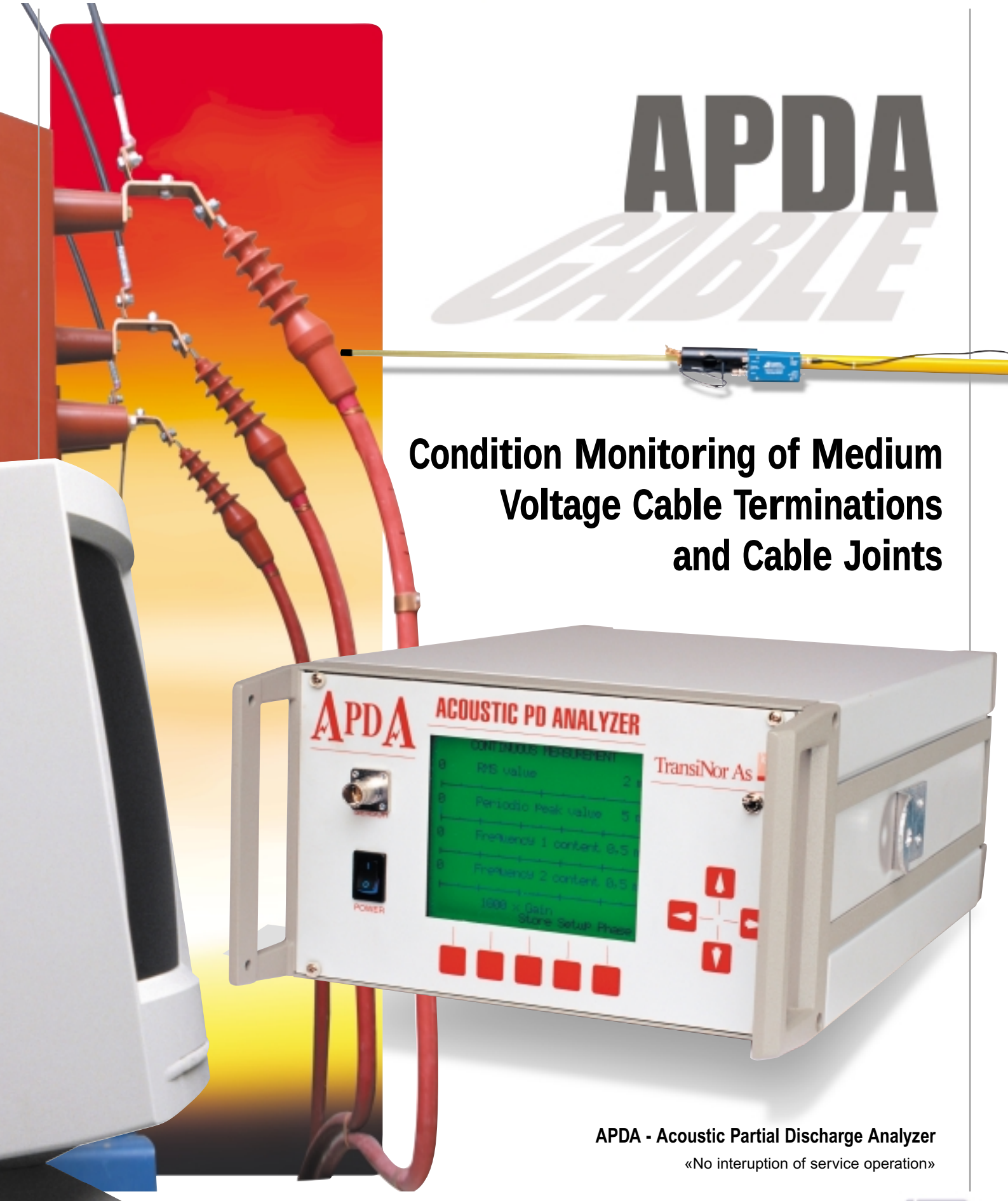
APDA CABLE



Condition Monitoring of Medium Voltage Cable Terminations and Cable Joints

APDA - Acoustic Partial Discharge Analyzer

«No interuption of service operation»

WORLDWIDE POWER DIAGNOSTICS

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APDA - Acoustic Partial Discharge Analyzer

• Check your cable accessory without disturbing normal service operation.

• Detect defects in cable accessory before breakdown and obtain optimum economic condition based maintenance and renewal program.

• Get quality assurance of new terminations during commissioning.

• Well tested system, several thousand medium voltage cable terminations have been successfully tested in service.

• Hot stick of electrically insulating glass fibre is used to transfer the acoustic signals from the termination to the instrument.

• APDA is portable, battery powered and very easy to use.

The acoustic technique used in the APDA is widely known and accepted as a diagnostic tool for detection of partial discharges

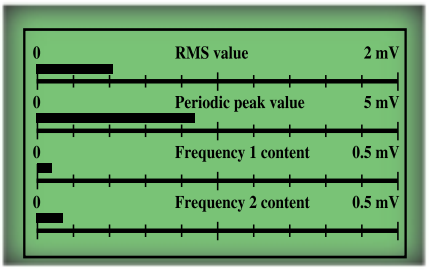

Figure 1: *Continuous mode measurement screen.*

APPLICATION

• Condition monitoring of medium voltage cable terminations and cable joints for in service discharge detection of defects.

• General purpose system to detect partial discharges (PD) for other types of equipment.

• Applicable for both commissioning of new cable accessory and maintenance based renewal program for existing cable system.

PROPERTIES

• The instrument is monitoring the acoustic signals by an ultrasonic sensor in an electrically insulating glass fibre rod. A microprocessor controls the data collection and data-processing.

• The results are presented on a LCD screen during measurements and may be stored and transferred to a PC via an RS-232 serial communication interface.

• The user communicates with the instrument by means of soft touch buttons on the front. Setting of filters, time constants and trigger circuits are all menu controlled.

• For easy use, recommended default settings of parameters are included.

APDA has two measuring modes, continuous and phase mode

• The continuous mode gives:
- RMS signal during one power cycle.
- Peak signal during one power cycle.
- Degree of modulation with the power cycle.
- Degree of modulation with twice the power cycle.

This continuous mode gives the first information about the signal, indicating a partial discharge. Figure 1 shows the result from measurements on a cable termination. 50 and 100 Hz content indicate that a partial discharge is present.

• The phase mode gives:
- Phase angle and pulse accurrance.

Figure 2 shows the correlation between the phase of power frequency and the moment of partial discharges. It is seen that most acoustic signals are generated around the crest of the power frequency voltage.

SENSITIVITY

• IEC 502 specify that the partial discharge level according to IEC 270 should be below 10 pC.

• The sensitivity of the APDA is in the range of 5-50 pC depending on the design and material used in the cable accessory. This is based on the comparison of electrically and accoustically measured signals.

APDA CABLE

TECHNICAL

Dimension:
Instrument:
WxHxD = 25x15x 31 cm
WxHxD = 10x6x12 in

Transport case:
WxHxD = 40x22x 80 cm
WxHxD = 16x9x32 in

Weight:
Instrument: approx 6 kg / 13.5 lbs
Total Weight: approx 27 kg / 60 lbs
including case and users guide

Display:
LCD W: 8cm/3 in H: 10 cm/4 in
Resolution 128x160 pix

Mains voltage:
110-230 VAC. 50/60 Hz
110 VDC
Battery: 12V, 4 Ah

Application of APDA on cable terminations

• The APDA is used to detect internal discharges. The system has incorporated a glass fibre rod (hot stick) that is acting as a wave guide. The rod will transfer acoustic signals from internal defects in the cable accessory to the sensor.

• Location of partial discharges is done by moving the tip of the hot stick and gently pressing it against the termination.

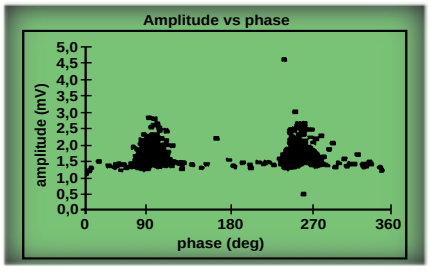

Figure 2: *Phase mode measurement screen.*

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