

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

Selective Level Meters



Key Features

- 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

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 JDSU SPM-32A, SPM-33A, and SPM-36A Selective Level Meters are hand-held instruments for selective and wideband measurements on FDM transmission systems with up to 600 channels. When combined with the JDSU 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.

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 bar graph 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.

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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 Ω basic connector and BNC insert.
Other types of insert – see Versacon data sheet – should be ordered with the device.)

Input impedance, selectable 75 Ω, high impedance

Balanced input

Connectors Normally CF but see ordering information
Input impedance, selectable 75 Ω, 150 Ω*, 600 Ω, high impedance
*135 Ω for BN 4033/02, /12 and /37
Signal balance ratio to ITU-T 0.9 f ≤ 620 kHz, signal balance ≥ 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 ±3 ppm of set frequency ±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

| Input | Selective | Wideband |
|------------------------|----------------------------------|------------------|
| Coaxial 75 Ω | < -120 ⁽¹⁾ to +20 dBm | < -50 to +20 dBm |
| Balanced 75 Ω to 150 Ω | < -105 ⁽¹⁾ to +20 dBm | < -50 to +20 dBm |
| Balanced 600 Ω | < -110 ⁽¹⁾ to +10 dBm | < -60 to +10 dBm |
| Voltage | < 8 μV ⁽¹⁾ to 3.8 V | 1 μV to 3.8 V |

⁽¹⁾ For a bandwidth of 25 Hz, f ≥ 10 kHz; bal. 75 Ω : -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 | | | | | |
| Coaxial | 100 Hz bandwidth | ±0.3 | ±0.1 | ±0.3 | ±0.4 | ±0.6 |
| | 25 Hz bandwidth | ±0.4 | | | | |

| | | | | | | | |
|---------------------|-----|---|---|-----|-----|------|------|
| Level range/dBm | +20 | 0 | 0 | -70 | -80 | -90 | -100 |
| (75, 135, 150 Ω) | | | | | | | |
| Level range/dBm, dB | +20 | | | -80 | -90 | -100 | -110 |
| (600 Ω) | | | | | | | |

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 | $Z_0 = 75 \Omega$ | ±0.3 | ±0.5 | ±0.6 | ±0.7 | ±0.9 | |
|----------|------------------------|--------------------|------|------|------|------|------|
| Balanced | $Z_0 = 75$ to 150 Ω | ±0.6 | ±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 ak2, ak3, 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

Specifications
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 dBmC/dBmC0 | BN 4033/11 |
| | | • | WECO | | BN 4033/12 |
| SPM-33A | 50 Hz to 2 mHz | • | CF | dBm/dBm0 dBmC/dBmC0 dBm/dBm0 | BN 4033/01 |
| | | • | WECO | | BN 4033/02 |
| | | • | I-214 | | BN 4033/03 |
| SPM-34A | 50 Hz to 2 MHz | | CF | dBm/dBm0 | BN 4033/20 |
| SPM-35A | 50 Hz to 2 MHz | | CF | | BN 4033/20 |
| SPM-36A | 50 Hz to 3.5 MHz | • | CF | dBm/dBm0 | BN 4033/36 |
| | | • | WECO | | dBmC/dBmC0 |

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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