



OPERATING INSTRUCTIONS



Version 06/09

Arbitrary Function Generator Module DDS-3005 USB

Item-No.12 29 24

Intended Use

The function generator module (also referred to as DDS Module) is intended for connection to a Windows® computer with USB 2.0 port (USB 1.1 compatible) for use as a digital function generator up to 5 MHz. Apart from the freely definable arbitrary functions, standard signals such as sine, square, triangle, saw tooth, TTL, noise, trapezium, exponential function as well as AM and FM are available. In addition, two frequency counter inputs (from DC - 25 MHz and from 25 MHz - 2.7 GHz) as well as a digital 8 bit input and output can be used. Operation and display is performed with the enclosed measurement software. It is equivalent to a real oscilloscope operating interface. Via an import function, signal data in CSV format can be imported and these signals can be regenerated without loss.

For simple initial operation, user defined appliance settings can be stored and called.

For safety reasons the input voltage of 25 Vpp must never be exceeded. Use partial probes, if necessary. It may only be used in the excess voltage range, category CAT I, for signal voltages.

The voltage supply for the generator module is via two free USB ports.

Any other use than that described above, could lead to damage to this product and involves the risk of short circuits, fire, electric shock, etc.

The product must not be changed or modified in any way. Do not open the housing!

Measurement in a damp locations, outdoors or under adverse environmental conditions is not permitted.

Unfavourable ambient conditions are:

- Wet conditions or high air humidity,
- Dust and flammable gases, vapours or solvent,
- Thunderstorms or similar conditions such as strong electrostatic fields etc.

Always observe the safety notes included in these operating instructions.

This quick guide explains the safety measures that should be taken to make working with the device as safe as possible. The individual appliance functions are explained in detail in the „Help“ function of the measurement software.

Safety Instructions and Hazard Warnings



Please read all of the operating instructions before using the product for the first time; they contain important information about the correct operation.

- The warranty will be void in the event of damage caused by failure to observe these safety instructions! We do not assume any liability for any consequential damage!
- Nor do we assume any liability for material and personal damage caused by improper use or non-compliance with the safety instructions! The warranty will be void in such cases.
- The unauthorized conversion and/or modification of the product is inadmissible because of safety and approval reasons (CE).
- All earth connections of the measuring inputs are directly connected to the earth of the USB connector.
- Measurement devices and accessories should be kept away from children! Therefore, be especially careful when children are around.
- Connect the measuring lines to the DDS circuit, before connecting them to the measuring circuit to be tested. After finishing the measurements, first disconnect the measurement leads from the circuit before you disconnect them from the DDS Module.
- Take particular care when dealing with voltages exceeding 25V AC or 35V DC! Even at such voltages you can receive a life-threatening electric shock if you come into contact with live electric wires.
- Prior to each measurement, check your instrument and its measuring leads for damage. Never make any measurements if the protecting insulation is defective (torn, missing etc.)
- To avoid electric shock, do not touch the connections/measuring points directly or indirectly during measurements.
- Do not use the appliance shortly before, while or shortly after a thunderstorm (lightning/ over voltage!). Make sure that your hands, shoes, clothing, the floor, the measuring device and/or measuring lines, the circuits and its parts are always dry.

- Do not use the product inside of rooms, or in poor ambient conditions, where flammable gases, vapours or explosive dust may be present or are present!
- Do not use in the immediate proximity of strong magnetic or electromagnetic fields or transmission aerials. These can affect the measurement.
- If you have reason to assume that safe operation is no longer possible, disconnect the device immediately and secure it against inadvertent operation. It can be assumed that safe operation is no longer possible if:
 - the device is visibly damaged,
 - the device no longer works and
 - the unit was stored under unfavourable conditions for a long period of time or
 - it has been subjected to considerable stress in transit
- Never switch the device on immediately after having taken it from a cold in to a warm environment. The condensation that forms might destroy your device. Allow the device to reach room temperature before switching it on.
- Do not leave packing materials unattended. They may become dangerous playthings for children.
- On industrial sites, the accident prevention regulations of the association of the industrial workers' society for electrical equipment and utilities must be followed.
- In schools, training centres, computer and self-help workshops, the use of measuring instruments and accessories must be supervised by trained personnel in a responsible manner.
- Consult qualified staff, if you have doubts about how the equipment operates or about how to connect it safely.
- Handle the product with care. The product can be damaged if crushed, struck or dropped, even from a low height.
- Pay attention to the detailed operating instructions in the measurement program (Help).

This device left the manufacture's factory in a safe and perfect condition. We kindly request the user to observe the safety instructions and warnings contained in the enclosed operating instructions so this condition is maintained and to ensure safe operation. Please pay attention to the following symbols:



A triangle containing an exclamation mark, in these operating instructions, indicates important information that has to be observed without fail.



The „hand“ symbol is used to indicate where specific hints and information on handling are given.



This product has been CE-tested and meets the required European guidelines.



Never operate the measuring device when it is open. !RISK OF FATAL INJURY!

Do not exceed the maximum permitted input values. Never touch circuits or parts of circuits with voltages greater than 25 V/AC rms or 35 V/DC! Danger to life!

When using partial probes, the active measuring circuit must always be placed against the internal conductor (probe head).

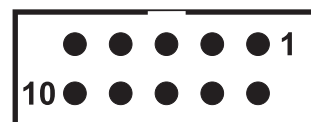
Description of the Parts

- A Generator output
- B Earth connection (Ground)
- C Counter input channel 2
- D Counter input channel 1
- E System display (green/red)
- F Digital input
- G USB Connection
- H Digital output



Pin assignment for the digital input (D in) and digital output (D out)

- Pin 1 Bit 7
- Pin 2 Bit 6
- Pin 3 Bit 7
- Pin 4 Bit 6
- Pin 5 Bit 7
- Pin 6 Bit 6
- Pin 7 Bit 7
- Pin 8 Bit 6
- Pin 9 Synchronised output signal (for D out)
External trigger input (for D in)
- Pin 10 Earth (Ground)



Installation of the Measurement Software

Before you connect the DSO (direct digital synthesis oscillator) to a computer, install the measurement software.

Switch on the computer and start the operating system.

Insert the software CD supplied in the CD drive. The automatic start mode will automatically start the installation of the measuring software.

If this does not happen automatically, start the program „setup.exe“ by double-clicking in Explorer, of your operating system, on the drive holding the CD-ROM. The software installation will start.

The installation assistant will guide you through the installation. Please follow the on-screen instructions.

In the start menu's program manager, a new folder called „DDS 3005 USB“ is created.



Leave the CD in the drive for device installation (drivers).

Connection and Installation of the DDS Module

Connect the USB connection cable provided to two free USB ports on your computer and then to the USB connection (G) on the DDS Module.

The operating system recognises the new hardware and starts the hardware assistant.

Follow the on the screen instructions.

Choose the installation option „Install software automatically (recommended)“ and press „Continue“.

The system searches for the compatible driver. Follow the instructions on the screen until the installation is completed.

Starting the Measurement Software

Start the computer and connect the USB connector from the computer to the DSO (DDS Module) before starting the program.

Start the „DDS-3005 USB“ program from the start menu or the desktop.

The start screen for the measuring software appears and initializes the DDS Module. The function generator is now ready for operation.

Cleaning

Always observe the following safety instructions before cleaning the device:



Live components may be exposed if covers are opened or parts are removed (unless this can be done without tools).

Prior to cleaning or repairing of the device, all cables have to be detached and the device has to be turned off.

Do not use any cleaning agents containing carbon, petrol, alcohol or the like to clean the product. These might attack the surface of the device. Furthermore, the fumes are hazardous to your health and are explosive. Moreover, you should not use sharp-edged tools, screwdrivers or metal brushes or suchlike for cleaning.

For cleaning the device or the display and the measuring cables, use a clean, slightly damp, fuzz-free, antistatic cloth.



Should questions arise concerning the use of the device, feel free to contact our technical support at the following phone number:

Voltcraft®, 92242 Hirschau, Lindenweg 15, Tel.-No. 0180 / 586,582 7.

Disposal



Electronic products are raw material and do not belong in the household waste. When the device has reached the end of its service life, please dispose of it, according to the current statutory requirements, at your local collecting site. Disposal in the domestic waste is not permitted!

Technical Data / Specifications

DDS-3005 USB	
Measurement inputs	2 frequency counter inputs, 8 digital inputs
Outputs	1 generator output, 8 digital outputs
Max. input voltage	25 Vpp
Generator band width	5 MHz
Sampling rate	50 MS/s
Power supply	2 x USB
Working temperature	0 to +70°C,
	rel. humidity < 65%, non-condensing
Weight	ca. 270 g (without accessories)
Dimensions (LxWxH)	approx. 205 x 100 x 35 mm

DDS Frequency Generator	
Frequency range	0.1 Hz (DC) – 5 MHz
Frequency resolution	0.01 Hz
Memory depth	256 kPts
Vertical resolution	14 bit
Amplitude	±10 V max.
Signal stability	< 30 ppm
Output current	50 mA (100 mApk)
Accuracy	AC ± 0.2% / DC ± 0.1%
Low-pass filter	5 MHz, 1 MHz, 100 kHz, 10 kHz, 1 kHz
Harmonic signal distortion	-65 dBc (1 kHz)/-53 dBc (100 kHz)
Impedance	50 Ohms

Frequency counter	Channel 1	Channel 2
Frequency range	DC – 25 MHz	25 MHz – 2.7 GHz
Input amplitude	±400 mVpp to ±25 Vpp	± 20 dbm
Accuracy	± (20 ppm x frequency) ± 1 Count	± (20 ppm x frequency) ± 1 Count
Input connection	AC, DC programmable	AC
Impedance	> 500 kOhm	50 Ohms

Digital input/ output	
Bits	8 Bits + 1 Bit synchronized output signal (for D out) + 1 Bit external trigger input (for D in)
Level	3/5 V TTL/CMOS

System requirements

Windows® computer as a minimum, Pentium® II or compatible with at least 64 kB RAM, VGA, CD-ROM, USB V2.0 (1.1 compatible), 40 MB free space on the hard disk, Windows® 2000 or above.

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