



Alarm test equipment
Circuit filters & modules
Testing & troubleshooting



Certificate no. 27253

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iD Test Meter

User Manual

Patents applied for

Introduction:

The iD Test Meter is designed to provide comprehensive diagnostic facilities for verifying the integrity of an iD system before commissioning, and for investigating faults.

The tests are performed by connecting the iD line directly to the test meter, which takes over control of the line. It can thus be used with any iD system, regardless of the control panel to be used. It does NOT obviate the need to check cable resistance measurements, as required by BS.4737, etc.

The meter requires connection to a 12v supply, which may be a (charged) battery, the Control Panel, or any other 12v DC supply.

Calibration:

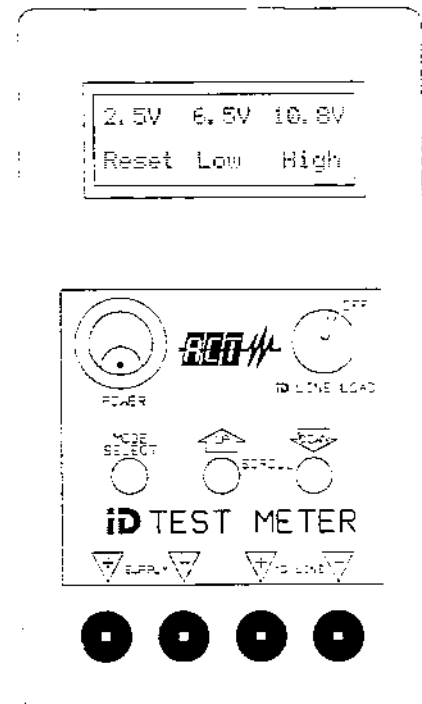
The unit is supplied fully calibrated, and should be returned to the factory for re-calibration every 12 months.

Warranty:

The unit is covered by a 12-month warranty. ACT Meters Ltd. will repair or replace, at our discretion, any product developing a fault, free of charge.

If the failure was caused by operating the unit outside of its specification, by physical damage, or by unauthorised modification, we reserve the right to raise an appropriate repair charge.

Units for repair or calibration should be returned to the factory, suitably packed to prevent damage, and be accompanied by full details of the fault, and the full return address.



Connections:

Connections to the unit are made by means of four screw terminals, which will also accept meter leads with standard 4mm plugs.

Connections are:

RED:	+12v power
BLACK:	0v power
YELLOW:	iD Line +
BLUE:	iD Line –

The unit will be most effective in identifying faults when powered from the Control power supply, but some faults may be highlighted by using an alternative 12v DC source, such as a (charged!) battery.

ALL TESTS MUST BE PERFORMED WITH THE ID LINE DISCONNECTED FROM THE CONTROL PANEL.

Controls:

Power:	Isolates 12v power
Mode:	Selects test mode
Down / Up:	Scrolls through individual detector addresses
Line Load:	Switches variable resistive load across line. This switch should be left in the OFF position (fully anti-clockwise and clicked 'off') except when using Mode 5.

EXCEPT FOR MODE 5, ALL TESTS REQUIRE THE 'ID LINE LOAD' SWITCH TO BE FULLY OFF – ensure that a click is heard.

Specifications:

The unit is calibrated to the voltage levels specified by the biscuit manufacturer. Range of tolerance is:

'High' voltage	10.80 – 11.20 volts
'Low' voltage	6.30 to 6.50 volts
'Reset' voltage	2.50 to 3.00 volts

The unit is capable of diagnosing a full network of 30 biscuits.

Due to varying techniques used for iD monitoring on different control panels, we cannot guarantee that results are exactly consistent with the control panel in use.

Powering Up:

Connect the unit to a 12v DC power source, but do NOT yet connect the iD line, check that the 'iD Line Load' switch is correctly 'OFF' and switch the 'power' on.

The display backlight will immediately illuminate, and display the software version (1.3) fitted, before moving to mode 1 (see below).

Select mode 3 by pressing the 'Mode' button twice, and verify the voltage levels set:

2.5V	6.5V	11.0
Reset	Low	High

If the 'HIGH' voltage reading is below 10.8 volts, the supply it is being fed from may be low, check and adjust this before continuing.

If the 'HIGH' voltage is satisfactory, but the 'LOW' reading is below 6.2 volts, the unit requires re-calibration. Below 6.0 volts, the unit cannot be relied upon.

Connect the iD line, ensuring that it is DISCONNECTED from the control panel.

The voltage readings may drop slightly with the addition of the load, but should remain within specification. If below specification, this may indicate a wiring problem, which should be investigated with a DMM set to resistance range to check for leakage between iD + and -, and from the iD line to earth or supply.

If the display shows

SHORT!

the unit should be switched OFF immediately, and the line disconnected so that the fault can be investigated with a DMM set to resistance range. The fault is likely to be a short on the iD line, a short from iD- to +12v or from iD+ to 0v, or the line connections being reversed.

Note: if the meter is separately powered, shorts to the control supply will probably not be detected.

Modes:

The unit has five operating modes, the first four of which are selected by sequentially pressing the 'SELECT MODE' (left-hand) button.

The fifth 'iD Line Load' mode applies an additional load to the iD line, and requires the use of mode 4 to display the results. In all other test modes, it is essential that the 'iD Line Load' switch is in the correct 'OFF' position.

MODE 1: Biscuit State display

This mode indicates the current status of ALL biscuits connected to the line.

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cccc00c00cTc00c
ccc0ccFFFFFFFF

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The top line of the display shows the status of biscuits 1 to 15, and the lower line 16 to 30, coded as follows:

- c Detector Closed Circuit
- 0 Detector open circuit
- F Tamper (open circuit) or Biscuit not connected
- T Twin Device tamper

Note, some panels do not report 'Twin device faults.' Whilst basically generated by having two biscuits of the same address connected, it is characteristic of Interference problems.

Thus, in the above example, zones 5,6,8,9,13 and 14 are 'Open circuit,' 11 is showing 'Twin device' 23 to 30 are in 'Tamper open' state (or are not connected) and the remainder in normal 'Closed Circuit' condition. As the state of biscuits on the systems changes, the display will update IN REAL TIME.

As the normal BS.4737 filtering of a Control panel is not applied, it is possible to anticipate potential problems from RFI, etc. by viewing the system in this mode. The presence of RFI will be shown by rapid changes in the state of biscuits, *including* the indication of 'Twin Device' conditions.

Display Variations, and Effect of Alternative Supplies

In certain cases, the display on the unit may differ from that of the diagnostic display of the control panel, or may differ according to whether the meter is powered from the panel supply or an isolated (battery) supply.

This can be caused by:

An earth or supply leakage fault on the iD line – which may not show on the meter if powered from a battery.

If the problems arise from the panel power supply – eg interference carried through the mains, or distortion as a result of overloading.

Interaction from other biscuits on the system – which will not show if only part of the iD network has been transferred to the meter.

Thus a comparison between these displays may provide additional clues to the cause of a problem.

Applications:

Overview of line to ensure connections are correct

Highlight faults affecting multiple biscuits

Advance warning of potential RFI problems

MODE 2 Diagnostic Current display

This display shows the overall iD line current, along with the individual diagnostic current of the biscuits, one at a time.

Line curr	32.0mA
iD 1 CC	14.5mA

This indicates that the total LINE current for the network connected is 32 mA, whilst the individual DIAGNOSTIC current of biscuit number 1 (which is indicating 'closed') is 14.5 mA

NOTE: The LINE current will be approximately 1.5mA per biscuit connected. The DIAGNOSTIC current of each biscuit should be between 12 and 20 mA – a biscuit showing outside of these limits is outside specification and may cause problems.

The 'SCROLL' buttons (↑ and ↓) enable the display to be scrolled through the various biscuits fitted.

Note: Excessive line current, or a diagnostic current showing for a biscuit which is not present (ie showing CF on display) would indicate a current leakage across the iD line, or to earth or supply (is the 'iD Line Load' switch definitely off?).

Certain earth or supply faults may result in a significant REDUCTION in line current rather than an increase.

Applications:

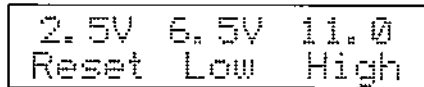
Verification of overall current drawn

Identify probable presence of leakage current in wiring

Analysis of individual biscuits by diagnostic current

Mode 3: Voltage scan display

This mode verifies the three voltage levels used, thus:



This display enables the voltage settings being used BY THE UNIT (not by the panel) to be verified as correct.

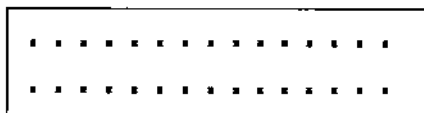
The reading being seriously dragged down by the iD load would indicate a serious overload (but not a short).

Applications:

- Ensure PSU providing adequate voltage and unit in calibration
- Indication of severe overload not indicating as 'Short'

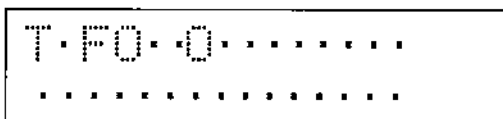
MODE 4: Transition Trap screen

This mode will latch transitional states if the status of any iD biscuit on the line changes, however fleetingly, so that they can be viewed at leisure.



Should a biscuit which has registered a change from 'closed' to 'open' subsequently change to 'fault,' the display will reflect this, but it will NOT change when the biscuit status reverts to 'closed.'

Eg biscuits 4 and 7 changing to 'Open circuit' along with number 1 becoming 'Twin device' and number 3 'tamper open' over a period of time will result in a display which will have latched at



The display can be reset by pressing the mode button repeatedly, until returning once more to this mode.

Applications:

- Simple 'walk test' of system (start with all biscuits closed)
- Indicates transient conditions – eg momentary tamper conditions caused by vibration, etc.

Mode 5: iD Line Load Test

This test enables the load on the iD line to be artificially loaded, which will very often result in a 'rogue' biscuit identifying itself.

To use this mode, first put the display into MODE 1 (biscuit state display) or Mode 4 (Transition trap display).

Observing the display carefully, switch the 'iD Line Load' to ON, and VERY SLOWLY turn the knob clockwise. At some point, the additional load will cause one or more biscuits to fail and indicate as 'F.'

If this occurs with one biscuit in isolation, and others follow suit only after increasing the load noticeably more, this biscuit is probably 'rogue' and should be replaced.

If a group of biscuits indicate thus together, it would indicate that the load is too severe for the line, and that there are no 'rogue' biscuits present.

Ensure that the 'iD Line Load' switch is returned to the 'OFF' position on completion of using this test, or the integrity of other tests will be compromised.

Applications:

Identification of 'rogue' biscuit causing tamper problems.

General Notes:

Don't forget the basic principles for successful installation of an iD system:

1. Ensure connections are made correctly
2. Keep cable runs as short as practical – and never exceed 100 metres for any cable run
3. Locate each biscuit *at* its relevant detector
4. Use screened cable for iD connections, and keep away from any other cables carrying AC or digital signals which could cause interference
5. Perform all recommended cable resistance checks – and also earth / supply leakage measurements.