

Nixie-Tubes

1. Nixie Box

Conventional Nixie Tubes (One Plate/Anode)

With a small additional adapter (Nixie-Box) it is possible to test conventional Nixie tubes very comfortably.

This adapter is connected between the socketbox connector of the RoeTest and the sockets. Sockets can be built into the adapter or can be plugged in.

As the RoeTest can switch a maximum number of 10 pins and Nixie tubes can have more pins a small circuit extension is required inside the socket box. A relay switches pins 1-8, pin 9 is connected through. So up to 17 pins are usable for the cathodes and can be switched automatically. Pin 10 is always connected to the anode voltage (the G2 voltage source with maximal 60mA is used). This pin must be attached manually to the specific tube pin with a pluggable series resistor **R_a** (see the data sheet for the specific Nixie tube).

I simply used a socket terminal as a patch panel (**Caution: do not touch the resistor when voltages are applied**). The relay's supply source is the heater voltage (use a 12 V relay with 8 SPDT switches; eventually use several relays, e.g. 4 relays with 2 SPDT switches each).

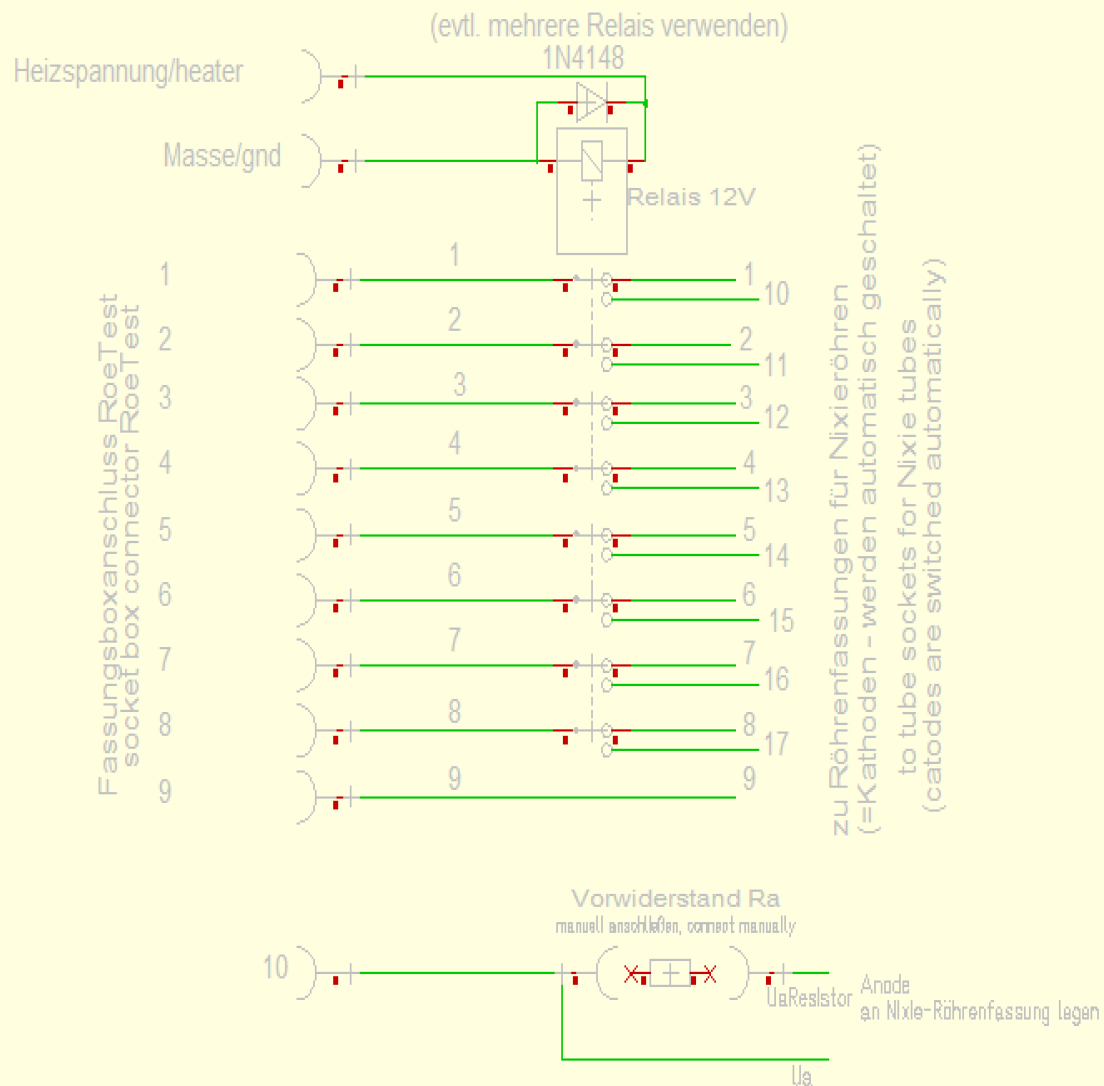
Socket box circuit diagram for conventional Nixie tubes (1 Anode)

As you can see the socket terminal is not only suitable for inserting a series resistor

into the anode connection but also for connecting Nixie tubes that come with wires. You could also connect additional socket boxes for the Nixie tubes there.

Nixiebox (RoeTest)

(c) - Helmut Weigl

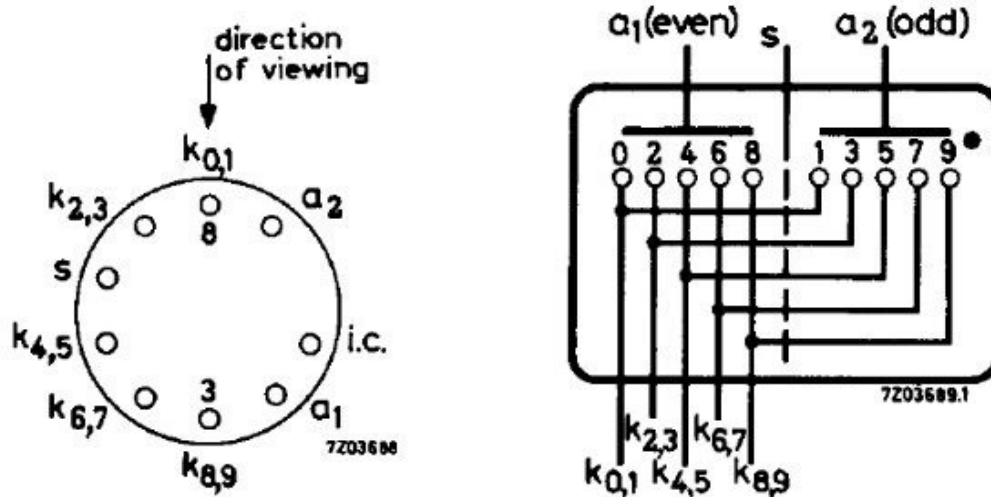




2. Biquinary Nixie Tubes (Two Anodes)

This type of Nixie tubes has two anodes. The cathode pins are double assigned (example: ZM1030). This connection pattern reduces the required overall pin count so a standard Noval socket with 9 pins can be used. The pins of these tubes are all wired using the same scheme so only one additional socket box suffices for all biquinary Nixie tubes.

Base: Noval

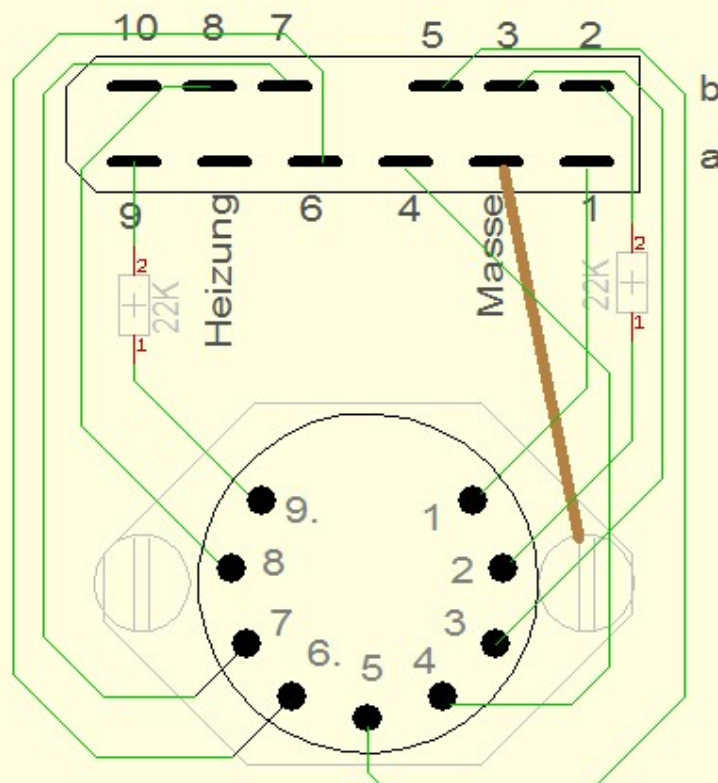


A standard Noval socket is required. Both pin 2 and pin 9 are connected with a 22 kOhms series resistor to the socket box connector. All other pins are directly connected.

Schaltplan Fassungsbox - biquinär Nixie

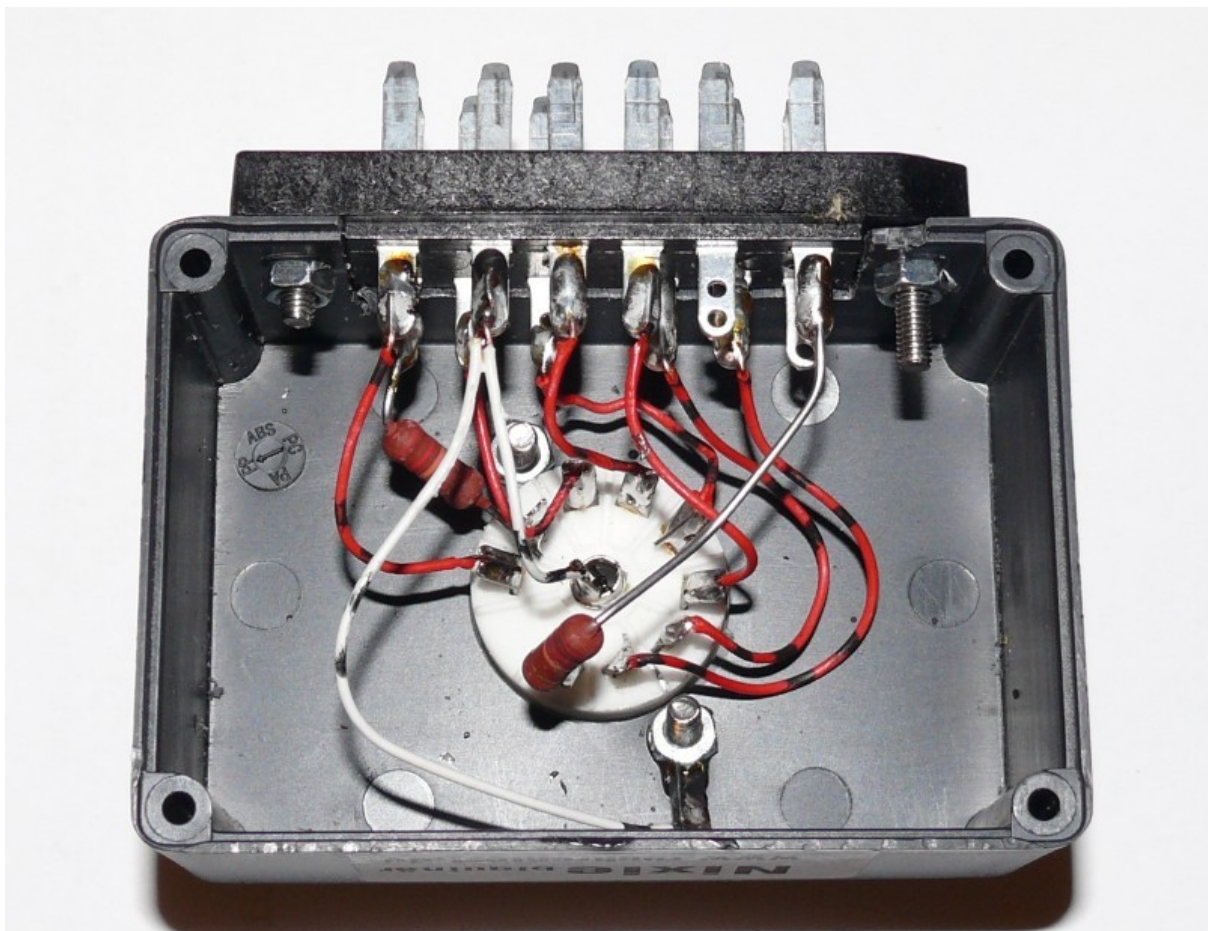
Beispiel Noval-Fassung

(von vorne auf Fassungsboxhalter gesehen) Reichelt ML A12 (DIN41622)



Masse an Metallteile

Socket box circuit diagram for biquinary Nixie tubes (2 Anodes)



5. Seven segments Nixies
→ see 7-Segmenttest_D_EN.pdf

Software:

In menu "B" there is a button for Nixie tubes. Clicking a symbol on the symbol column switches on this symbol and the burning current and voltage are measured. The symbols can also be automatically switched on one after the other (button <alle Symbole testen>).

The testing time for a symbol can be selected with a rotary switch from 0,5 to 4s. With the two radio buttons at top of the table the sorting/testing order can be chosen, either by pin number or by symbol.

RoeTest - professional tube-testing-system - Nixie tube tester

Nixie - Tester

For nixie tubes you need especially socket boxes !


☒ Nixie ☐ biquinär Nixie

operating voltage: V Brennspannung: V

limiting resistor: KOhm

nominal cathode current: 1,00 to 2,50 mA

To test a single symbol, left click mouse on symbol in column

time per symbol [s]: 

pin	symbol	cathode current	burning voltage
pin1			
pin2	A1		
pin3	0		
pin4	9		
pin5	8		
pin6	7		
pin7	6		
pin8			
pin9	5		
pin10	4		
pin11	3		
pin12	2		
pin13	1		
pin14			
pin15			
pin16			
pin17			

*) Sortier- und Prüfreihenfolge

Menu for conventional Nixie tubes (1 Anode)

RoeTest - professional tube-testing-system - Nixie tube tester

Nixie - Tester

☒ *)

pin	symbol	<input type="radio"/> *)
pin1		
pin2	A1	
pin3	8	9
pin4	6	7
pin5	4	5
pin6		
pin7	2	3
pin8	0	1
pin9		A2
pin10		
pin11		
pin12		
pin13		
pin14		
pin15		
pin16		
pin17		

For nixie tubes you need especially socket boxes !

☐ Nixie
☒ biquinär Nixie

operating voltage
 V

Brennspannung:
 V

limiting resistor:
 KOhm

nominal cathode current
3,80 to 0,00 mA

To test a single symbol, left click mouse on symbol in column

0,5

1

2

4

time per symbol [s]

*) Sortier- und Prüfreihenfolge

Menu for biquinary Nixie tubes (2 Anodes)

Database software:

Selecting the „Nixie“ tube type automatically changes the input mask:

Conventional Nixie tubes (1 Anode):

RoeTest DatenbankRoeTest - database

RoeTest.dbf

tube's designation: **Z560M** K

manufacturer: ---

see similar type:

Philips code:

heater:

heater voltage [V]: 0,00 control: ☐ ☐

Heater current [A]: 0,000

heater type: keine

Heater cold resistance (ohms): 0,00

General data

Market introduction year:

checked: ☒

Origin of data:

Data filed by: H. Weigl


Data changed or new: ☐ (check if data changes should be used and transferred for updating purposes)

Data changed by:

remarks about changes:

type of tube system: Nixie System 1 System 2 System 3

base/socket:

 NIXIE 13

pin 1: pin 2: A1

pin 3: 0 pin 4: 9

pin 5: 8 pin 6: 7

pin 7: 6 pin 8:

pin 9: 5 (ext. page) pin 10: 4 (ext. top)

length of bulb [mm]: 0

diameter of bulb [mm]: 0

weight [g]: 0

pin 11: 3

pin 12: 2

pin 13: 1

pin 14:

pin 15:

pin 16:

pin 17:

A1, A2 = Plates, anodes

Insert symbols of Nixie tube (=cathodes)

remarks about tube: [help on tube types:](#)

Betriebsspannung 170V, Vorwiderstand vor Anode 20K, Zündspannung 145, Brennspannung 135, Löschspannung 120, Strom 1-2,5 mA

Navigation dataset: new duplicate print datasheet abort store

RoeTest DatenbankRoeTest - database

RoeTest.dbf

tube's designation: **Z560M** K

manufacturer: ---

see similar type:

Philips code:

heater:

heater voltage [V]: 0,00 control: ☐ ☐

Heater current [A]: 0,000

heater type: keine

Heater cold resistance (ohms): 0,00

General data

Market introduction year:

checked: ☒

Origin of data:

Data filed by: H. Weigl

Data changed or new: ☐ (check if data changes should be used and transferred for updating purposes)

Data changed by:

remarks about changes:

type of tube system: Nixie System 1 System 2 System 3

typical ratings:

S2 +1 0,0

S3 -1 0,00

S4 +2 operating voltage [V]: 170,0

S5 -2 0,0

min. IK [mA]: 1,00

max. IK [mA]: 2,50

Uignition[V]: 145,00

Uburning[V]: 135,0

extinguish at voltage 120,0

limiting resistor [kOhm]: 20,0

*) See database: Type of tube. Pentagrids etc may also have different connection of grid voltages to hte "higher" grids

remarks about tube: [help on tube types:](#)

Betriebsspannung 170V, Vorwiderstand vor Anode 20K, Zündspannung 145, Brennspannung 135, Löschspannung 120, Strom 1-2,5 mA

Navigation dataset: new duplicate print datasheet abort store

RoeTest DatenbankRoeTest - database

tube's designation: ZM1030 K

manufacturer: ---

see similar type:

Philips code:

heater:
heater voltage [V]: 0.00 control: ☒ ☐
Heater current [A]: 0.000
heater type: keine
Heater cold resistance (ohms): 0.00

General data
Market introduction year:
checked: ☐
Origin of data:
Data filed by: Helmut Weigl
Data changed or new: ☐ (check if data changes should be used and transferred for updating purposes)
Data changed by: Helmut Weigl
remarks about changes:

Navigation dataset

base/socket:

type of tube system:

System 1
Nixie bi
pin 1:
pin 2: A1
pin 3: 8
pin 4: 6
pin 5: 4
pin 6:
pin 7: 2
pin 8: 0
pin 9:
pin 10:

System 2
Nixie bi

A2

System 3

length of bulb [mm]: 49
diameter of bulb [mm]: 22
weight [g]: 0

Noval B9A

remarks about tube: help on tube types:
= NL1032, NL1032N, NL5030, Z523M, Z8700M, Z870M, ZM1030, ZM1032N
spezielle Fassungsbox für binäre Nixie erforderlich
Pin 8 vorne

A = plate
G1-5 = grid
K = Cathode
F1, F2, FM = Heater/Filament
S = Shield
IV = do not connect
L = target, A1, A2, St1, St2

RoeTest Datenbank

tube's designation: K

manufacturer:

see similar type:

Philips code:

heater:

control: ☐ ☒

heater voltage [V]:

Heater current [A]:

heater type:

Heater cold resistance (ohms)

General data

Market introduction year:

checked: ☐

Origin of data:

Data filed by:

Data changed or new: ☐ (check if data changes should be used and transferred for updating purposes)

Data changed by:

remarks about changes:

	System 1	System 2	System 3
typical ratings:	S2 +1	S2 +1	S2 +1
	S3 -1	S3 -1	S3 -1
	S4 +2 operating voltage [V]:	S4 +2 operating voltage [V]:	S4 +2 operating voltage [V]:
	S5 -2	S5 -2	S5 -2
	min.IK [mA]:	min.IK [mA]:	min.IK [mA]:
	max.IK [mA]:	max.IK [mA]:	max.IK [mA]:
	Uignition[V]:	Uignition[V]:	Uignition[V]:
	Uburning[V]:	Uburning[V]:	Uburning[V]:
	extinguish at voltage	extinguish at voltage	extinguish at voltage
	limiting resistor [kOhm]:	limiting resistor [kOhm]:	limiting resistor [kOhm]:

* See database: Type of tube. Pentagrids etc may also have different connection of grid voltages to hte "higher" grids

remarks about tube: help on tube types:
= NL1032, NL1032N, NL5030, Z523M, Z8700M, Z870M, ZM1030, ZM1032N
spezielle Fassungsbox für biquinäre Nixie erforderlich
Pin 8 vorne

Navigation dataset

new duplicate print datasheet abort store