



# Acterna SPM-32A/-33A/-34A/-35A/-36A

## Selective Level Meters

Manufacturers, service providers, operators, and integrators qualifying copper lines require high performance instruments that will maximize testing efficiency and minimize training requirements for technicians.

The Acterna SPM-32A, SPM-33A, and SPM-36A Selective Level Meters are handheld instruments for selective and wideband measurements on FDM transmission systems with up to 600 channels. When combined with the Acterna PS-33A Level Generator (2 MHz), each instrument forms a test setup for measuring level, gain, attenuation, and crosstalk. This test setup is the ideal tool for verifying the local loop performance of services such as ISDN, PCM, and xDSL. In addition to the basic functions, the SPM-34A Selective Level Meter also includes four special bandwidths for in-service measurements of FM-VFT systems, in accordance with ITU-T recommendations.

With bandwidths all the way down to 5 Hz, the SPM-35A Selective Level Meter is ideal for analyzing composite signals. The instrument can be used for measurements on ARI and RDS systems, as well as remote control and FM-VFT systems as per ITU-T recommendations.

### Highlights

- For line qualification tests on ISDN, PCM, xDSL, and measurements on analog transmission systems up to 3.5 MHz
- Synthesizer for accurate, stable frequency settings
- Straightforward operation with large digital display
- Balanced and unbalanced inputs with common standard impedances
- Battery operation up to eight hours

### Accurate, stable frequency settings

The built-in synthesizer and 1 Hz frequency resolution allows accurate, stable frequency settings across the entire range. This greatly simplifies tuning to pilots using a narrow resolution bandwidth. The instrument key, with user selectable step size, is useful for measurements on evenly spaced channels. Fixed frequencies such as pilots can be stored in the memory to speed up routine tests.

### Absolute and relative level measurements

The digital display indicates absolute and relative level with 0.01 dB resolution, allowing measurements of very small level differences. The fast bargraph is very useful for alignment work.

### Straightforward operation

The display provides a quick overview of all functions currently in use. Other functions such as frequency scan, AFC, demodulation, setups, and storage of fixed frequencies contribute to fast and error-free test procedures.

### Field application

The instrument is ideal for such field applications as in-service testing and maintenance, due to its simple operation, wide temperature range, rugged design, and flexible options for powering – AC line or batteries.

## Specifications

### Inputs

#### Frequency range

SPM-32A	50 Hz to 620 kHz
SPM-33A/-34A/-35A	50 Hz to 2 MHz
SPM-36A	50 Hz to 3.5 MHz

#### Coaxial input

Versacon 9 Universal Connector  
(Fitted with the Versacon 9 75  $\Omega$  basic connector and BNC insert.  
Other types of insert – see Versacon 9 data sheet – should be ordered with the device.)

Input impedance, selectable 75  $\Omega$ , high impedance

#### Balanced input

Connectors Normally CF but see ordering information

Input impedance, selectable 75  $\Omega$ , 150  $\Omega^*$ , 600  $\Omega$ , high impedance

\*135  $\Omega$  for BN 4033/02, /12 and /37

Signal balance ratio to ITU-T 0.9  $f \leq 620$  kHz, signal balance  $\geq 40$  dB

### Frequency

#### Frequency setting

Numeric via keypad, in steps, resolution 1 Hz

Quasi-analog with up/down keys

Automatic search (adjustable threshold)

AFC

Frequency display LCD, 7 digits

Error limits for tuning frequency  $\pm 3$  ppm of set frequency  $\pm 1$  Hz

### Level and voltage measurements

#### Level display

Digital display, max. resolution 0.01 dB

Quasi-analog bargraph detects signal trends

#### Display range

Intrinsic spurious noise up to max. test level (dBm), battery power

Input	Selective	Wideband
Coaxial 75 $\Omega$	$< -120^{(1)}$ to +20 dBm	$< -50$ to +20 dBm
Balanced 75 $\Omega$ to 150 $\Omega$	$< -105^{(1)}$ to +20 dBm	$< -50$ to +20 dBm
Balanced 600 $\Omega$	$< -110^{(1)}$ to +10 dBm	$< -60$ to +10 dBm
Voltage	$< 8 \mu V^{(1)}$ to 3.8 V	1 mV to 3.8 V

<sup>(1)</sup> For a bandwidth of 25 Hz,  $f \geq 10$  kHz; bal. 75  $\Omega$  :  $-100$  dBm

### Error limits of the level display

For  $Z_{in} = Z_{out} = Z_0$ , after calibration, with noise averaging, MAX. HOLD off, battery mode, includes rounding errors

### Intrinsic error and variation with level at 10 kHz and (23 ± 3) °C (table values in dB)

Bal., all bandwidths	±0.4				±0.9	–	
Bandwidths > 100 Hz	±0.4				±0.9	–	
Coaxial 100 Hz bandwidth	±0.3	±0.1	±0.3	±0.4		±0.6	
25 Hz bandwidth	±0.4						
Level range/dBm (75, 135, 150 Ω)	+20	0	0	–70	–80	–90	–100
Level range/dBm, dB (600 Ω)	+20			–80	–90	–100	–110

### Variation of level display with frequency

referred to 10 kHz, the input level being ≥ 40 dB above the intrinsic noise level (table values in dB)

Coaxial $Z_0 = 75 \Omega$	±0.6	±0.3	±0.5	±0.6	±0.7	±0.9	
Balanced $Z_0 = 75$ to 150 Ω		±0.3	±0.5	±0.6	±0.7	±0.9	
Balanced $Z_0 = 600 \Omega$		±0.4	±0.6	±0.7	±0.8	±1.0	
Frequency range	50 Hz	100 Hz	620 kHz	1.62 MHz	2 MHz	3 MHz	3.5 MHz

### Bandwidth selectable

Nominal value 25 Hz; 1.74 (1.95)\* kHz; 3.1 kHz  
\*BN 4033/02, /12, /37

### Harmonic ratio $a_{k2}$ , $a_{k3}$ , for level ≤ –10 dBm

For fundamentals ≥ 2 kHz > 60 dB

### Demodulator

Single sideband demodulation  
Integral loudspeaker, volume adjustable

### Memory

Storage of 100 user-programmable setups, 100 results

### General specifications

#### Power supply

Dry batteries (supplied) 2 x 9 V IEC 6 LF 22 (6LR61)  
Battery pack (attaches to device) BAZ-33  
Line operation separate LNT-2 adapter/charger  
Operating time with dry batteries/NiMHs approx. 8 h/2 h  
with BAZ-33 battery pack approx. 8 h

#### Ambient temperature

Nominal range of use 0 to +50°C  
Limits operating range –10 to +55°C  
Storage and transport –30 to +70°C  
Dimensions (w x h x d) 110 x 60 x 200 mm  
Weight with batteries/with BAZ-33 approx. 1 kg/1.5 kg

**Ordering Information**

Type	Frequency range	Connectors		Noise measurement	Order number
		Versacon	Balance		
SPM-32A	50 Hz to 620 kHz	•	CF	dBm/dBm0	BN 4033/11
		•	WECO	dBrnC/dBrnC0	BN 4033/12
SPM-33A	50 Hz to 2 MHz	•	CF	dBm/dBm0	BN 4033/01
		•	WECO	dBrnC/dBrnC0	BN 4033/02
		•	I-214	dBm/dBm0	BN 4033/03
SPM-34A	50 Hz to 2 MHz		CF	dBm/dBm0	BN 4033/20
SPM-35A	50 Hz to 2 MHz		CF	dBm/dBm0	BN 4033/20
SPM-36A	50 Hz to 3.5 MHz	•	CF	dBm/dBm0	BN 4033/36
		•	WECO	dBrnC/dBrnC0	BN 4033/37

Supplied accessories: two dry batteries

**Options (to be ordered together with the device [can only be factory fitted])**

124 Ω instead of 150 Ω	BN 4033/00.60
135 Ω instead of 150 Ω	BN 4033/00.61
140 Ω instead of 150 Ω	BN 4033/00.62
100 Hz bandwidth instead of the 25 Hz bandwidth	BN 4033/00.52
Bandwidth 300 Hz instead of 400 Hz (for SPM-34A only)	BN 4033/00.24

**Accessories**

BAZ-33 battery pack, can be recharged with LNT-2	BN 4033/00.10
LNT-2 A.C. adapter/charger	BN 4071/90.02

**Please specify power cord required**

European plug	K 490
US plug (also suitable for Japan)	K 491
UK plug	K 492
Australian plug	K 493
SDG-40 Balanced Attenuator	BN 4608/00.01
PLCP-40 Unbalanced Attenuator	BN 9203/01
No. 10 Leather pouch, for one device and BAZ-33	BN 4071/23
Carrying strap	BN 4033/00.01
MK-1 Equipment case for one device with BAZ-33, additional LNT-2 or BAZ-33	BN 4071/09
MK-4 Equipment case for two devices with BAZ-33, two additional LNT-2 or BAZ-33	BN 4071/21

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