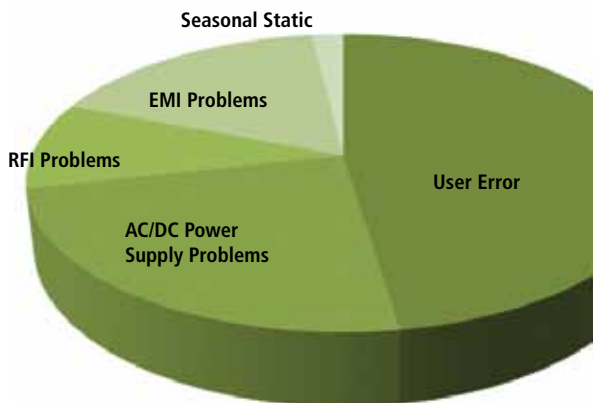
Checking the AC/DC Power Supply

When a false alarm occurs which hasn't been triggered by user error, the first thing that should be checked is the AC/DC power supply. It is critical for the AC/DC supply to be stable to prevent random false alarms and control panel crashes. An AC supply fault or low capacity battery would cause PIRs to trigger falsely and cause LIMs to lockout.

Alarm installers have a duty of care to ensure the AC supply is safe BEFORE connecting the control equipment. Voltage, polarity and Earth loop resistance are the most essential safety tests to perform when checking this power supply. Loop faults can only be performed using a mains multimeter such as the ACT Easiplus. Test for stable DC voltage between 13.5 min and 14.0 max at battery, PIRs, keypads and LIMs.

Remember, AC/DC problems can only be prevented by testing during installation and service inspections.

Check out www.actmeters.com for our latest information on alarm



Identifying False Alarms by RFI

Visual Inspection

Go outside and look for close sources of RFI signals such as CB/Ham radio aerials, local taxi ranks and police, fire and ambulance stations.

Mobile Phone

Place the aerial of your mobile phone against the PIR cover and, standing perfectly still so you don't activate it, dial a number and press send. This test can be performed on any power detector.

Cover

Mask the troublesome PIR securely with a business card or PVC tape and put the circuit on a soak-test.

Finally

If RFI is identified as a potential cause of fire alarms, don't fit a dual microwave/PIR. Microwave is a receiver of RFI and could give more false alarms than an ordinary PIR.

RFI EMI ESD Signals

If an unstable AC/DC power supply is not the cause of the false alarm, the next likely cause is electrical interference. Radio Frequency Interference (RFI), Electromagnet Interference (EMI) and Electro Static Discharge (ESD) can cause big problems for alarm and other electrical systems.

RFI - caused from signals omitted by an external source such as the local police office, taxi CB or HAM radio equipment - will cause specific PIR or shock sensors to activate.

EMI - caused by AC voltage induced from electrical wiring or kitchen appliances into DC alarm cables - will cause random PIR or shock sensors to activate or the control equipment to crash.

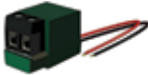
ESD - caused by seasonal weather changes and lightning - will cause keypads to lock out or the control panel to crash when the user enters their entry/exit code

Fit As Standard

Protection, protection, protection is the key to reducing false alarms. Every alarm installer should fit the below products AS STANDARD to prevent RFI, EMI and static from causing problems on your system.

Protection Against EMI & Nearby Lightning

ACT 1313



12V Spike Suppressor

Protects DC supply against induced spikes and nearby lightning

ACT 2323



Mainspike Suppressor

Protects AC supply against induced spikes and nearby lightning

ACT 431

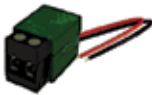


Broadband Filter

Protects the telephone line against induced spikes and nearby lightning

Protection Against RFI

ACT 1376



PIR Stabiliser

Protects PIR DC supply against RFI signals

ACT 3010

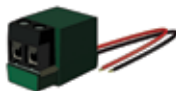


Ferrite Tubes

Protects keypad, LIM and shock sensor DC supply against RFI signals

ACT1313

12V Spike Suppressor



ACT1313 Features

- Protects alarm control equipment and detectors from induced AC and nearby lightning
- Clamps 12VDC against electrical spikes and connects between 12VDC supply and mains earth
- Connect red+ and black- across the 12VDC auxiliary supply and green to mains earth
- Essential for control panels and PSUs

Both the ACT1313 and ACT2323 should be fitted as standard to protect against false alarms and system malfunctions caused by induced AC and nearby lightning.

To prevent such false alarms, fit an ACT1313 to every alarm system as standard - just one to the control panel and each PSU.

The ACT1313 will decouple induced AC from every alarm cable connected to the panel and clamp the 12VDC supply against spikes to the control panel, alarm detectors and plug-on communicators.

Causes of Induced AC

No matter how far you keep alarm cables away from mains, telephone and other electrical wiring, induced AC and electrical spikes will eventually affect the 12V supply to control equipment and cause false alarms and system malfunctions.

The main culprits for false alarms include:

Fluorescent Lighting



Central Heating



Kitchen Appliances



ACT1313 12V Spike Suppressor

Quantity	1+	10+	25+
Catalogue List Price	£8.50	£7.65	£7.23
Web 10% Discount	£7.65	£7.23	£6.80
Web NSI & SSAIB 15% Discount	£7.23	£6.80	£6.38

ACT2323

230V Mainspike Suppressor



Both the ACT2323 and ACT1313 should be fitted as standard to protect against false alarms and system malfunctions caused by induced AC and nearby lightning.

The ACT2323 provides up to 4,500 Amps spike protection across live, neutral and earth.

Testing For Induced AC Voltage

1. Switch multimeter to 20VAC range
2. Connect test probes across the 12VDC+ to PIRs and mains earth. Reading obtained should not exceed 1.2VDC
3. If high induced AC voltage is measured, fit an ACT1313 to the control panel (and any PSU) as described
4. Retest with meter to confirm induced AC voltage reading drops to within 0.5VAC



Walkie Talkies

CB Radio

Vehicles with radio frequency



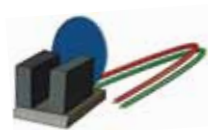
ACT2323 Features

- Continuously protects all security and fire alarm panels, CCTV cameras, access control equipment and security lighting from false alarms and malfunctions
- Provides up to 4,500 Amps spike suppression across live, neutral and Earth
- Neat modular shape fits easily with simple parallel connections to LNE

ACT2323 230V Mainspike Suppressor

Quantity	1+	10+	25+
Catalogue List Price	£12.00	£10.80	£10.20
Web 10% Discount	£10.80	£10.20	£9.60
Web NSI & SSAIB 15% Discount	£10.20	£9.60	£9.00

ACT1414 24V Spike Suppressor



The ACT1414 works in exactly the same way as the ACT1313 spike suppressor but is designed for 24VDC fire alarm panels.

ACT 1414 24V Spike Suppressor

Quantity	1+	10+	25+
Catalogue List Price	£9.50	£8.55	£8.08
Web 10% Discount	£8.55	£8.08	£7.60
Web NSI & SSAIB 15% Discount	£8.08	£7.60	£7.13

ACT1166 HF Earth Line Choke



The ACT1166 is designed to protect 'steel boxed' control panels against RFI signals feeding back from mains earth, onto the 0Volt, affecting the 12VDC supply to the control panel, communicator and alarm detectors. The ACT1166 can be used on any steel boxed panel which ties 0Volt to earth as a preventative measure against RFI.

- Prevents electrical RFI from affecting the 12VDC supply on metal control panels
- Connect in line with mains earth inside the control panel

ACT1166 HF Earth Line Choke

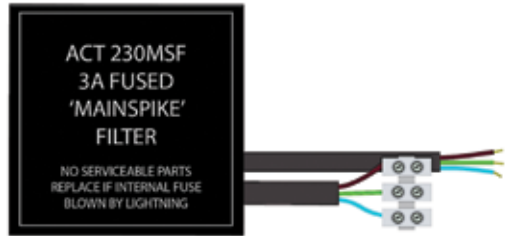
Quantity	1+	10+	25+
Catalogue List Price	£12.00	£10.80	£10.20
Web 10% Discount	£10.80	£10.20	£9.60
Web NSI & SSAIB 15% Discount	£10.20	£9.60	£9.00

ACT 230MSF

230V Mains (EMI/RFI) Filter

The ACT 230MSF will prevent unexplained false alarms and system malfunctions caused by EMI/RFI signals and nearby lightning via the 230VAC mains supply.

The filter is designed to protect against interference on a continuous basis, but in the event of a direct lightning strike, it will self sacrifice in order to protect the equipment.



Features

- Protects against EMI/RFI and nearby lightning via the 230VAC mains supply
- Clamps induced mains spikes
- Suppresses radio frequency interference
- Protects equipment on a continuous basis
- Will self sacrifice in the event of a direct lightning strike
- Terminal connections provided: brown live, blue neutral and green/yellow earth

ACT 230MSF 230VAC Mains (EMI/RFI) Filter

Quantity	1+	10+	25+
Catalogue List Price	£22.00	£19.80	£18.70
Web 10% Discount	£19.80	£18.70	£17.60
Web NSI & SSAIB 15% Discount	£18.70	£17.60	£16.50



ACT211 Intruder Mainspike Suppression Kit (Intruder)

This kit provides the best protection against EMI via the AC, DC supply and earth, for metal intruder control panels. Each filter will continuously clamp electrical spikes via the respective supply to help protect your equipment.



Features

ACT2323 230V Mainspike Suppressor

Continuously protects all security and fire alarm panels, CCTV cameras, access control equipment and security lighting from false alarms and malfunctions. It provides up to 4,500 Amps spike suppression across live, neutral and Earth. A neat modular shape fits easily with simple parallel connections to LNE.

ACT1166 HF Earth Line Choke

Prevents electrical RFI from affecting the 12VDC supply on metal control panels. It connects in line with mains earth inside the control panel

ACT1313 12V Spike Suppressor

Protects alarm control equipment and detectors from induced AC and nearby lightning. It clamps the 12VDC against electrical spikes and connects between 12VDC supply and mains earth.

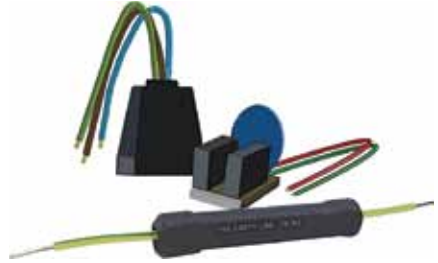
ACT211 Mainspike Suppression Kit Intruder

Quantity	1+	10+	25+
Catalogue List Price	£29.00	£26.10	£24.85
Web 10% Discount	£26.10	£24.65	£23.20
Web NSI & SSAIB 15% Discount	£24.65	£23.20	£21.75

ACT211 Fire

Mainspike Suppression Kit (Fire)

This kit provides the best protection against EMI via the AC, DC supply and earth, for metal fire control panels. Each filter will continuously clamp electrical spikes via the respective supply to help protect your equipment.



Features

ACT2323 230V Mainspike Suppressor

Continuously protects all security and fire alarm panels, CCTV cameras, access control equipment and security lighting from false alarms and malfunctions. It provides up to 4,500 Amps spike suppression across live, neutral and Earth. A neat modular shape fits easily with simple parallel connections to LNE.

ACT1166 HF Earth Line Choke

Prevents electrical RFI from affecting the 12VDC supply on metal control panels. It connects in line with mains earth inside the control panel

ACT1414 24V Spike Suppressor

The ACT1414 works in exactly the same way as the ACT1313 spike suppressor but is designed for 24VDC fire alarm panels.

ACT211 Mainspike Suppression Kit Fire

Quantity	1+	10+	25+
Catalogue List Price	£30.00	£27.00	£25.50
Web 10% Discount	£27.00	£25.50	£24.00
Web NSI & SSAIB 15% Discount	£25.50	£24.00	£22.50



ACT CPS-3 Intruder Control Panel Suppression Kit

This kit provides the best protection against EMI, RFI and nearby lightning via the AC, DC supply and earth, for metal intruder control panels. Each filter will continuously clamp electrical spikes via the respective supply to help protect your equipment.



Features

ACT230MSF 230V Mains (RFI/EMI) Filter

Prevents unexplained false alarms and system malfunctions caused by EMI/RFI signals and nearby lightning via the 230VAC mains supply. The filter is designed to protect against interference on a continuous basis, but in the event of a direct lightning strike, it will self sacrifice in order to protect the equipment.

ACT1166 HF Earth Line Choke

Prevents electrical RFI from affecting the 12VDC supply on metal control panels. It connects in line with mains earth inside the control panel

ACT1313 12V Spike Suppressor

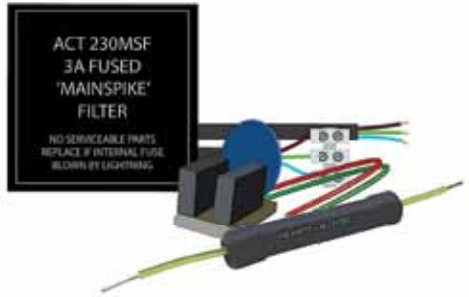
Protects alarm control equipment and detectors from induced AC and nearby lightning. It clamps the 12VDC against electrical spikes and connects between 12VDC supply and mains earth

ACT CPS-3 Intruder Control Panel Suppression Kit

Quantity	1+	10+	25+
Catalogue List Price	£29.00	£27.90	£26.35
Web 10% Discount	£27.90	£26.35	£24.80
Web NSI & SSAIB 15% Discount	£26.35	£24.80	£23.25

ACT CPS-3 Fire Control Panel Suppression Kit

This kit provides the best protection against EMI, RFI and nearby lightning via the AC, DC supply and earth, for metal fire control panels. Each filter will continuously clamp electrical spikes via the respective supply to help protect your equipment.



Features

ACT230MSF 230V Mains (RFI/EMI) Filter

Prevents unexplained false alarms and system malfunctions caused by EMI/RFI signals and nearby lightning via the 230VAC mains supply. The filter is designed to protect against interference on a continuous basis, but in the event of a direct lightning strike, it will self sacrifice in order to protect the equipment.

ACT1166 HF Earth Line Choke

Prevents electrical RFI from affecting the 12VDC supply on metal control panels. It connects in line with mains earth inside the control panel.

ACT1414 24V Spike Suppressor

The ACT1414 works in exactly the same way as the ACT1313 spike suppressor but is designed for 24VDC fire alarm panels.

ACT CPS-3 Fire Control Panel Suppression Kit

Quantity	1+	10+	25+
Catalogue List Price	£32.00	£28.80	£27.20
Web 10% Discount	£28.80	£27.20	£25.60
Web NSI & SSAIB 15% Discount	£27.20	£25.60	£24.00

ACT1376 PIR RFI Stabiliser



The ACT1376 will prevent unexplained false alarms caused by troublesome PIRs affected by RFI signals. Such problems are caused by a specific cable length acting as an aerial which passes the signal from the 12V supply onto sensitive components within the detector. RFI can cause a PIR relay to 'chatter' or 'drop out' altogether resulting in an unexplained false alarm. Once fitted, the ACT1376 will stabilise the DC supply in the event of a DC spike.

- Prevents RFI from affecting a troublesome PIR or dual detector
- Powers a PIR or dual detector for up to 250ms in the event of a DC spike
- Eliminates replacing non-defective motion sensors
- Fitter either inside or behind the troublesome detector with the 12VDC supply connected through

ACT1376 PIR RFI Stabiliser

Quantity	1+	10+	25+
Catalogue List Price	£10.00	£9.00	£8.50
Web 10% Discount	£9.00	£8.50	£8.00
Web NSI & SSAIB 15% Discount	£8.50	£8.00	£7.50

5 Causes of PIR Alarms

1. Check for low or unstable voltage at the detector. Test to make sure the voltage at each PIR is above 13VDC and stable.
2. Check sudden infrared movement / heat changes in view of the detector. Look behind and inside the PIR for insects and identify objects that can move or rapidly change temperature [e.g. pets, vermin, fax, mailbox, radiator or boiler etc].

3. Is white light momentarily blinding the detector? Always choose PIRs with genuine white light filters and avoid fitting facing glass with 50% of its operating range.

4. Check for a direct draught striking the detector. This causes air convection inside the PIR. Make sure cable and screw holes are totally sealed and don't forget the hole where the cable comes through the

cavity wall or ceiling.

5. What about RFI/EMI signals? A mobile phone can be used to test susceptibility to RFI by placing the aerial against the PIR casing and transmitting. Fit an ACT 1376 stabilise inside the PIR to eliminate RFI.



ACT2468

8-Way RFI Filter



- Powerful 1Amp rated RFI filter to prevent RFI malfunctions on any DC troublesome alarm circuit cable
- Particularly beneficial where data corruption occurs to keypads and LIMs
- Works on 12V and 24VDC, normally closed, end-of-line and fire alarm circuits
- Offers virtually no resistance to DC circuits but will reduce RFI signals between 2.5Hz and 800MHz, making them work quicker and more cost effective than re-wiring in screened cable
- Connects between alarm circuit wiring & control equipment
- Supplied as a 1 x 8 block which can be snapped apart to make 2 x 4 ways or 4 x 2 ways as required

ACT2468 8-Way RFI Filter

Quantity	1+	10+	25+
Catalogue List Price	£24.00	£21.60	£20.40
Web 10% Discount	£21.60	£20.40	£19.20
Web NSI & SSAIB 15% Discount	£20.40	£29.20	£18.00

ACT120L

Transistorised Relay



- Eliminates false alarms on a troublesome zone or tamper circuit
- Easy to install and can be used on positive or negative 'normally closed' circuits
- Includes an 'optional latch-link' enabling the module to be triggered by a momentary >5+ or OV signal

ACT 120L Transistorised Relay

Quantity	1+	10+	25+
Catalogue List Price	£13.00	£11.70	£11.05
Web 10% Discount	£11.70	£11.05	£10.40
Web NSI & SSAIB 15% Discount	£11.05	£10.40	£9.75

ACT 4425

ID Line RFI Filter



- Prevents RFI false alarms on iD alarm systems
- Designed to connect between the blue and yellow data wires and the input terminals of the alarm control panel
- Allows data to pass through normally but prevents RFI entering into the control panel
- Should be fitted to all iD systems, especially on take-overs where existing wiring has been used, to prevent potential false alarms from occurring

ACT 4425 ID Line RFI Filter

Quantity	1+	10+	25+
Catalogue List Price	£13.00	£11.70	£11.05
Web 10% Discount	£11.70	£11.05	£10.40
Web NSI & SSAIB 15% Discount	£11.05	£10.40	£9.75

ACT 3010

12V Data Ferrite Tubes



To prevent RFI signals from affecting alarm circuit wiring, fit ACT 3010 tubes over DC, data and contact wires, inside the affected shock sensor. Fit them as standard to both ends of the alarm cabling.

- Wideband EMI attenuation from 30 to 1000MHz
- Fits easily inside control panels, PIRs, vipers, keypads etc

ACT 3010 12V Data Ferrite Tubes

Quantity	1+	10+	25+
Catalogue List Price	£16.00	£14.40	£13.60
Web 10% Discount	£14.40	£13.60	£12.80
Web NSI & SSAIB 15% Discount	£13.60	£12.80	£12.00

ACT 4201

4 Zone Opto-Isolator



The ACT 4201 is designed to prevent false alarms by optical isolating troublesome zones from the control panel. Zone and tamper cables running close to mains, telephone and computer cabling can pick up induced EMI/RFI signals. This can play havoc with the microprocessor control equipment, causing unexplained false alarms and system malfunctions.

Passing normally closed circuit wires through an opto-isolator, totally isolates alarm cabling from the control panel inputs. Long circuit cables affected by nearby lightning can also be isolated this way.

Features

- Prevents false alarms on up to 4 normally closed alarm circuits by isolating the circuit wiring from the control panel zone or tamper input circuit
- Particularly beneficial on alarm takeovers when updating control equipment, but retaining alarm circuit wiring

ACT 4201 4 Zone Opto-Isator

Quantity	1+	10+	25+
Catalogue List Price	£32.00	£28.80	£27.20
Web 10% Discount	£28.80	£27.20	£25.60
Web NSI & SSAIB 15% Discount	£27.20	£25.60	£24.00

ACT 431 DSL Broadband Alarm Filter

Make your alarm systems 'BROADBAND-READY' and help protect your communicator against direct lightning via the BT line by fitting our ACT 431 DSL Broadband Filter as standard.

If your customer upgrades to broadband without telling you, your communicator may no longer work in the event of a break-in. This could compromise your customer's insurance if the analogue communicator fails to work by changing to a digital broadband line. The ACT 431 DSL filter has screw terminals for quick and easy installation within the control panel.

If 'Line Seizure' is not necessary, the filter can be connected between any BT block terminal and the alarm communicator. If 'Line Seizure' is a requirement, the filter must be connected in accordance with instructions between the incoming Master BT Socket and the alarm communicator. When connecting filters and communicators, it is essential to test the BT line for voltage, polarity and fault conditions by using a telephone test set.



Features

- Enables analogue alarm signals to operate securely on broadband and DSL lines
- Meets BSEN 50131 requirements
- Provides terminal connections to be wired directly to the master phone socket and alarm equipment
- Suitable for REDCARE, digital communicators and speech dialers

ACT 431 DSL Broadband Alarm Filter

Quantity	1+	10+	25+
Catalogue List Price	£20.00	£18.00	£17.00
Web 10% Discount	£18.00	£17.00	£16.00
Web NSI & SSAIB 15% Discount	£17.00	£16.00	£15.00

Q&A Guide

To Alarm Fault Finding

Does the control panel fully operate correctly?

No? Then check panel AC/DC supply for faults.

What is the control panel made of?

If metal, fit an ACT211 control panel suppression kit but if plastic, fit an ACT1313 spike suppressor and ACT2323 mainspike suppressor.

Are there any remote PSUs?

If so, fit an ACT1313 spike suppressor and ACT2323 mainspike suppressor.

Have standby batteries been tested?

No? Then test with a GOLD-PLUS Intelligent Battery Tester or replace batteries.

Do false alarms occur when switched off?

Yes? Check for contact faults. Fit an ACT120L transistorised relay to the troublesome panel contact circuit.

Do false alarms occur on door contact zones?

If so, check for contact faults. Fit an ACT120L transistorised relay to the troublesome panel contact circuit.

Do false alarms occur on PIR/dual detector zones?

Yes? Check voltage at each detector is stable and above 13VDC. Fit an ACT1313 spike suppressor.

Do false alarms occur on specific PIR/dual detector zones?

If so, fit an ACT1376 PIR stabiliser inside the troublesome PIR but if not, check voltage at each

detector is stable and above 13VDC. Fit an ACT1313 spike suppressor.

Do false alarms occur on window or door shock sensors?

Yes? Then check sensitivity. Fit an ACT3010 ferrite tube over each wire at the troublesome shock sensor.

Does the control panel crash or lock out?

If so, check the AC supply, Earth and standby battery for faults. Fit an ACT2323 mainspike suppressor.





ACT3000
Autoranging Multimeter

Voltage AC/DC Range	AC: 3.2V 32V 320V 740VAC DC: 320mV 3.2V 32V 320V 1000VDC
AC/DC Resolution	AC: 1mV 10mV 100mV 1V DC: 100 μ V 1mV 10mV 100mV
AC/DC Accuracy	AC: 1.2% rdg+4dgts DC: 0.5% rdg+2dgts
Resistance	Range: 320 Ω 3.2K Ω 32K Ω 320K Ω 3.2M Ω 30M Ω Resolution: 0.1 Ω 1 Ω 10 Ω 100 Ω 1K Ω 10K Ω Accuracy: 0.8rdg+2dgts
Current AC/DC	Range: 320mA 3200 μ A 32mA 320mA 20A Resolution: 0.1mA 1mA 10mA 100mA 10mA Accuracy: AC: 1.5% rdg+5dgts DC: 1.0% rdg+2dgts Fuse Overload Protection: 0.5A 250V and 16A 380V
Diode	Test: Forward/Reverse Resolution: 1mV Accuracy: 1% rdg+2dgts Test Current: 0.8mA Open Circuit Voltage: 3.2V Overload Protection: 400Vrms
Display	LCD: 3 $\frac{3}{4}$ digit Max Count: 3200 Auto-Power-Off: 10min Sampling: Digital 2 per second Analogue: 12 per sec
Operation	Power: 2 x 1.5V AAA alkaline batteries Battery Life: Approx 800 hr
Dimensions	180L x 82W x 38Dmm
IN THE BOX	<ul style="list-style-type: none"> ACT3000 Autoranging Multimeter ABS case with flip-stand Protective rubber holster Test leads Operating manual



ACT720
Datalogging Multimeter

AC/DC Range and Resolution	1000V AC/DC resistance range with 0.01mV resolution
Resistance Range and Resolution	50M Ω resistance range with 0.01 Ω resolution
Capacitance Range and Resolution	9999 μ F capacitance range with 0.01nF resolution
Frequency Range and Resolution	125KHz frequency range with 0.001Hz resolution
Diode Range	0.8mA
Temperature Range	-50 to 1000 °C (-58 to 1832 °F)
High Basic DC Voltage Accuracy	0.08%
Datalog Sample Rate	0.05 [0.2 for °C/°F & Ω , 0.4 for HZ and 1 for C], 1, 20, 40, 60, 120, 240 & 480 seconds
Power Supply	9V battery
Dimension	186 x 87 x 35.5mm
IN THE BOX	<ul style="list-style-type: none"> ACT720 Datalogging Multimeter with built-in stand & belt clip Protective rubber holster with water resistant housing CAT IV silicon test leads with attachable crock clips Temperature probe, Windows data acquisition software RS-232 cable interface with 9 pin serial connector Serial to USB adapter Instrument user manual Alarm troubleshooting manual



ACTCA60
mA Current Clamp

Range Measurement	10mA - 60A DC or AC
Frequency	(AC) 50Hz to 20KHz
Accuracy	DCA: \pm 1.5% ACA: \pm 2% (40Hz - 2KHz) ACA: \pm 4% (2K - 10KHz) ACA: \pm 6% (10K - 20KHz)
Resolution	1mA
IN THE BOX	<ul style="list-style-type: none"> ACTCA60 mA Current Clamp Test plugs Instructions



ACT452 Telephone Test Set

Long Line Operation	With a 48V feed > 5k Ω loop, minimum current < 10mA
Dc Resistance	Off-hook TALK mode: < 300 Ω On-hook idle: > 5M Ω (10uA @ 48VDC) Monitor: > 5M Ω (20uA @ 100VDC)
Monitor Impedance	100k Ω @ 1kHz
Dial	Pulse Dial: 100pps break 60% DTMF/Tone dial level: -3dm typical Flash/Timed Break Recall 100mS (switchable 600mS, 300mS)
Memory Dial	32 digit last number redial PBX Pause: 2 seconds
Alkaline Battery Led	One year normal use Low battery indication, 2 hours remaining continuous use
Automatic Power Shut Off	Five minutes after disconnection
IN THE BOX	



ACT Verifier Cabling Tool

Variable Resistance Tones	Low 0 Ω to high 250 Ω Low <250 Ω to high 25K Ω Low <25K Ω to high 250K Ω
Battery Type	9V (PP3) Alkaline
Enclosure	Flame retardant ABS
Dimension	110L x 63W x 20Dmm
IN THE BOX	<ul style="list-style-type: none"> • ACT Verifier • ACT 200GX Inductive Amplifier • Magnetic Test Screwdriver • Carry case



ACT CALMASTER Multimeter Calibration Kit

Resistance	00.0 Ω to 110K
AC Volts	0.0 - 230VAC
DC Volts	0.0 - 36VDC
DC Current	1mA, 10mA, 1000mA and 1 Amp
Fuse Protection AC Input	250VAC 1.6 Amp max
Fuse Protection AC Output	250VAC 50mA max
Dimensions	216L x 132W x 102Dmm
Weight	2.2kg
IN THE BOX	<ul style="list-style-type: none"> • ACT CALMASTER • Test Leads • Test Labels • Operating Instructions



ACT BATMASTER Battery Tester Calibration Kit

Pass Rate	Equals +/-5% of multimeter reading
Operating Temp	20 - 30C (68 - 86F)
Battery Replacement	When red LED indicates, replace with Yuasa NP7 Ah 12V
Dimensions	164H x 120W x 145Dmm
Weight	3KG
IN THE BOX	<ul style="list-style-type: none"> • ACT BATMASTER • Power Supply • Operating Instruction



**ACT GOLD-PLUS
Intelligent Battery Tester**

Operating Voltage	6V and 12V DC
Reverse Polarity Protection	Red LED Indication
Max Input Voltage	>15VDC
Battery Types	SLA, GEL & Flooded
Battery Sizes	6V (1.2Ah - 12Ah) 12V (1.2Ah to 100Ah)
Ah Capacity Test	Simulated 20 hour (C20) load test to 10.50VDC
Ah Calibration	Calibrated at 0 (zero) position to brand new fully charged premium brand SLA batteries rated at C20hour at 20C (68°F)
Ah Result	Based on the battery under test age, temperature and state of charge
Ah Adjustment	Provides ± Ah adjustment to brand new fully charged standby SLA, cyclic GEL and car FLOODED lead acid batteries
Battery Table	Recharge or replace battery when Ah capacity available falls below 65% of the battery's stated capacity
Display Type	Back-lit LCD
Flat Battery Warning	6V <5.30VDC, 12V <10.50VDC
Repeat Test Operation	Can perform repeat tests continuously
DCV Accuracy	± 3% of displayed reading
Ah Accuracy	± 10% Fully charged premium brand C20hour rated SLA batteries at 20 - 25C (68F - 77F)
Applied Pulse Load	6A 1.2Ah - 7Ah, 18A 8Ah - 100Ah
Ah Cal Adjustment	Aprox ± 25 dgts
Case Construction	High impact ABS
Size	210H x 110W x 41Dmm
IN THE BOX	<ul style="list-style-type: none"> • GOLD-PLUS Intelligent Battery Tester • ACT-GPTL Test Leads • ACT430N Soft Carrycase • Operating Instructions • Certificate of Conformity



**ACT D4000
Emergency Lighting
Battery Tester**

Input Sockets	Red + Black - (4mm)
Test Leads	2m long, heavy duty leads with durable clips (part no. ACT-LMTL)
Power Supply	Self-powered by battery under test (step-up inverter)
Led Indication	red/fail, amber/testing, green/pass
Acceptable Batteries	2.4V to 12V (Nicaid, NIMH & SLA batteries)
Acceptable Capacity	Greater than 4Ah
Test Times	Between 7 to 10 minutes dependant on battery voltage
Heat Dissipation	Between 23 to 115 watts, heatsink cooling with processor controlled fan
Ambient Operating Temp	-5 to 40 deg C
Max Heatsink Temp	[safety trip point] 100 deg C
Input Protection	Reverse polarity and high voltage protection (18VDC max)
Input Fuse	10Amp quick blow blade type
Enclosure	Flame retardant ABS
Dimensions	167mm x 107mm x 6mm
IN THE BOX	<ul style="list-style-type: none"> • ACT D4000 • Test Leads • Carry Case • Operating Instructions



ACT 4201
4-Zone Optoisolator

Output Connections To Panel	C1-C4 normally closed 'fail-safe' relay contacts (2A resistive/24VDC)
Input Circuit Connections	C1-C4 normally closed zone or tamper circuits
Loop Resistance	10K max
12VDC Supply	120mA max



ACT 120L
Transistorised Relay

Operating Voltage	10-15VDC
Input / Relay Terminals	+Trig, 12V+, 0V, -Trig / N/O, N/C, Common
Max Loop Resistance	10KΩ
Output	Clean S/P relay changeover contacts at 1amp
Relay Rating	3A at 24VDC
Current Energised	30mA max
Trigger Voltage/Current	Positive 5V+ and negative 0V/ 1mA max

20 Tips

To Prevent False Alarms

Control Equipment

1. Take the mains supply from the consumer board
2. Charge batteries overnight before using them
3. On larger systems, power PIRs from a separate PSU
4. Make sure PSUs come off the same phase/Earth mains supply
5. Always eliminate induced AC by fitting a 12V spike suppressor

Alarm Cables

6. Don't run alarm cables next to mains or any other service cables
7. Connect unused spare wires down to Earth
8. Always use screened cable

for keypads, LIMs and iD circuits

9. Never run data and sounder circuits in the same cable
10. Use insulated staples in staple guns
11. Always solder twisted joints on EOL and iD circuits

PIR Detectors

12. Choose PIRs fitted with genuine white light filters
13. Don't fit PIRs within 50% of their range facing glass
14. Avoid placing PIRs close to radiators, fireplaces and boilers etc
15. Make sure all windows and doors are closed
16. Seal PIR entry holes,

especially where cables come through walls

17. Use dual technology where insects and rodents are a problem
18. Make sure the DC supply is above 13V and stable
19. Fit a PIR stabiliser to prevent false alarms caused by RFI

Commissioning

20. Complete the control panel checklist overleaf as part of your procedure



CONTROL Panel Checklist - Installation Details

Date:..... Ref:..... User Code:.....
 Name:..... Default Code:.....
 Address:.....
 Tel:..... Panel Model:.....

Always perform the following test in the order shown

MAINS PHASE NEUTRAL TEST: AC voltage between live and neutral This should measure between 220 - 250VAC	
MAINS PHASE EARTH TEST: AC voltage between live and earth This should be the same as the previous reading	
MAINS NEUTRAL EARTH TEST: AC voltage between neutral and earth This reading should not exceed 1.2VAC	
POWER SUPPLY CURRENT NORMAL TEST: AC current used by system when unset. Measure with meter in series with the transformer output	
POWER SUPPLY CURRENT IN ALARM TEST: AC current used by system when in alarm. As step 3	
INDUCED AC TEST: AC voltage between DC+ and earth. AC noise should not exceed 1.2volts max	
BATTERY CHARGING VOLTAGE TEST: DC voltage at battery terminals. Measure with charge leads connected to the battery	
PANEL AUXILIARY DC VOLTAGE TEST: DC voltage supply to detectors. Should be within ± 1 volt of the battery charging voltage	

BATTERY FLOAT CHARGE TEST: DC mA current flowing through battery. Should fall from a double mA figure to a single mA figure within 30 seconds	
BATTERY SYSTEM CURRENT NORMAL TEST: DC current used by system when unset. Ideally, not more than five percent of the battery's Ah capacity	
BATTERY SYSTEM CURRENT IN ALARM TEST: DC current used by system when in alarm. Ideally, not more than ten percent of the battery's Ah capacity	
BATTERY TEST: Record temperature, voltage and capacity available. Replace battery when reading falls below 65% of Ah capacity °C DCV	Ah
CIRCUIT RESISTANCE TESTS: Record all circuit resistances. Circuits must be removed from control panel before testing	
CIRCUIT EARTH LEAKAGE TEST: Check for resistance between zone, tamper and earth. Test with meter on highest meg ohm range	
BELL TAMPER RETURN TEST: Record resistance between 0 volt and removed tamper return. Check for stable resistance. Ring bell to induce vibration	
PANEL ZONE WALK TEST: Walk test all detection zones to confirm operation. Check each circuit operates normally, especially after lightning	
SELF-ACTIVATING BELL TEST: Remove hold-off voltage to confirm operation. Replace if defective	
BELL AND STROBE TEST: Activate bell and strobe to confirm operation. Replace if defective	
COMMUNICATOR TEST: Activate communicator to confirm operation. Confirm correct operation with alarm receiving centre	
WIRING AND CONNECTIONS: Check panel for incorrect or loose wiring connections. Check all cables are marked and connected correctly	
DETECTOR VOLTAGE TEST: Check voltage at furthest detector is above 13VDC. Low or unstable DC voltage at the detector is a main cause of false alarms	

STEP 1

MAINS VOLTAGE ACROSS LIVE AND NEUTRAL

1. Switch multimeter to highest AC range
2. Connect test probes across live and neutral
3. Reading should be between 220 and 250VAC and reasonably stable



STEP 1.2

MAINS VOLTAGE ACROSS LIVE AND EARTH

1. Connect test probes across live and Earth
2. Reading obtained should be almost identical to previous reading
3. A difference of more than 1.2VAC means an Earth fault may exist



STEP 1.3

MAINS VOLTAGE ACROSS NEUTRAL AND EARTH

1. Switch the multimeter to 20VAC range
2. Connect test probes across neutral and Earth
3. Reading should not exceed 1.2VAC (example shows .0299mV)



STEP 2

POWER SUPPLY CURRENT NORMAL (UNSET)

1. Switch meter to highest AC current range
2. Disconnect either AC output lead to panel
3. Connect test probes in series with removed lead and power supply terminal
4. Record AC mA reading obtained



STEP 3

POWER SUPPLY CURRENT IN ALARM

1. Generate a full alarm condition
2. Record AC mA reading obtained
3. Excessive current in this or previous test indicates a system fault
4. Disconnect 12VDC supply to PIRs, bells, battery etc in turn to identify fault



STEP 4

INDUCED AC VOLTAGE

1. Switch multimeter to 20VAC range
2. Connect probes across any DC+ and Earth
3. Induced AC reading should not exceed 1.2V
4. To eliminate induced AC, fit an ACT 1313 12v spike suppressor



STEP 5

BATTERY CHARGING VOLTAGE

1. Switch multimeter to 20VDC range
2. Connect test probes across battery
3. Reading should be between 13.5 - 14VDC [Below 13V the battery will not charge, above 14.5V the battery will overcharge]



STEP 6

AUXILIARY DC VOLTAGE

1. Connect probes across auxiliary DC supply
2. Reading obtained should be within 0.5VDC of battery charging voltage.
3. Any variation ± 1 VDC may cause false alarms



STEP 7

BATTERY FLOAT CHARGE

1. Switch multimeter to DC mA range
2. Remove red charge lead from battery
3. Connect test probes in series with removed charge lead & positive battery terminal
4. A double mA reading, falling to a single mA reading should occur within 30 seconds
5. If a constant high or no mA reading, replace battery



STEP 8

BATTERY CURRENT NORMAL (UNSET)

1. Switch multimeter to 20A DC range
2. Disconnect mains supply by removing panel or 'spur' fuse
3. Reading ideally should not exceed 5% of battery capacity (7Ah = 350mA)



STEP 9

BATTERY CURRENT IN ALARM

1. Generate a full alarm condition
2. Reading ideally should not exceed 10% of battery capacity (7Ah + 700mA)



STEP 10

BATTERY CAPACITY TEST

1. Disconnect battery from control panel
2. Check battery terminals are clean
3. Connect battery tester leads red+ black-
4. Record ambient temperature, DC voltage and Ah capacity available
5. Replace battery when capacity falls below replace below 4.55Ah)



Battery Testing Tips

Understanding The Technology

Battery 'C' Rating?

Battery C Rating

In addition to the stated voltage and Ah capacity, SLA batteries have a 'C' rating designed to meet specific load applications such as C5, C10 and C20. The vast majority of SLA batteries are rated C20 which means they are designed to provide 1/20th of the stated Ah capacity for 20 hours to 10.5V. For example, 7Ah/ C20 = 350mA load for 20 hours. If the 'C' rating is not specified consult the battery manufacturer.

Data Code

Manufacturers use different codes to decipher the date of production which is normally stamped on the battery.

It is important to decipher this date code for inventory rotation purposes and to ensure you don't have power supply problems caused by installing old self-discharged stock.

Code Types Below are three date code examples of premium brand 12 V/7Ah SLA batteries:

- a) Genesis Code 050308G = Mar 8th 2005
- b) Power-Sonic Code 02065-L = Jun 2nd 2005
- c) Yuasa Code 0603173B = Mar 17th 2006

If you cannot decipher the date code contact the battery manufacturer.

SLA Battery Types

There are two common types of SLA battery, general standby (permanently charged) and cyclic use (charged, then discharged).

General Standby

Standby SLA batteries are designed to be normally permanently charged. Applications include security, fire, UPS and telecommunication standby systems. In the event of mains failure, they are designed to provide 1/20th of the stated capacity for 20 hours (e.g. 7Ah/20 = 350mA). **IMPORTANT:** To avoid damage, standby batteries should not be deep discharged below 10.5V.

Cyclic Use

Cyclic SLA batteries are designed to be charged then deep discharged repeatedly. Applications include mobility scooters and golf carts. **IMPORTANT:** To avoid damage, cyclic batteries must be fully recharged immediately after use. SLA batteries normally self-discharge at 3% per month and so must be fully recharged when the voltage drops below 12.30V.

SLA Battery Technology

There are two types of SLA technology, AGM and GEL.

AGM

In AGM (Absorbed Glass Mat) sealed batteries, an electrolyte paste is absorbed between the plates and a fibre glass mat. AGM technology is cheaper to produce than GEL and accounts for the vast majority of SLA sales. Applications include general standby and motor vehicles.

GEL

In GEL sealed batteries, a silica additive causes the electrolyte liquid to stiffen. GEL technology provides less instant energy than AGM but gives greater long term energy delivery. Applications include mobility scooters and golf carts.

Visual Inspection

If an SLA battery shows any sign of white residue leakage around the cells or battery terminals it is defective and must be replaced. If a battery in service rattles when shaken it is faulty and must be replaced and recycled.

Check the Voltage

To avoid potential battery failure problems, it is essential to check the voltage level in new batteries to ensure that they have been sufficiently charged by the manufacturer before leaving the factory. Any battery with less than 12.30V should be returned to your supplier as suspect. A new out-of-the box battery should show above 12.60VDC.

Battery Charging - Constant Voltage

In order for 12V SLA batteries to charge fully, they must be charged at between 13.5VDC minimum and 14.0VDC maximum. The time taken to fully charge will vary substantially depending on the Ah size of the battery. A flat battery after fully recharging should be allowed to rest for 24 hours before testing with the GOLD-IBT. Batteries that are on permanent charge can be tested immediately.

Batteries Hate Heat

For maximum life and performance, an SLA battery should be maintained at between 20 °C - 25 °C (68 °F - 77 °F). At significantly higher or lower temperatures the Ah capacity available could vary by up to 50%. Be aware that SLA batteries hate heat, the hotter the battery the shorter its life.

Battery Life

For maximum life and performance, a standby SLA battery should be maintained at a constant 20 °C to 25 °C (68 °F - 77 °F) temperature and charged at a constant 13.8VDC (2.3V per cell). Under these conditions, an SLA battery should have 90% of its stated Ah capacity after 3 years, 65% after 4 years and 40% after five years

NEW GOLD-PLUS 6/12V Intelligent Battery Tester



T&Cs

Terms & Conditions

1.1 DEFINITIONS: In these terms and conditions of sale ("the Conditions of sale"); the Company means ACT Meters Ltd; the Customer means the person, firm or company, unincorporated association or public authority purchasing or agreeing to purchase the Goods from the company; the Goods means the goods and/or services agreed to be bought and sold under the Order; the Order means the Customer's order for the Goods which when accepted by the Company constitutes the contract.

1.2 ALL DEALINGS (INCLUDING ORDERS) BETWEEN THE COMPANY AND THE CUSTOMER SHALL BE SUBJECT TO THESE CONDITIONS WHICH SHALL PREVAIL OVER ANY TERMS OR CONDITIONS WHENEVER OR STIPULATED BY THE CUSTOMER.

2.1 GOODS: All descriptions, product specification and particulars relating to the Goods may be varied at any time by the Company and without notice.

2.2 The quantity quality description price and specification of the Goods shall be quoted in the order.

2.3 The Customer shall be responsible for ensuring the accuracy of the Order and that the Goods are suitable for the Customer's purpose.

3.1 PRICE AND PAYMENT: The price quoted in the Order is the price of the Goods. Prices quoted are exclusive of VAT, other taxes, packing, delivery and installation.

3.2 The Company without notice reserves the right to vary the prices quoted in the Order by upwards additions in accordance with charges in the Customer's specifications or due to increased market costs or exchange rates.

3.3 Orders placed shall only be accepted by the Company upon receipt of satisfactory references as to the credit worthiness.

3.4 Payment shall be due on the 20th of the month following the date of invoice. Interest on overdue invoices will be charged at the rate of 4% over Barclays Bank Plc current base lending rates. No extended credit will be allowed.

3.5 The Customer shall not be entitled to withhold or delay payment of any monies due to the Company on account of any claim counterclaim or right of set off or otherwise. Time of payment shall be of the essence of the contract.

4.1 DELIVERY AND RISK: The time for the delivery or collection of the Goods or the completion of any services relating to the Goods shall not be of the essence and shall not be breach of contract and the Company shall not be liable for any delay or the consequences arising therefrom.

4.2 Place of delivery shall be the Customer's place of business as

specified on the Order. The Goods shall be at the Customer's risk from the time the Goods enter the Customer's premises or if the Customer specifies that he wishes to collect the Goods from the time of such collection.

4.3 All orders over the value of £100.00 net will be dispatched free of charge in mainland UK. Every endeavour will be made to dispatch Goods for delivery the next day (Monday to Friday) in which cases Orders must be placed by midday. The Company reserves the right to make an extra charge for delivery to a different address or for storage.

4.4 The Customer is required to inspect the Goods immediately upon delivery or upon completion of any services forming part of the Goods and to immediately notify the Company of any defects or complaints. PARCELS DELIVERED DAMAGED SHOULD BE RETURNED IMMEDIATELY TO THE COMPANY.

4.5 Export deliveries shall be charged at extra costs to include freight and insurance charges. Price available on application. Payments for deliveries to Customers abroad should be made to the Company by irrevocable letter or credit, banker's draft or through a UK confirming house.

5.1 ACCEPTANCE: No claims for damage, delivery, misdelivery, loss or storage of Goods will be considered unless notified in writing to the Company within 7 days of the date of the invoice, quoting the invoice number and giving full details. Packing etc should be retained.

5.2 Admitted shortages will be replaced at the previously quoted price on the Order.

6.1 PROPERTY IN GOODS: Notwithstanding the passing of risk in 4.2 the Goods shall remain the sole and absolute property of the Company and ownership shall not pass to the Customer until payment is received by the Company for all monies due from the Customer to the Company on any account.

6.2 Until ownership passes the Customer shall keep the Goods separate and distinct from any other property and insured, protected stored, marked and distinct so as to remain clearly identifiable as the Company's.

6.3 Until payment is made in full of all monies due from the Customer to the Company, the Customer is in possession of the Goods solely as a fiduciary bailee or the Company.

6.4 Until property in the Goods passes to the Customer the Company shall be entitled to request that the Customer delivers up the Goods failing which the Company shall be entitled to enter any premises where they are stored or affixed and may repossess or remove the same from such premises and the Customer shall keep



Weee Directive

ACT badged products that are broken, faulty or have come to the end of their serviceable life can be returned to ACT Meters for disposal under the WEEE directive. Test meters sent for re-calibration that are found to be faulty or beyond economical repair will be disposed of under the WEEE directive on written authority from the customer.

the Company fully indemnified against any liability arising from the exercise of that right herein contained.

6.5 Until property in the Goods passes to the Customer the Customer shall not cause or suffer the Goods to be worked upon or mixed with or incorporated with any other goods or things belonging to the Customer or any third party.

7.1 RETURNS: No returns except "Under Guarantee" replacements are accepted without our consent. Goods returned "not wanted" or "incorrectly ordered" will only be accepted in their original packing and will be subject to a 12.5% handling charge. In all cases the invoice/delivery note number must be quoted. Goods out of warranty cannot be returned for credit.

7.2 Cancelled orders can only be accepted after prior negotiation. A cancellation fee may be charged by the Company.

8.1 WARRANTY: All Goods supplied by the Company are warranted free of defects caused by faulty workmanship for a period of one year from the date of invoice provided that this warranty shall not apply unless:-

8.1.1 the Customer promptly notifies the Company of breach of warranty and

8.1.2 the defective Goods are returned to the Company carriage paid and

8.1.3 examination by the Company confirms that there is a defect in the Goods and such a defect has not arisen by misuse, neglect, method of storage, faulty installation, handling testing, repair or by alteration or accident

8.2 A valid claim must be brought within the one year warranty period and shall be limited to replacing or repairing the Goods or the issuing of a credit note as the Company shall in its sole discretion determine.

8.3 Save as provided herein and save where the Goods are sold to a person dealing as a consumer and save to the extent provided by law all conditions, warranties or representations express or implied statutory or otherwise in relation to the Goods are hereby excluded.

8.4 No warranty is given and no liability is accepted where the Goods are supplied in accordance with the Customer's own specifications and designs and the Customer shall indemnify the Company for any breach of intellectual property of rights.

8.5 No warranty is given and no liability is accepted where the Company provides technical advice or consultancy services in connection with the Customer's Order or Goods supplied.

8.6 So far as the law permits the Company shall not be liable for

any loss or damage arising from the Order or, Goods or services supplied with the Goods, or the actions of the Company including without limitation to the foregoing loss of profits, economic loss, loss of goodwill and costs or removal and reinstallation.

9.1 TERMINATION: If the Customer fails to comply with the terms of payment or any of these Conditions or if the Customer ceases to trade or any event or action is taken

with regard to bankruptcy or insolvency or liquidation or administration then the Company reserves the right to terminate the Order, stop Goods in transit and discontinue further delivery of Goods and reclaim from the Customer any extra costs so incurred.

10.1 GENERAL: The restrictions contained in the Conditions are considered reasonable but if any condition is subsequently found to be unreasonable or unenforceable it shall be deleted from these Conditions and the remaining Conditions shall remain effective.

10.2A ny failure to enforce its rights here under shall not be taken as a waiver of those rights by the Company.

10.3 These Conditions shall be governed and construed in accordance with English Law and the parties shall submit to the exclusive jurisdiction of the English Courts.

11.1 TELEPHONE ORDERS: If it is your policy to send written confirmation of telephone orders, please ensure it is clearly marked "confirmation". Failure to do so may result in duplicated Orders. A duplicated order returned "not required" will be subjected to 7.1 in these Conditions.



RoHs Directive

Although every endeavour will be made to use RoHs components and manufacturing procedures, test and measuring equipment falls under category 9 (monitoring and control equipment) which is outside the RoHs directive.



A large rectangular area containing 25 horizontal dotted lines, intended for handwritten notes.



ACT METERS LTD



PRODUCT CATALOGUE

specialist test equipment
false alarm solutions

