

ZZG5

TIME SIGNAL GENERATOR

The **Time Signal Generator ZZG5** simulates different time code transmitters. The generated time signal can be broadcasted via a connected antenna or it can be connected directly to the "unit under test".



3D-view, with AC/DC adapter



front side



rear side

Dimensions, weight and other characteristics:

Dimensions (ZZG5): B = 305mm; H = 88.5mm; T = 150.5mm

Weight (standard set): 2.2kg (with AC/DC adapter; w/o packaging and w/o additional parts)

Colour: grey

Equipment: metal case with adequate HF-shielding properties; AC/DC adapter with an EURO-plug (detachable); other attached plugs for: UK, USA, ROW
Connector cable (black, 2m long)

1 Application

- Simulation of time signals DCF77, HBG, MSF, WWVB and JJY (40kHz and 60kHz)
- Creation of exact defined time signals for measuring purposes and quality inspection
- Support of software development for RC watches, clocks and any other time piece application
- Creation of highly exact frequencies

2 Features

- Mains operated equipment with 50 Ohm output for time signal
- Back-up function with continuous clock in switched OFF condition, settings remain unchanged
- Operation + Display with 5 buttons and a two-lined, illuminated display (24 characters each)
- Simple adjustment of time, date, time signal transmitter and output voltage
- Once the value of an antenna factor is put in, the adjustment/indication of output signal level can be done as output-voltage (V; dBV or dB μ V) or field strength (V/m; dBV/m or dB μ V/m)
- Fine tuning of time in 100ms, 10ms and 1ms steps
- Automatic calculation of the "day-of-the-week"
- Automatic switch to DST and back from DST for DCF, HBG, MSF and WWVB in switched ON condition
- Separate menu for each time signal for adjustment/input of special protocol bits
- All bits (including 2nd bit level for MSF, marker bits for WWVB and JJY) are changeable
- Possibility of flexible change of carrier frequency, modulation and pulse length
- Noise generator included; Creation of narrow-band-noise with and without heterodyning
- Possibility to switch OFF the modulation and/or the carrier frequency, independent to each other
- Fine tuning of time pulse and frequency between -99.9ppm and +99.9ppm
- Additional output for modulation signal (second impulse)
- Possibility to connect a GPS receiver for time- and/or seconds synchronisation
- Automatic adjustment is executed when a GPS receiver is connected

3 Technical data (values referred to ambient temperature: 23°C ± 1°C)

Parameter	value	condition
Operating temperature	10° - 35°C	
Humidity	0% - 90%	not condensing
Output voltage	1.00µV - 9.99V eff.	at an output impedance = 50 Ohm; adjustable in 7 decades, 3 digits resolution each
Deviation of output voltage in comparison with the displayed value	±2.5 % ±5 %	for ranges 10µV - 9.99 V for ranges 1µV - 9.99µV
Adjustment (level reduction) of output voltage via time signal	0% - 99% of carrier amplitude	adjustable in 1% steps
Adjustment of narrow band noise (band width = 25Hz)	0% - 99% of carrier amplitude	adjustable in 1% steps
Frequency	10 kHz - 99.99999 kHz	adjustable in steps of 0.01Hz, with guaranteed accuracy of output voltage
Frequency	0 Hz - 999.99999 kHz	adjustable in steps of 0.01Hz, without guaranteed accuracy of output voltage, frequency limits (-3dB) at 10Hz and 900kHz
Time pulse and frequency deviations	± 0.5 ppm equals ± 43 ms/day	
Time pulse and frequency deviations	short term operation: ± 0.1ppm over 1 day and > 1day: 0 ppm	with connected and receiving GPS receiver; measured after a GPS operation of at least 30 minutes
Accuracy of the length of modulation pulses	±75 µs	
Accuracy of the leading edge of SECOND-pulses	±75 µs	GPS operation; referred to the leading edge of seconds of UTC-time
Time pulse and frequency change	-99.9ppm - 99.9ppm	adjustable in 0.1ppm steps
Data memory time of backup battery	5 years	OFF time durations >2days considered only
Field strength	<u>lower limit:</u> 1µV/m (or another field strength, created at an output voltage of 1µV, if the resulting value is higher) <u>upper limit:</u> 9.99V/m (or another field strength, created at an output voltage of 9.99V, if the resulting value is lower)	from 1 abbreviating antenna factor

4 Order information

Notation: **ZZG5 - Time Signal Generator**

Part-no.: **MAX 08010**

5 Useful accessories

no.	notation	part-no.
1	1-loop antenna - RAA1	MAX 06010
2	4-loop antenna - RAA4	MAX 05010
3	GPS-Receiver "standard" - GPS RS	MAG 01010