

NDR62 Driver series

NDR6220
NDR6210

Single Channel Dynamic Drivers for Piezoelectric Actuators

Purpose

The **NDR62** series drivers are intended as basic laboratory devices which enable effectively to supply various piezoelectric actuators with static and dynamic voltage in the range up to $-60 \div +300\text{V}$. The driver can be used as a part of fine and fast adjustment mechanism in mechanical positioning equipment with piezo feed or for other piezo element application.

The NDR62 series drivers are available in two versions according to the maximal power: NDR6210 for 25W and NDR6220 for 55W.

Basic driver - NDR6220 Single Channel Dynamic Driver
($-60 \div +300 \text{ V}$ or $\pm 180 \text{ V}$, 1 A amplitude of sine wave, 2 A peak)

Features



- Fast linear low noise driver
- Galvanic separation of the output
- Adjustable input range and phase inversion
- Adjustable output range
- 4 predefined cut off frequencies
- G class design with higher efficiency so less warming
- Soft startup
- Adjustable output voltage limiters
- Actuator discharge circuit
- Switch off timer

Output voltage range $-60 \div +300 \text{ V}$ or $\pm 180 \text{ V}$ and load current 2 A peak.

The driver can supply actuators having capacity up to $100 \mu\text{F}$.

Driver **NDR62** is available in another version: **NDR6210** for 0.45 A amplitude, 1 A peak.

Description

The driver input signal can be static or dynamic. It can be controlled by a potentiometer, trimmer, frequency generator or D/A converter.

The input range can be set between $0 \div 1$, $0 \div 2.5$, $0 \div 5$ and $0 \div 10 \text{ V}$. The bipolar input is also available as option ± 1 , ± 2.5 , ± 5 and $\pm 10 \text{ V}$.

The gain of the amplifier can be set to negative (opposite) phase. An internal voltage limiter guarantees output voltage within limits during operation and also during startup or shutdown. The limits can be set for both minimal and maximal values. The offset of output voltage and the possible negative voltage are settable as well. All adjustments are done from a keyboard. Two rows display allows reading of all available parameters, values and settings.

The actuator is protected against overvoltage or reverse voltage and subsequent depoling. Heating caused by burning of energy from actuators is minimized by use of G class construction of the driver. In the case of overload or thermal trip it is possible to choose manual or automatic restart. The driver can be also automatically switched off after some preset time.

The high voltage output of the device is galvanically separated from other circuits. This allows connecting of all categories of piezoelectric actuators and possible serial connection of two or more drivers.

Parameters

Electrical parameters			
Parameter	Unit	Typical value	Remark
NDR6210			
Maximal power	W	25	
Output voltage	V	-60 ÷ +300 -180 ÷ +180	Settable from the panel
Maximum current amplitude	A	0.45	
Peak current	A	1	<0.5 ms impulse, 10 ms period
NDR6220			
Maximal power	W	55	
Output voltage	V	-60 ÷ +300 -180 ÷ +180	Settable from the panel
Maximum current amplitude ¹	A	1	Ambient temperature less than 22 °C
Peak current	A	2	<0.5 ms impulse, 10 ms period
NDR62 series parameters			
Power supply	V	230 V / 50 Hz or 115 V / 60 Hz	Two versions of the device
Voltage limiters	V	-60 ÷ +300 -180 ÷ +180	Both - High limit and Low limit
Output voltage distortion	%	5	
Maximal capacitance load	µF	100	
Frequency range			
Low frequency limit	Hz	0	DC coupled, galvanically isolated
High frequency limit -2 dB	kHz	10	Limited by maximal power
Slew rate	V/µs	10	
High frequency filter	-	50 Hz, 500 Hz, 2500 Hz and 10 kHz	Settable from the panel
Offset setting	%	±100	
Output noise ²	mV	10	Typical RMS value, 1 µF load
Input voltage range ³	V	0 ÷ 10.0, 0 ÷ 5.0, 0 ÷ 2.5, 0 ÷ 1.0	Settable from the panel
Input impedance	kΩ	10	
Input connection	-	BNC	
Output connection	-	4 pin LEMO	The output plug is FGG.0B.304.CLAD52Z
Measured values ⁴	-	LCD display with 2 rows	Voltage, current, temperature
Environmental parameters			
Temperature range	°C	+5 ÷ +45	
Relative humidity	%	Max. 80 % to 31 °C, max 50 % above 40 °C	
Ingress protection	-	IP20	When connectors are opened
Mechanical parameters			
Dimensions ⁵	Width 105 mm, Height 59.5 mm, Depth 200 mm		
Mass	kg	1.9	

¹ Two front long purple rubber feet must be used!

² Input is shorted and output is set with the aid of offset into 0 V DC. Noise voltage RMS was measured in bandwidth 0 ÷ 300 kHz.

³ Other input ranges on request

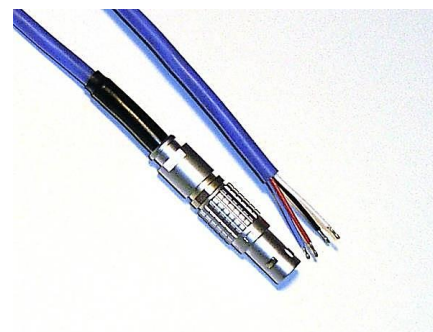
⁴ Current and temperature are only informative values

⁵ Dimensions are without purple rubber feet (foot overlap is about 5.5 mm) and without connector(s) overlap

Accessories

Output signal cable

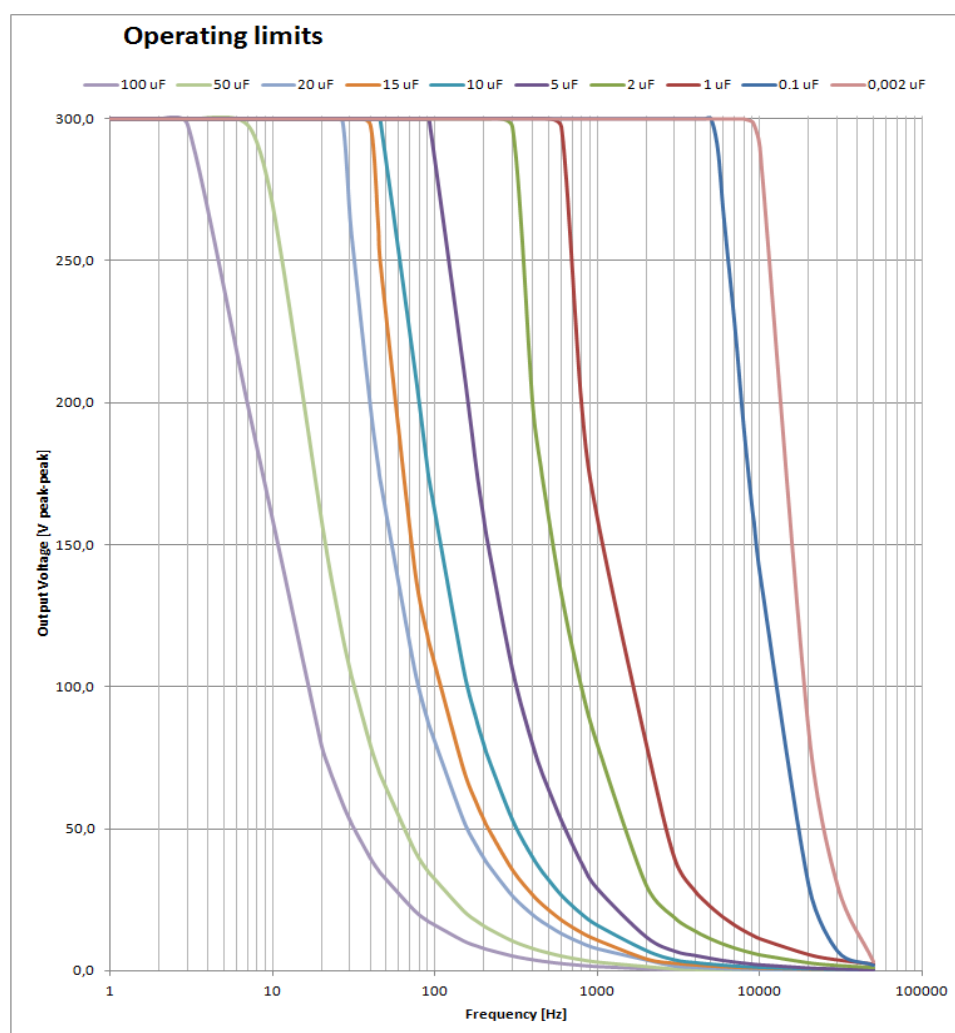
SK05BE/1,5m - Output cable. The cable is equipped by LEMO 4 way connector at one side. The second side is free. The cable is intended for experimental purposes. The standard length 1.5 m could be changed in 0.5 m step upon request.



Operating limits

Operating limits on the figure below are the maximal limits for the continuous maximal current amplitude 1 A of the driver. In the higher frequencies they are determined by the frequency response of the amplifier.

The working area must be always under the curves!



NOTE 1

The operating limits hold for active filter 10 kHz.

NOTE 2

This driver is not allowed to be used with pure resistive or inductive loads (i.e. speakers, solenoids, bulbs etc.).

WARNING

The instrument may only be operated by personnel who are capable of recognizing contact hazards and implementing appropriate safety precautions. Contact hazards are present anywhere where voltages are higher than 50 V.

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