

Cradle relay N

Cradle relay N, for dc operation, neutral, monostable

The cradle relay N is available in size I or size II, depending on the height of the contact pile-ups and can be supplied either with a transparent dust cover which also affords a measure of protection against physical damage, or hermetically sealed in a metal case.

The hermetically sealed types V23162-A..., -B..., -G..., -H... comply with MIL-R-5757 F.

Information on sockets and mounting is contained in Section 13.

Approval: PTB No. III B/E-16134 U (see page 8.3)

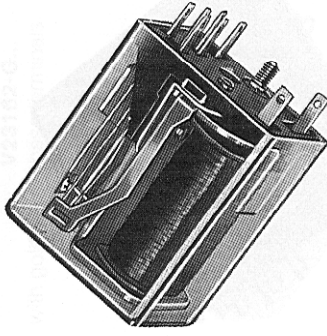
Cradle relay N

Cradle relay dust protected, with single - and bifurcated contact pile-ups, plug-in or for mounting by screw fixing, with individual solder connections.

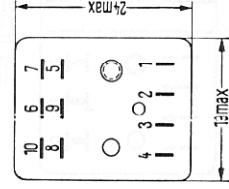
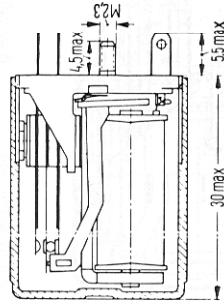
Size I

Cradle relay N V23154-C...

with silver-plated base terminals



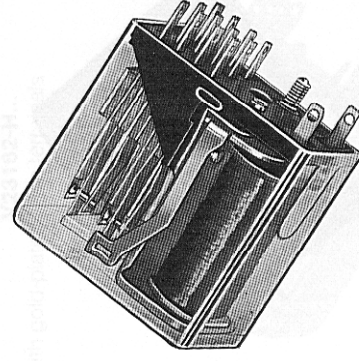
Approx. weight 20 g
Approx. actual size



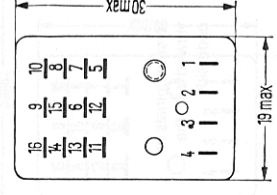
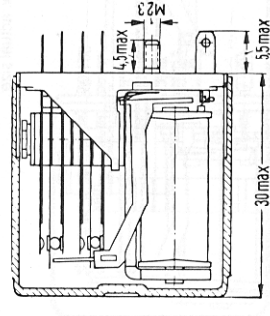
Size II

Cradle relay N V23154-D...

with silver-plated base terminals



Approx. weight 25 g



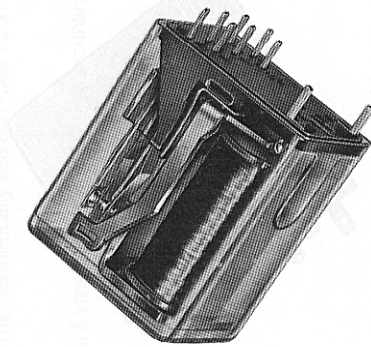
Mounting hole layout see page 13.6

Cradle relay N

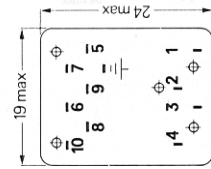
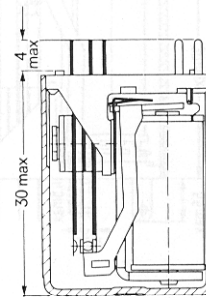
Cradle relay dust protected, with single - and bifurcated contact pile-ups, for direct mounting into printed circuits. Pin arrangement for 2.5 mm grid, also 2.54 mm in accordance with DIN 40801 and DIN 40803, medium.

Size I

Cradle relay N V23154-M...
with ground terminal



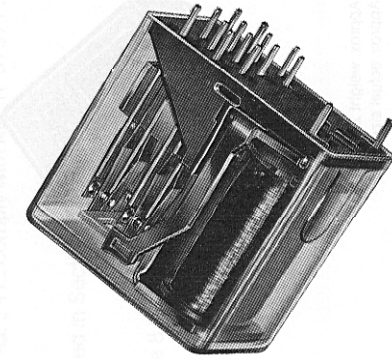
Approx. weight 20 g
Approx. actual size



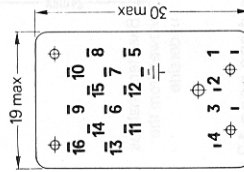
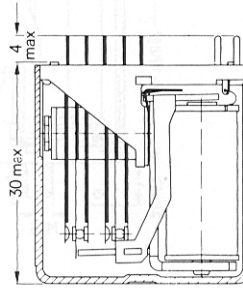
Base terminals as viewed from the underside

Size II

Cradle relay N V23154-N...
with ground terminal



Approx. weight 25 g



Cradle relay N

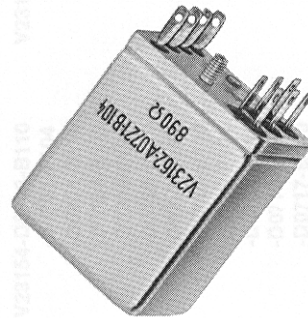
Cradle relay hermetically sealed, with single - and bifurcated contact pile-ups, plug-in or for mounting by screw fixing, with individual solder connections.

Size I

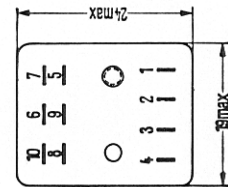
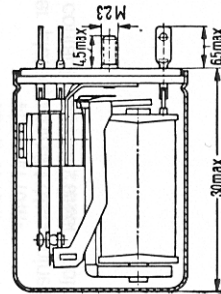
Cradle relay N V23162-A...
with tinned base terminals

V23162-G...

with gold-plated base terminals



Approx. weight: 30 g
Approx. actual size



Base terminals as viewed from the underside

Size II

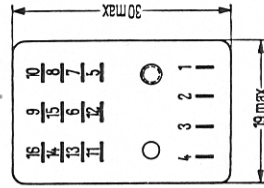
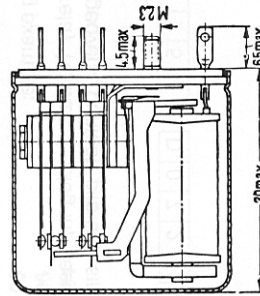
Cradle relay N V23162-B...
with tinned base terminals

V23162-H...

with gold-plated base terminals



Approx. weight 35 g

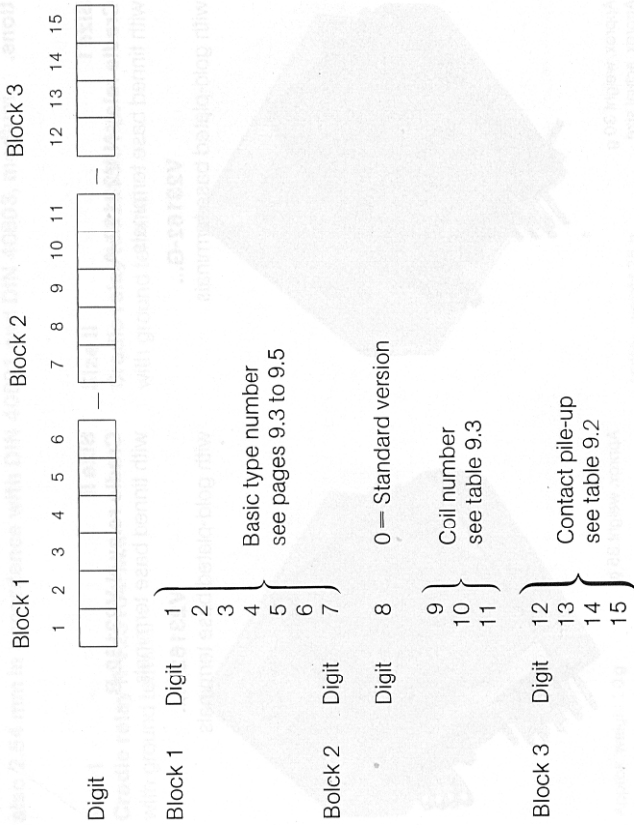


Mounting hole layout see page 13.6

Mounting hole layout see page 13.7

Cradle relay N

Ordering code



Ordering example:

Cradle relay N, size II, plug-in, base terminals silver plated, coil 24 V nominal, 4 changeovers contact pile-up, single contacts, contact material silver, gold flashed.

V 2 3 1 5 4 - D 0 7 2 1 - B 1 1 0

Cradle relay N

Preferred standard types

V23154-C0703-B104	V23154-C0720-F106
-C0704-B104	-C0721-B103
-C0712-B104	-C0721-B104
-C0715-B104	-C0721-B604
-C0716-B104	-C0721-C104
-C0717-B104	-C0721-F106
-C0719-B104	-C0722-B104
-C0720-B104	-C0726-B104
-C0720-C104	-C0726-C104
V23154-D0703-B110	V23154-D0717-C110
-D0703-F104	-D0717-F104
-D0704-B110	-D0719-B110
-D0704-B112	-D0719-C110
-D0704-F104	-D0719-F104
-D0712-B110	-D0720-B110
-D0712-F104	-D0720-C110
-D0715-B110	-D0720-C410
-D0715-F104	-D0720-F104
-D0716-B110	-D0721-B110
-D0716-F104	-D0721-B112
-D0717-B110	
V23154-M0712-B104	V23154-M0721-B103
-M0716-B104	-M0721-B104
-M0716-C104	-M0721-C104
-M0717-B104	-M0721-F105
-M0719-B104	-M0721-F106
-M0719-C104	-M0722-B104
-M0720-B104	

Preferred standard types (cont.)

V23154-N0717-B110
 -N0721-F104
 -N0719-B110
 -N0720-B110
 -N0720-F104
 -N0721-B110

V23162-A0704-B104
 -A0719-B104
 -A0719-C104
 -A0720-B104
 -A0721-B104
 -A0721-C104

V23162-B0712-F104
 -B0717-B110
 -B0719-F104
 -B0720-B110
 -B0720-C110
 -B0720-C410
 -B0720-F104
 -B0721-B110
 -B0721-B610

V23162-H0720-C410
 -H0721-B110

V23154-N0721-C110
 -N0721-F104
 -N0722-B110
 -N0722-F104
 -N0726-B110

V23162-A0721-C404
 -A0721-F105
 -A0722-B104
 -A0722-B604
 -A0726-B104
 -A0726-C404

V23162-B0721-F104
 -B0722-B110
 -B0722-B112
 -B0722-B610
 -B0722-F104
 -B0726-B110
 -B0726-B610
 -B0726-C110
 -B0726-F104

Table 9.1
 Energizing side

Order No.	see Table 9.3
Voltage range	Vdc
Pick-up excitation	AT
Pull-in power	mW
Admissible ambient temperature at operating power	°C
Max. temperature	°C
Continuous thermal load at 20° C ambient temperature	W
Thermal resistance at continuous load	K/W
Operate time ¹⁾	ms
Release time ¹⁾	ms
Inductance armature released at 120 AT	H
Test voltage coil/frame	Vrms

Contact side

Order No. block 3	B1..	B6..	C1..	C4..	F1..	W055.W056 ³⁾
Contact force approx.	cN	10	10	15	12	12
Type of contact	single		bifurcated		single	single main-maintained contacts
Contact material	silver gold flashed	Gold F	silver gold flashed	Gold F	silver gold flashed	silver gold flashed
Max. switching voltage	Vdc	150	36	150	36	250
	Vac	125	30	125	30	250
Max. switching current	A	2	0.2	2	0.2	5
Max. power rating	W	35 to 70	5	35 to 70	5	50 to 140
		s. fig. 9.1	(voltage dependent)	s. fig. 9.1	(voltage dependent)	s. fig. 9.2
	VA	50	5	50	5	500
Max. cont. current	A	2	2	2	2	5
Test voltage contact/contact/frame	Vrms	500		1000		
Max. switching rate	ops./sec.	50		10		
Mechanical life	ops.	approx. 10 ³		approx. 10 ⁷		

1) Depending on the contact pile-up
 2) Measured with contact pile-up B110 with fully wound coil and no series resistance and 180 AT excitation. For other operating conditions these values can be appreciably exceeded or be much lower.
 3) Contact pile-up with relay version V23154-D... only.
 4) Insulation to VDE 0110 group AO

Cradle relay N

Table 9.2 Characteristics

Size I

	B101		B102		B103		B104		C104		F105		F107		F106	
	1	2	2	21	21	21	21	21	21	21	1	1	2	2	2	1
Contact material silver, gold flashed order No. block 3																
Contact material gold F order No. block 3																
Contact designation																
Symbols with base connections																
Pick-up excitation max.	AT		55		55		65		105		80		100		90	
Pull-in power	mW		35-70		35-70		50-95		130-250		75-145		120-225		95-185	
Holding excitation max. 1)	AT		15		20		30		40		40		40		35	
Release excitation min. 1)	AT		5		5		10		15		10		10		10	

Size II

	B114		C114		B112		C112		B117		B116		B110		C110		F104		W055 ²⁾		W056 ²⁾	
	1-1	1-1	1-1-1	1-1-1	1-1-1	1-1-1	1-1-1	1-1-1	2-2-2	1-1-1	1-2-2	1-2-2	1-2-2	21-21	21-21	21	21	21	21	1-2	1-2	1-2
Contact material silver, gold flashed order No. block 3																						
Contact material gold F order No. block 3																						
Contact designation																						
Symbols with base connections																						
Pick-up excitation max.	AT		80		100		125		100		100		100		150		100		135		155	
Pull-in power	mW		75-145		120-225		125-225		150-345		120-225		120-225		120-225		120-225		215 bis 410		280 bis 540	
Holding excitation max. 1)	AT		40		45		60		45		45		50		65		40		55		75	
Release excitation min. 1)	AT		10		20		25		15		15		15		25		15		20		30	

1) These values are the result of a type test, and are guaranteed for a production series on request only.
 2) Maintained contact pile-ups with relay version V23154-D... only.

Table 9.3 List of coils and operating voltage ranges

		Maximum pick-up excitation according to table 9.2											Coil data ¹⁾		
		50 AT	55 AT	65 AT	80 AT	90 AT	100 AT	105 AT	125 AT	135 AT	150 AT	155 AT			Max. voltage $U_{II, 20^\circ C}$ Vdc
38	22	41	49	61	69	77	81	81	99	108	122	128	20900 ± 3140	32700	703
		24	28	34	39	43	46	46	55	60	69	71			
14	10	16	18	23	26	29	30	37	41	45	48	3200 ± 480	13400	726	
		11	13	16	18	21	22	22	26	29	33				35
6.8	5.3	7.5	8.6	11	12	13.5	14.5	18	19	22	22	890 ± 89	7300	721	
		5.8	6.9	8.5	9.6	10.8	11.3	13.7	15	16.5	17.5				550 ± 55
4.1	3.3	4.5	5.3	6.6	7.5	8.4	8.8	10.5	12	13	14	325 ± 33	4450	719	
		3.7	4.3	5.3	6.1	6.8	7.1	8.7	9.5	10.5	11.5				220 ± 22
2.7	2.3	3.0	3.5	4.4	4.9	5.5	5.8	7.1	7.7	8.5	9.1	150 ± 15	3100	716	
		3.0	3.7	4.1	4.6	4.9	5.8	5.8	6.4	7.5	7.6				110 ± 11
1.7	1.15	1.9	2.2	2.7	3.1	3.5	3.7	4.4	4.9	5.5	5.8	58 ± 6	1900	712	
		1.3	1.5	1.8	2.1	2.3	2.5	3.0	3.2	3.7	3.8				28 ± 3

1) Pin connections:
Coil with one winding
Start 4 End 1
Coil with two windings (available on request)
Start 3 End 2 for winding I
Start 4 End 1 for winding II

The minimum voltage U_I is dependent on the contact pick-up and the ambient temperature, whereas the maximum voltage U_{II} depends on the ambient temperature alone. Between minimum voltage $U_{I, tu}$ and operating voltage U a safety margin of 20% is recommended. For example calculation see page 1.21.

$$U_{I, tu} = (1,2) \cdot U \leq U_{II, tu}$$

$$U_{I, tu} = U_{I, 20^\circ C} \cdot k_{I, tu}$$

$$U_{II, tu} = U_{II, 20^\circ C} \cdot k_{II, tu}$$

t_u = ambient temperature
 U = operating voltage
 $U_{I, tu}$ = minimum voltage at ambient temperature t_u
 $U_{II, tu}$ = maximum voltage at ambient temperature t_u
 k_I and k_{II} = factors

t_u	20 °C	30 °C	40 °C	50 °C	60 °C	70 °C
k_I	1.0	1.05	1.09	1.13	1.17	1.215
k_{II}	1.0	0.93	0.86	0.79	0.705	0.615