

PS-33 Level Generator

for the frequency range 200 (50) Hz to 1.62 MHz



- Synthesizer for high frequency accuracy
- Frequency and level setting via keyboard or stepwise
- Digital frequency and level displays
- Output level adjustable in 0.1 dB steps
- Level display in dB/dB0 or dBm/dBm0 or in mV
- Coaxial and balanced outputs
- Output impedances of approx. 0; 50, 75, 150, 600 Ω
- Memory for 100 setups/fixed frequencies
- Battery or a.c. powered (external adapter/charger)
- · Compact, lightweight and easy to operate
- Optional case for instrument and accessories

Applications

The compact and handy-sized PS-33 Level Generator provides a signal source for measurements on balanced and coaxial FDM transmission systems and for measurements at the baseband frequency level of radio-link and satellite systems with up to 300 channels. The lower frequency range limit also enables VF and AF ranges to be detected. The PS-33 Level Generator can also be used at 50 Hz. Because it is batteryoperated and is unaffected by large temperature changes it is ideal for field operation. It can be used for in-service maintenance on communication systems as used by PTTs, railways and public utility companies in the energy sector. It can be operated in conjunction with the SPM-32, SPM-33 or SPM-34 Selective Level Meters to give a complete measuring setup, which is especially suitable for carrying out end-to-end measurements where different send and receive frequencies may be required. When the level generator is operated together with W&G measuring bridges, analog measurements on ISDN equipment can also be performed.

Characteristics

The PS-33 Level Generator stands out for its variety of functions and ease of operation. The use of large-scale integration (LSI) and surface mounted devices (SMD) has reduced the size and weight to a fraction of that of a conventional level generator.

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Frequency range
Output level range (dependent on impedance)
when matched60 to +15 dBm
Output impedance, coaxial approx. 0Ω ; 50Ω , 75Ω
balanced . approx. 0 Ω; 75, 150 *), 600 Ω
*) 124, 135 or 140 Ω as an option
Harmonic ratio, f ≥ 200 Hz ≥50 dB
Operating error, $Z_{out} = Z_0 = 75 \Omega$, coaxial
$f = 0.2 \text{ to } 620 \text{ kHz} / 1.62 \text{ MHz} \dots \pm 0.22 / \pm 0.3 \text{ dB}$
Ambient temperature, operating range 0 to +50°C
Recommended level meter SPM-32, SPM-33, SPM-34

The send frequency is produced by a synthesizer and so has high accuracy and stability. Both frequency and level can be set via the numerical keypad, in steps or in quasi-analog mode, and can be read off very accurately from the display.

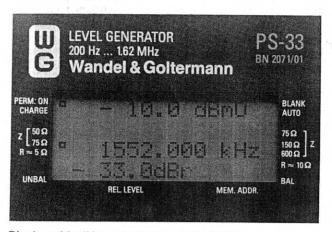
100 instrument setups and fixed frequencies can be stored in the memory to facilitate frequently performed measurements.

Battery operation is possible. The battery voltage is monitored to ensure that incorrect measurements cannot be made. For longer measurements the PS-33 Level Generator can be connected to an a.c. line adapter/charger unit.

After switching on a self-test is performed and any errors are indicated in the display.

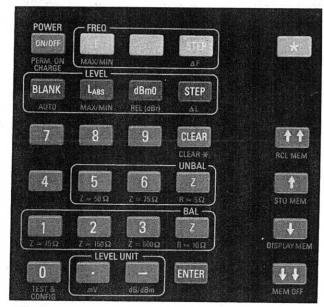
Further Characteristics and Applications

- Soft blanking of the output level: prevents unwanted frequencies occuring when changing frequency which could cause interference in transmission systems.
- Level and frequency range limits can be set to the user's requirements. The risk of causing system interference due to an incorrect setting (e.g. feeding in too high a level or the wrong frequency) is therefore greatly reduced.
- Voltage display and 50 Ω output: the PS-33 is also suitable for laboratory work as the signal source is accurate, stable and of high spectral purity and output impedance of 50 Ω and approximately 0 Ω are available.



Display with all important setting parameters

ISDN measurements: the PS-33 can be operated in conjunction with the SPM-33 (32) Selective Level Meter and the ISDN measuring bridges ISM-1 and IMB-1 (see separate data sheets) to form a handy measuring setup. It can be used to measure line and crosstalk attenuation on the transmission circuit as well as signal balance ratio and impedance on terminal equipment (TE) and network termination (NT). All the equipment can be accommodated in the ISDN MK-4 equipment case (BN 2092/04).



PS-33 keypad

(The specifications are valid for the nominal ranges of use immediately after switch-on, unless otherwise stated)

Outputs Coaxial output* Versacon® 9 Universal Connector System, adapts to all standard connector systems	balanced or $Z_{out} = Z_L$
Output impedance (Z_{out}) switchable approx. 5 Ω (+0.5 μ H); 50 Ω , 75 Ω	$Z_{out} = Z_L = Z_{out} = Z_L = Z_{out} = Z_0 $
Return loss for $Z_{\text{out}} = 50$ to 75 Ω , $f = 20 \text{kHz}$	lowest level
Output impedance (Z_{out}), switchable approx. 10 Ω (+1.1 μ H); 75, 150 *) and 600 Ω	Output level
Return loss for $Z_{out} = 75$ to 600 Ω , $f = 20$ kHz \triangleq 40 dB	
Output signal balance to CCITT 0.121 (0.9) $Z_{out} \ge 75 \Omega$	Limits of er for $Z_{out} = Z_L$
Applied DC voltage	Operating endors for L _{max} to L _n
Frequency Frequency range 200 (50) Hz to 1.62 MHz	200 Hz to 62 200 Hz to 1.6 which includ
Frequency setting via keypad, resolution 1 Hz or stepwise, smallest increment 1 Hz quasi-analog via up/down keys,	intrinsic erro at 20 kHz and
in steps	attenuator er
for one year	frequency re referred to 20
	coaxial
Output level Switchable; voltage levels (0 dB \triangleq 0.775 V) or power levels (0 dBm \triangleq 1 mW on Z_0) or voltage	balanced
Absolute level, display units dB, dBm Level referred to 0 dB, display units dB0, dBm0	,
Relative level, display units dBr Voltage, dependent on range, displayed in μV , mV , V	Spurious vo
Level setting:	harmonic rati 2nd and 3rd o
via keypad, resolution 0.1 dB or stepwise, smallest increment 0.1 dB or quasi-analog via up/down keys, increment fine, coarse 0.1 or 5 dB Level display 3 digit, LCD	Suppression spurious sign referred to our referred to L _{mi}
Output level ranges (operating range) Highest level L_{max} or V_{max} coaxial output $ \begin{array}{c cccc} dBm & dB & V \\ \hline Z_{out} = Z_L = Z_0 = 50 \ \Omega & & +11 & 0 & 0.8 \\ Z_{out} = Z_L = Z_0 = 75 \ \Omega & & +9 & 0 & 0.8 \\ Z_{out} = Z_0 \approx 5 \ \Omega, Z_L >\!\!> Z_0 & & +6 & 1.6 \\ \hline \end{array} $	(which ever is Signal to nois 100 dB at free 110 dB at free
	2) Refers to the I

$Z_{\text{out}} = Z_{\text{L}} = Z_{\text{L}}$ $Z_{\text{out}} = Z_{\text{L}} = Z_{\text{L}}$		Ω	. +12	+6 +6 +6 +12	1.6 1.6 1.6 3.2
lowest level, re lowest voltage	elative to L _{max} .		· · · · · ≦	. ≧7 ≦V _{max} /5	5 dB 5000
Output level ca	an be soft blank	red			
Limits of erro for $Z_{out} = Z_L =$	r Z _o (when matc	hed)			
Operating erro for L_{max} to L_{max}					
200 Hz to 620 k 200 Hz to 1.62 which includes	MHz	±0		±0.27 ±0.35	'dB
intrinsic error ³⁾ at 20 kHz and L	_{max} , coaxial balanced .				
attenuator erro	r (at 20 kHz)			. ±0.1	dB
frequency resp referred to 20 k		, -64 dB			
coaxial	±0.15 dB	±0.17 dB	±0.2	5 dB	
balanced	±0.15 dB	±0.2 dB	±0.3	dB	
0.	2 20 k	Hz 620	kHz	1.62 M	Ηz
Spurious volta	ges				
harmonic ratio 2nd and 3rd ord				≧50	dB

and the second control of the second control
harmonic ratio 2nd and 3rd order; f \geq 200 Hz \geq 50 dB
Suppression of discrete, nonharmonic spurious signals
referred to output signal ≧60 dB
referred to L_{max}
Signal to noise ratio at 1 Hz bandwidth and L_{max} 100 dB at frequencies \geqq 20 kHz from f_{out} 110 dB at frequencies \geqq 200 kHz from f_{out}

¹⁾ BN 2071/02: connector (135 Ω) compatible with WECO 241A connector (600 Ω) compatible with WECO 310 BN 2071/03: connector compatible with I-241

²⁾ Refers to the limits of operating error (IEC 359) within the nominal operating ranges for the influence quantities and the measurement ranges of the measurands. It includes variation due to the specified influence quantities and intrinsic error.

3) The intrinsic error (IEC 359) is valid for the reference values or reference ranges of the influence quantities and measurands.

Memory 100 user programmable setups. Entry and recall using keypad, setups are cleared by being overwritten

General specification

Power	su	pp	oly	,
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Batter	y or A.C. I	ine	0	эе	ra	at	ic	n		
Dry batte	eries (fitted)									. 2×9 V IEC 6 LF 22
										Varta TR 7/8 No. 5022
										or Canyo N 6 DT

Separate a.c. adapter/charger for recharging NiCd batteries. It is possible to charge the batteries and make measurements at the same time.

Operating time															
(dependent on output leand type of battery)	ev	el,	aı	mb	ie	nt	ter	mp	er	at	ure	Э,	op	era	ting mode
with dry batteries .															approx. 7 hours
with NiCd batteries															
Auto off when batte incorrect results.															

•									
Ambient temperatu	re								
Operating range							÷		0 to +50°C
Limits operating range .									$-10 \text{ to } +55^{\circ}\text{C}$
Storage and transport .				•					-40 to +70°C
Size (inmm)			*	×		•			110×200×60
Weight with batteries.							÷		. approx. 1 kg

Ordering information

140 $\Omega^{2)}$ instead of 150 Ω

PS-33 Level Generator * (CF conn	ector) BN 2071/01
PS-33 Level Generator * (WECO	connector) BN 2071/02
PS-33 Level Generator* with socket for I-214 connector ¹⁾	BN 2071/03
Supplied accessories: 2 dry batte	eries, carrying strap
Options (no extra charge) $124 \Omega^{2)}$ instead of 150 Ω $135 \Omega^{2)}$ instead of 150 Ω	BN 2071/00.61 BN 2071/00.62

BN 2071/00.63

Accessories (charged extra)	
NiCd batteries TR 7/8 (two required)	BN 820/00.50
with charger contact LNT-1 A.C. adapter/charge	BN 2068/01
Please specify type of power cord required 3):	B142000/01
Power cord with	
Furonean plug	K 490

ower cord with	
European plug	K 490
US plug	K 491
UKplug	K492
Australian plug	K 493

MK-1 Equipment case	BN 2090/04
for PS-33 LNT-1 batteries, test cable and operating manual	

MK-4 Equipment case	BN 2092/20
for storing and transporting PS-33, SPM-32/33 or SPM-34	
and 2×LNT-1	

ISDN Equipment case also available, BN 2092/04.

No 9 Leather case	BN 926/22
Black leather case for PS-33 only	

Fitted with the Versacon® 9 75 Ω basic connector and BNC insert. Other types of insert (see Versacon® 9 data sheet) should be ordered with the

¹⁾ On request cable K 438; I-214 (m)/CF, 1 m; K 474 $\,$ 2×I-214 (m), 1.5 m 2) To be ordered with the PS-33 (can only be factory fitted)

³⁾ For BN 2071/03 on request