

MATELECT

PRODUCT GUIDE

2011

Welcome to the latest edition of the Matelect PD products Guide. Inside you will find information on all our off-the-shelf instruments and peripherals, covering both the AC and DCPD techniques as well as our induced signal monitors.

Matelect have been in the potential drop business since the beginning of the 1980's. The company was started by an electrical engineer and a materials scientist who together decided to turn the fruits of their university based research into a manufacturing business.

Matelect's first commercial product was the CGM-3 ACPD crack growth monitor. This was followed by the greatly improved version designated the CGM-5R. Today, after taking into account various user comments and suggestions we have the CGM-7 widely regarded as the premier ACPD instrument for research use.

Over the years we have augmented the AC instrument with a wide variety of peripherals, including multiplexing modules (which permit many signals to be processed by a single CGM instrument), hand held depth probes and sophisticated data acquisition software. Information on all these products is to be found in this Guide.

In 1993, we expanded into the then established, traditional DCPD market - with a definitely non-traditional microprocessor based pulsed DC system. This product, the DCM-1, proved to be very popular but as always we listened to what our customers wanted and have recently replaced this unit with a very much improved DCM-2, which we consider to be one of the best DCPD units on the market.

Whilst we remain a commercial organisation, Matelect has not lost sight of its research based roots - all of our employees are university graduates and we pride ourselves in our ability to provide end-users with detailed assistance and applications support. Matelect also undertakes bespoke design and manufacture - for those customers whose needs cannot be met from our standard product line.

Please note:

Prices within this document are correct at time of press. For current pricing customers are advised to contact Matelect Ltd for a quotation.

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ACM-1A ACPD CRACK GROWTH MONITOR



Designed as a 'Black Box' ACPD crack growth monitor to reduce costs and simplify end user installation, the ACM-1 is ideally suited to semi-permanent installations for long term crack growth monitoring, for example in power utility installations and structural applications. The ACM-1 utilises the alternating current potential drop method (ACPD) which is an established technique covered by the ASTM 647 standard. The technique involves passing an alternating current through the metal under test and measuring the resultant voltage drop that is created across the specimen. The presence of a growing defect will alter this voltage and by suitable calibration, a measure of the defect depth can be obtained.

ACM-1A FEATURES

- 300 Hz output frequency, normally fixed. Variable frequency models available.
- Built in scan controller, measure multiple locations from one unit.
- Built in high precision pre-amplifier circuitry.
- Small compact size! Measures only 160mm * 160mm * 60mm.
- 2 Amps output, normally fixed. Variable current models available.
- Two channels as standard, measure active and reference signals.
- Wi-Fi and Ethernet communication modules available.
- Fixed gain setting at 20,000

Applications

- Slow crack growth
- Crack sizing
- Stress corrosion testing
- Crack initiation
- Fatigue crack initiation
- Condition monitoring

ACM-1A SPECIFICATIONS

Main Specifications	
Current O/P	2Amps High stability fixed current supply. At our discretion it may be possible to increase the current output to as much as 5 Amperes, and make it adjustable, call for further information.
Frequency O/P	Fixed frequency output set at 300Hz At our discretion it may be possible to make the frequency adjustable between 300Hz and 30kHz, call for further information.
Amplification	Fixed gain setting of each channel set to 20,000.
Offset	No offset feature provided
Filter	No filters provided At our discretion it may be possible to add filters, call for further information.
Display	No display provided, all display of variables via PC display
Outputs	No analogue O/P's Digital O/P of all set and displayed values. (Via RS-232) The unit outputs the following parameters via RS-232, Ethernet or wifi; Current o/p Frequency o/p Signal X (0 degree or 90 degree component ONLY , as chosen by user before dispatch) Signal Y (0 degree or 90 degree component ONLY , as chosen by user before dispatch)
Connectors	6-pin Lemo for both current output and signal in * 2 9-pin D-type for RS232 25-pin D-type for scanner control
EMC and Safety	Conforms to all relevant European directives.
Power supply	To be advised
Line Fuses	To be advised
Mechanical	To be advised
Dimensions / Weight	160mm * 160mm * 60mm (approx)
Operating Temperature	0°-35°C.

Other specifications	
Built in Pre-amps	Two built in pre-amplifiers will be provided, for signal X and Y
Software	The basic price of the unit includes simple software to control and read the unit and also store the values to a text file. (This does NOT include control or reading of any scanners)

Available accessories and options on all models	
SM1-HF	4 dual channel signal switching unit. (500KHz compliant)
SM2-HF	4 channel current switching unit. (5A compliant)
PDSOFT	16 channel data logging software, with formula entry for real time 'mm' output.
Mounting brackets	A range of mounting brackets are available for directly mounting to any flat surface.*

*Please specify this option when ordering.

PRICING		
ACM-1A Main Unit		P.O.A
Adjustable frequency		P.O.A
Adjustable Current		P.O.A
Software for scanners		P.O.A
Wi-Fi module		P.O.A
Hand held probe		P.O.A
Cable converter for use of standard CGM-7 leads		P.O.A
0.1Hz output filter.		P.O.A
PDSOFT		P.O.A

CGM-5R ACPD CRACK GROWTH MONITOR



Designed for the accurate measurement of crack growth in metals, the CGM-5R Crack Growth Monitor operates by establishing an alternating current of constant amplitude and frequency in the specimen surface, or across some region where a crack is expected to develop this is an established technique covered by the ASTM 647 standard. Very high sensitivity and accuracy is possible because the frequency of operation may be chosen to suit the electrical properties of the particular metal or alloy under investigation. This induces a pronounced skin-effect enhancement of the A.C.P.D. signal level.

CGM-5R FEATURES

- High stability and ultra high resolution.
- Switchable output filters, very low freq, 80Hz and out position.
- Automatic phase setting, maintains the correct phase as conditions change. Also fixed and manual phase operation.
- Variable supply current, 0 to 2 amps continuously adjustable
- Multi frequency operation, frequencies of 300Hz to 100kHz can be selected in steps.
- Full range of options, the unit may be enhanced by multiplexing units, probes and data acquisition software.

Applications

- Slow crack growth
- Crack sizing
- Dynamic crack growth studies
- Crack closure studies
- Crack initiation
- Fatigue crack initiation
- Condition monitoring
- Stress corrosion testing

SM MODULAR SCANNER SYSTEM



To increase the versatility of the CGM-5R crack growth monitor, Matelect developed a compact, modular signal multiplexing system designed to allow multi-point monitoring of specimens undergoing crack growth Measurements.

In its most basic form the system is capable of measuring up to 8 signal points sequentially and the most sophisticated version a maximum of 256 points. A basic system comprises an SC-1 controller and either an SM-1 and/or an SM-2 multiplexing unit as shown in the picture.

The SC-1 can control up to a maximum of 100 current and signal channels which enables the system to be simply expanded by the addition of SM-1 or SM-2 units as required.

SM FEATURES

- The SM1-HF is capable of switching signals running at up to 100kHz.
- The SM2-HF is capable of switching currents running at up to 100Khz and 2Amps, a perfect partner for the CGM-5.
- The SM system can handle up to 256 channels, all controllable from PDsoft, 100 from the front panel.

Applications

- For use with CGM-5R units.
- Monitoring of multiple specimens using one CGM-5R unit.
- Monitoring multiple areas of interest on one specimen.

SM-3 THERMAL COMPENSATION UNIT



Matelect manufactures the SM-3 for switching between two channels of ACPD data and performing the division of the recorded values automatically. This frees the user from having to attend the experiment and allows temperature normalisation to be performed during long term tests (where it is more likely to prove important to do so). The SM-3 unit switches between the two ACPD channels a preset time (of variable duration). The switched signal is routed via a standard CGM-5R for processing and then routed back to the SM-3 so that a highly accurate analogue division can be performed. The resultant normalised signal can then be recorded by a chart recorder or a PC via Labview drivers for the SM-3.

SM-3 FEATURES

- Can be used as a standalone unit to perform thermal compensation of ACPD measurements.
- Switching between channel A and B is carried out continuously, at rates of 3.2, 8 and 16 seconds, user selectable.
- Both analogue and digital outputs are provided. The unit is primarily designed to work with the CGM-5R.

Applications

- Thermal compensation for use with CGM-5R units

CGM-5 & ACCESSORIES SPECIFICATIONS

CGM-5R Model range	
CGM-5R	2A Max current and up to 100kHz max frequency.

Specifications	
Current O/P	The current amplitude may be set, using a 10-turn helipot, to any value up to 2 Amps r.m.s. and it will be stable to better than 0.1 %. The CGM5R can deliver a maximum of 3 volt-amperes to the load.
Frequency O/P	The frequency can be set to one of six preset values: 300Hz, 1kHz, 3kHz, 10kHz, 30kHz or 100kHz.
Amplification	A high quality input transformer is used in the CGM-5R to ensure excellent common mode rejection and perfect balance. This transformer is followed by a very low noise amplifier with a maximum gain of 90db. A front panel control allows the gain to be reduced to 50db in steps of 10db.
Offset	Continuous offset adjustment via front panel pot.
Filter	Filter with sharp cut-offs at 0.1Hz, 80Hz as well as an out position.
Display	Phase sensitive detection, followed by selectable filters, is used to process the final output, which can be displayed on the 4 1/2 - digit auto ranging LCD display on the front panel of the CGM-5R.
Outputs	A socket on the rear panel provides digital outputs of the current and A.C.P.D. signal levels for a computer or a digital data-logger. Software is available to read the digital output port. A separate socket provides both analogue outputs for XY recorder users, and a front panel 10-turn pot allows a variable offset for convenient positioning of the display.
CONTROL INPUTS/OUTPUTS	A further rear panel socket on the CGM-5R makes it possible to sample some of the internal waveforms within the instrument. The socket also gives access to a control relay in the CGM-5R which may be used to stop the test or sound an alarm when a crack is detected or has grown to some preset length.
EMC and Safety	Conforms to all relevant European directives.
Power supply	Standard CGM-5R units are powered from AC supplies of 100-130, and 220-240 volts, 50/60Hz, user selectable from the rear panel.
Line Fuses	Two 20mm anti surge 1Ampere fuse.
Dimensions / Weight	350mm x 130mm x 262mm deep. 10kg.
Operating Temperature	0° - 35°C main unit. LCD 10° - 30°C. 30 minutes warm up time is recommended.

Available accessories and options on all models	
ACPR-2 SEPARATE PRE-AMPLIFIER	Useful when CGM-5R has to be some distance away from the test. It also improves the noise performance marginally.
ACPR-2 (FL) Input filter	Required when specimen under test is heated by high frequency induction heating.
SC-1, SM-1, SM-2 MULTIPLEXING SYSTEMS	Modular signal and current multiplexers are available so that multiple specimens or crack sites can be monitored. Computer control and sophisticated software allow unattended scanning and data logging. Low cost manual scanners are also available.
MAT-3 PROBES	Standard hand held products for crack sizing in the field are available. Custom units, designed and built to agreed specification, can also be supplied.
SM-3	For use with a reference specimen to eliminate the effects of temperature in situations where extremely high stability and accuracy are required.
PDSOFT	16 channel data logging software, with formula entry for real time 'mm' output.

PRICING		
CGM-5R		P.O.A
ACPR-2		P.O.A
ACPR-2 (FL)		P.O.A
SC-1		P.O.A
SM-1		P.O.A
SM-2		P.O.A
CABL1		P.O.A
CABL2		P.O.A
MAT-3		P.O.A
SM3		P.O.A
PDSOFT (BASIC VERSION)		P.O.A
CGM-5R CALIBRATION SERVICE		P.O.A

CGM-7 ACPD CRACK GROWTH MONITOR



The CGM-7 is a modern microprocessor based instrument for measuring crack depth in metals undergoing materials testing. Building on the success of the CGM-5R this unit improves upon the CGM-5R specification by offering two channel operation, higher frequency and current outputs, full computer control and a variety of expansion options.

It utilises the alternating current potential drop method (ACPD) which is an established technique covered by the ASTM 647 standard. The technique involves passing an alternating current through the metal under test and measuring the resultant voltage drop that is created across the specimen. The presence of a growing defect will alter this voltage and by suitable calibration, a measure of the defect depth can be obtained.

CGM-7 FEATURES

- Continuously variable frequency output from 10Hz to 500kHz in 1Hz increments.*
- Advanced filtering capabilities with 3 user selectable ranges (and out).
- 10 pre-set gains built in. User selectable from 1000 to 30000.
- Two channels as standard on all models.
- High output currents up to 5 amps. Continuously variable in 1mA increments.
- User selectable offsets. Continuously variable from $-4v$ to $+4v$.
- Resistive and inductive components simultaneously displayed.
- Pre-amplifiers provided as standard for each channel for superior SNR.

* Dependent on model option

Applications

- Slow crack growth
- Crack sizing
- Dynamic crack growth studies
- Crack closure studies
- Crack initiation
- Fatigue crack initiation
- Condition monitoring
- Stress corrosion testing

SM-HF MODULAR SCANNER SYSTEM



The SM-HF scanner system provides a modular way of monitoring multiple specimens or areas of Interest and is designed for use in conjunction with the CGM-7 or ACM-1A series of ACPD crack growth monitors manufactured by Matelect or indeed as a standalone scanner system. The SM-HF system is modular and can be specified (or expanded) to cover a total of 256 specimen channels. Each module is based on a 4 channel switching unit. Two types of unit exist; the SM1-HF is used for switching the ACPD 0 degree and 90 degree signals, whilst the SM2-HF is used to switch the AC excitation current. Both modules are under the control of an SC1 scan controller module built into both the CGM-7 and ACM-1A, and supplied as standard.

SM-HF FEATURES

- The SM1-HF is capable of switching signals running at up to 500kHz.
- The SM2-HF is capable of switching currents running at up to 500Khz and 5Amps, a perfect partner for the CGM-7.
- The SM-HF system can handle up to 256 channels, all controllable from PDsoft.

Applications

- For use with ACM-1A and CGM-7 ACPD units.
- Monitoring of multiple specimens using one CGM-7 unit.
- Monitoring multiple areas of interest on one specimen.

MAT-3 PROBE



Matprobes are designed to be used with the CGM series of crack growth monitors, allowing the user to obtain crack depth data in the field without the need to provide permanent contact to a specimen. Spring loaded pins are utilised to form some or all of the contacts necessary for operation. The probes are designed to be used as handheld devices although it is possible to incorporate them into other apparatus to maintain fixed geometries (e.g. for use on a production line).

The MAT-3 handheld probe is an advanced crack depth measurement probe which is made up of an outer aluminium tube body and two PTFE inserts containing, a high precision pre-amplifier circuit as well as a detachable probe head that contains all the necessary contacts to pass both the current and pick up the resultant ACPD voltage signals.

MAT-3 PROBE FEATURES

- Spring loaded pins.
- Built in precision pre-amplifier circuit.
- Detachable probe heads for user specific measurements.

Applications

- In field crack depth measurement with CGM units.

ACPR-2 (FILTERED)



The ACPR-2 (FL) is a filtered pre-amplifier, specifically developed for use with the CGM-7 and CGM-5R. When using an induction furnace for high temperature experiments the induction coils can affect the signals of the ACPD test, therefore a filter is required to cut-out the high frequency interference. As standard these units have a 10kHz cut-off frequency, other cut-off frequencies may be available on request.

ACPR-2 (FL) FEATURES

- High grade analogue circuitry used to reject induced signals from the environment whilst allowing the measured signal through.
- 10kHz cut-off frequency as standard, other frequency cut-offs available on request.

Applications

- For use with CGM-7 and CGM-5R ACPD units.
- Filters signals from within induction ovens that would otherwise be affected by the induction coils.

CGM-7 & ACCESSORIES SPECIFICATIONS

CGM-7 Model range	
Option1	2A Max current output and up to 100kHz max frequency.
Option2	2A Max current output and up to 240kHz max frequency.
Option3	5A Max current output and up to 100kHz max frequency.
Option4	5A Max current output and up to 240kHz max frequency.
Option5	5A Max current output and up to 500kHz max frequency.
Option6	2A Max current output and 10Hz to 100kHz max frequency.

Specifications	
Current O/P	High stability (better than 0.2%) continuously variable current supply. Continuously variable up to 5 Amperes* RMS maximum in 1mA increments.
Frequency O/P	Continuously variable from 10Hz to 500kHz*, in 1Hz increments to a stability better than 0.01% and a distortion of less than 0.1%.
Amplification	Independent gain setting of each channel, 1000, 1500, 2000, 3000, 5000, 7500, 10000, 15000, 20000 and 30000.
Offset	Continuous offset adjustment of both resistive and inductive components. Variable from -4v to +4v in 1mV increments.
Filter	Filter with sharp cut-offs at 0.1Hz, 80Hz, and 1KHz, as well as an OUT position.
Display	Large 240*128 back-lit LCD displaying the following: Current set/read, Frequency set, gain set, bias set, filter set, resistive and inductive components of each channel.
Outputs	Separate analogue O/P of resistive and inductive components of each channel (BNC) Digital O/P of all set and displayed values. (Via RS-232)
Connectors	Current O/P 2-way Lemo Pre-Amp Input 8-way Lemo (one per channel) 9-pin D-type for RS232 25-way D-type for SM1-HF and SM2-HF units.
EMC and Safety	Conforms to all relevant European directives.
Power supply	110-120V or 220-240v (Switch selectable) AC Mains, 50 or 60Hz. Mains input via earthed and fused IEC connector.
Line Fuses	Two 20mm anti surge 1Ampere fuse.
Mechanical	Frame made of aluminium extrusions and die-cast pieces, covers made of zinc-plated steel. All finished in a RAL epoxy powder coat. Optional 19" rack mountable handles.
Dimensions / Weight	450mm wide x 340mm deep x 145mm high. Net weight 12Kg. (approx)
Operating Temperature	0°- 35°C main unit. LCD 10°- 30°C. 30 minutes warm up time is recommended.

*Total frequency and current range is dependent on model purchased.

ACPR-2 Pre-Amplifier specifications (Two included with each CGM-7)	
Pre-set gain	500
Mechanical	Extruded aluminium silver anodised case. With optional mounting brackets available on request.
Dimensions Weight	63mm wide x 84mm deep x 33mm high. Net weight 120g. (approx)
Operating Temperature	0°-35°C.

Available accessories and options on all models	
SM1-HF	4 dual channel signal switching unit. (500KHz compliant)
SM2-HF	4 channel current switching unit. (5A compliant)
PDSOFT	16 channel data logging software, with formula entry for real time 'mm' output.
19" rack mounting	Rack mounting kit, please state when ordering.
Mounting brackets	A range of mounting brackets is available for both the pre-amplifiers and scanner modules for directly mounting to any flat surface.*

*Please specify this option when ordering.

PRICING		
CGM-7 (option 1)		P.O.A
CGM-7 (option 2)		P.O.A
CGM-7 (option 3)		P.O.A
CGM-7 (option 4)		P.O.A
CGM-7 (option 5)		P.O.A
CGM-7 (option 6)		P.O.A
ACPR-2 (FL)		P.O.A
SM1-HF		P.O.A
SM2-HF		P.O.A
CABL1-HF		P.O.A
CABL2-HF		P.O.A
MAT-3		P.O.A
PDSOFT (BASIC VERSION)		P.O.A
CGM-7 CALIBRATION SERVICE		P.O.A

DCM-2 DCPD CRACK GROWTH MONITOR



The DCM-2 is a modern microprocessor based instrument for measuring crack depth in metals undergoing materials testing. Building on the success of the DCM-1 this unit takes on board customer comments and suggestions, as shown in its impressive features list.

It utilises the pulsed current potential drop method (DCPD) which is an established technique also covered by the ASTM 647 standard. The technique involves passing a constant current through the metal under test and measuring the resultant voltage drop that is created across the specimen. The presence of a growing defect will alter this voltage and by suitable calibration, a measure of the defect depth can be obtained. DCPD is generally regarded as easier to set-up than ACPD, but care is required to attain comparable crack depth resolutions due to the extra opportunity for experimental noise.

DCM-2 FEATURES

- Capable of reversing DCPD*.
- Sophisticated filtering options. The unit has advanced sampling and filtering options.
- High Current O/P, up to 50A. Variable in steps of 10mA.
- Built in scan controller*, for direct control of high current scanners.
- Pulsed DCPD as standard.
- Advanced triggering*, including peak, trough, and mid-point of load cycle waveform input.
- Variable DC offsets for the removal of standing voltages.
- Two channels as standard, reference and specimen.

*Dependent of model option

Applications

- Slow crack growth
- Crack sizing
- Dynamic crack growth studies
- Crack closure studies
- Crack initiation
- Fatigue crack initiation
- Condition monitoring
- Stress corrosion testing

SM-HC MODULAR SCANNER SYSTEM



The scanner system provides a modular way of monitoring multiple specimens or areas of interest and is designed for use in conjunction with the DCM-1 or DCM-2 series of crack growth monitors manufactured by Matelect or indeed as a standalone scanner system. The SM-HC system is modular and can be specified (or expanded) to cover a total of 256 specimen channels. Each module is based on a 4 channel switching unit. Two types of unit exist; the SM1-HC is used for switching the DCPD X and Y signals, whilst the SM2-HC is used to switch the DC excitation current. Both modules are under the control of a single Scan Controller unit, the SC1 or in the case of the DCM-2 a SC1 scan controller module built into the unit.

SM-HC FEATURES

- The SM1-HC switches both reference and active signals at the same time.
- The SM2-HC is capable of switching currents at up to 50 Amps, a perfect partner for the DCM-2.
- The SM-HC system can handle up to 256 channels, all controllable from PDsoft.

Applications

- For use with DCM-1 and DCM-2 DCPD units.
- Monitoring of multiple specimens using one DCPD unit.
- Monitoring multiple areas of interest on one specimen.

DCM-2 & ACCESSORIES SPECIFICATIONS

DCM-2 Model range	
Option1	10A maximum current output.
Option2	10A maximum current output, with Advanced triggering
Option3	10A maximum current output, with Advanced triggering, and 20 volt output supply
Option4	50A maximum current output.
Option5	50A maximum current output, with Advanced triggering
Option6	50A maximum current output, with Advanced triggering and reversing output current

Other Configurations are available please call for a quote

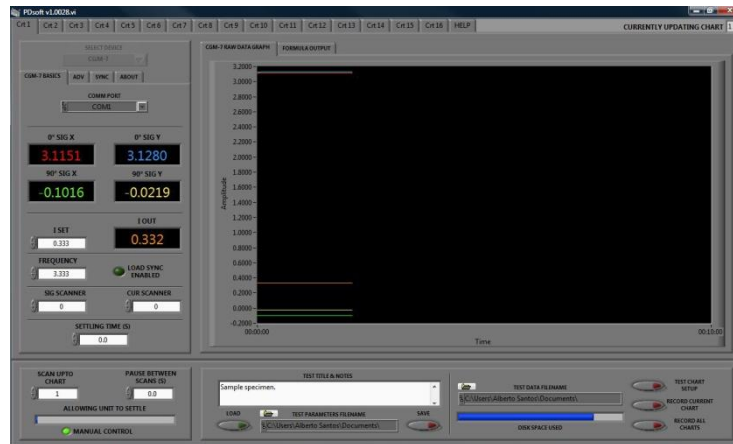
Specifications	
Current O/P	High stability (better than 0.01%) continuously variable current supply. Continuously variable in 10mA increments.
Input ranges	+/-4500 μ V with a resolution of 0.1 μ V. +/-450 μ V with a resolution of 0.01 μ V. +/-45 μ V with a resolution of 1nV.
Offset	+/- 4.5mV with respect to input signal. Adjustable in 1 μ V steps.
Filters	User definable filtering with 3 pre-defined settings.
External sync	Input voltage range, Max +/-20V Min +/-150mV Frequency range, Max 1kHz Min 0.1Hz Unit will trigger on peak, trough or mid-point of load cycle waveform input.
Display	Large 240*128 back-lit LCD displaying all user definable settings. As well as the X, Y and X/Y signals.
Outputs	Separate analogue O/P's of X, Y and X/Y signals. (BNC) Digital O/P of all set and displayed values. (Via RS-232)
Connectors	Current O/P 2-way and 3-way Lemo (2B size) Signal I/P X and Y 2-way Lemo (0B size) Analogue signal out X, Y & X/Y: BNC Ext sync BNC RS232 9-pin male D-type
EMC and Safety	Conforms to all relevant European directives.
Power supply	110-120V or 220-240v (Switch selectable) AC Mains, 50 or 60Hz. Mains input via earthed and fused IEC connector.
Line Fuses	Two 20mm anti surge 3Ampere fuse.
Mechanical	Frame made of aluminium extrusions and die-cast pieces, covers made of zinc-plated steel. All finished in a RAL epoxy powder coat. Optional 19" rack mountable handles.
Dimensions / Weight	450mm wide x 340mm deep x 145mm high. Net weight 12Kg.
Operating Temperature	0°- 35°C main unit. LCD 10°- 30°C. A 30 minutes warm up time is recommended.

*Total current output is dependent on model purchased.

Available accessories and options on all models	
INTERNAL PRE-AMP	Internal Preamplifier providing 2 extra concurrent inputs.
EXTERNAL PRE-AMP	External Preamplifier. (Availability TBA)
INTERNAL SC1-HC	Scanner control with 25-way male D-type for SM system, 2x BNC to give analogue position of current and signal channels.
EXTERNAL SM1-HC	4 dual channel signal switching unit.
EXTERNAL SM2-HC	4 channel current switching unit. (50amp compliant)
19" rack mounting	Rack mounting kit, please state when ordering.

PRICING	
DCM-2 (option 1)	P.O.A
DCM-2 (option 2)	P.O.A
DCM-2 (option 3)	P.O.A
DCM-2 (option 4)	P.O.A
DCM-2 (option 5)	P.O.A
DCM-2 (option 6)	P.O.A
SC1-HC	P.O.A
SM1-HC	P.O.A
SM2-HC	P.O.A
SM2-HCR (Reversing version of above)	P.O.A
CABL1-HC	P.O.A
CABL2-HC	P.O.A
PDSOFT (BASIC VERSION)	P.O.A
DCM2 CALIBRATION SERVICE	P.O.A

PDsoft & LABVIEW DRIVERS



PDsoft is a new fully integrated software package that has been developed to provide a single environment in which to talk to all of our current and previous PD products, and control them where applicable. PDsoft has many advanced features, not only has it the usual scanner controls but it also has the ability to perform load synchronisation for ACPD equipment. It has a formula entry system, this allows the software to give an 'mm' output in real time. Why not download and try the evaluation version from our website, if you like it just get in touch and we can send out a license file to activate it fully.

PDsoft FEATURES

- Control and read up to 16 different instruments, or select any channel of our scanner systems from the same package sequentially.
- Adjust and store the settings of your instrument. (Where the instrument allows)
- All readings displayed on a graph in real time in a CSV file.
- Enter your own user formulas using the readings of your PD instrument as variables, and get real time 'mm' outputs, displayed in a graph and stored in CSV format.
- Synchronise your ACPD readings with the load cycle of your machine. (Extra hardware required)

LABVIEW DRIVERS

The following LABVIEW drivers are available free of charge for download from our website.

- ACM-1A (inc SM-HF SCANNERS)
- CGM-5R (INC SM SCANNERS)
- CGM-7 (inc SM-HF SCANNERS)
- ISM-6A
- DCM-1 (inc SM-HC SCANNERS)
- DCM-2 (inc SM-HC SCANNERS)
- ICF-6R

ISM-6A INDUCED SIGNAL MONITOR



Used mainly in the EBIC mode (electron beam induced current), the ISM-6A is employed in conjunction with a scanning electron microscope to image electrically active defects in semiconductor materials and devices. Long regarded as the industry leader, the ISM series offers quantitative as well as qualitative facilities, the former enabling device parameters and materials data to be obtained. The ISM-6A builds on the original ISM-5 unit which is found in many research labs worldwide.

ISM-6A FEATURES

- Induced Current and/or Voltage options. Through use of dedicated current or voltage preamplifier units.
- Internal bias source with range – 100V to +100V. Allows biasing of a sample to a resolution of up to 0.1mV.
- Large back-off current range from – 20mA to +20mA. Digitally displayed with resolutions ranging from 1uA to 0.1pA
- Wide bandwidth. 3kHz bandwidth at 0.1pA resolution and 320kHz at 100nA resolution.
- Complete microprocessor control, with interface to PC via Labview drivers.
- Intuitive interface with adjustable backlight control for use in reduced ambient conditions.

Applications

- Characterization and observation of junction areas
- Failure analysis (FA) of semiconductor devices
- Locating areas of ESD (Electrostatic Discharge) damage
- Quality control and assurance (QA) of semiconductors
- Detecting subsurface damage or defects
- Can also be used for OBIC, EBIV, SOMSEM and CL (transmitted or emitted) studies

ISM-6A SPECIFICATIONS

INDUCED CURRENT AMPLIFIER (ICA-1)					
Range	F.S.D.	Resolution	Accuracy	Bandwidth	Noise (r.m.s.)
1	2 nA	0.1 pA	1 pA	3 kHz	2.5 pA
2	20 nA	1 pA	10 pA	6 kHz	2 pA
3	200 nA	10 pA	100 pA	24 kHz	2 pA
4	2 uA	100 pA	1 nA	70 kHz	1 pA
5	20 uA	1 nA	10 nA	100 kHz	1 pA
6	200 uA	10 nA	100 nA	150 kHz	1 pA
7	2 mA	100 nA	1 uA	230 kHz	1 pA

INDUCED VOLTAGE AMPLIFIER (IVA-1)					
Range	F.S.D.	Resolution	Accuracy	Bandwidth	
1	2 mV	100 nV	1 uV	The bandwidth performance for the IVA-1 depends on sample impedance.	
2	20 mV	1 uV	10 uV		
3	200 mV	10 uV	100 uV		
4	2 V	100 uV	1 mV		

BEAM CURRENT MONITOR IN ICA-1 AND IVA-1					
Range	F.S.D.	Resolution	Accuracy	Bandwidth	
1	2 nA	0.1 pA	1 pA	200 Hz	
2	20 nA	1 pA	10 pA	6 kHz	
3	200 nA	10 pA	100 pA	24 kHz	
4	2 uA	100 pA	1 nA	70 kHz	
5	20 uA	1 nA	10 nA	100 kHz	
6	200 uA	10 nA	100 nA	150 kHz	
7	2 mA	100 nA	1 uA	230 kHz	

BACK-OFF CURRENT					
Range	Resolution	Range	Resolution		
0-2 nA	0.1 pA	0-20 uA	1 nA		
2-20 nA	1 pA	20-200 uA	10 nA		
20-00 nA	10 pA	0.2-1 mA	100 nA		
0-200 uA	10 pA	0-2 mA	100 nA		
0.2-2 uA	100 pA	2-20 mA	1 uA		

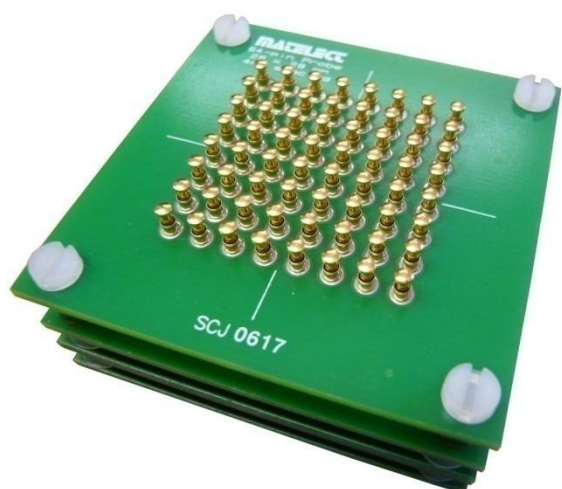
BIAS VOLTAGE		SHORT-CIRCUIT TRIGGER LEVELS	
Range	Resolution	Range	Resolution
0-2V	0.1mV	0.1, 0.5, 1 and 10mA	5%
2-100V	1mV		

OTHER SPECIFICATIONS	
DIMENSIONS	Head amp: 110mm x 160mm x 30mm (W*D*H)
	Main unit: 450mm x 280mm x 130mm (W*D*H)

PRICING	
ISM-6A	P.O.A

FORTHCOMING PRODUCTS

64-WAY PROBE



Used in conjunction with any of the Matelect PD products, this small device has 64 pins laid out in a 8 x 8 grid, two pins can be simultaneously selected allowing for a potential drop measurement to be made. Coupled with the provided software, a scan of the specimen under test can quickly be made and presented in a 3D display, allowing for quick defect detection within a flat area. Different sized grid arrays are available allowing for finer resolution or larger areas to be scanned. For further information please contact our head office.

PD TOMOGRAPHER

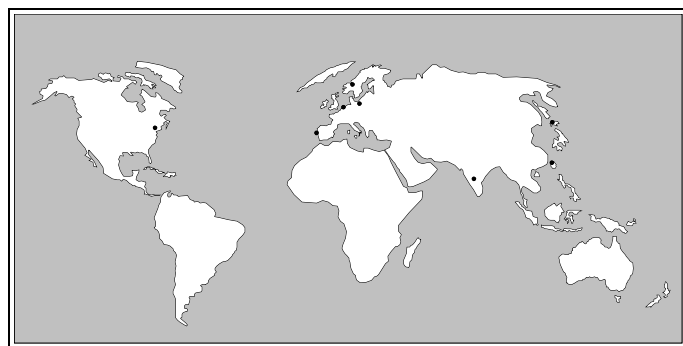
For larger area scanning, Matelect have designed a sophisticated X-Y PD scanning system, which can be used in conjunction with either AC or DC instrumentation to map the PD activity on a specimen's surface. Similar in concept to the 64-way probe above, software controls all available functions and is used to generate a false colour 'image' of the surface voltages. This enables multiple crack defect sites to be 'imaged' rather than simply providing an integrated PD signal.

PURCHASING

Please contact Matelect for a formal quote should any of our products interest you. We are also able to provide demonstration units for short term loans for evaluation, longer term loans can be arranged on a rental or leasing basis, again please contact Matelect head office for further information on this.

LOCAL AGENTS

Matelect has built up a network of local agents that handle customers in various parts of the globe. Some of the countries covered by agents are shown below.



In most locations, customers are free to deal either through their local agent or directly with Matelect. If you have obtained this guide through your local agent, then it is best to trade via that agent. Further details are available from our head office. Our agents can usually assist with minor technical issues and repairs but are primarily local points of contact between the end user and Matelect UK.

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