



Utilization categories for control switches to IEC 947-5-1 EN 60947 DIN VDE 0660-200.

Type of current	Utilization category	Typical examples of application	Normal conditions of use							
		I = current made, I _c = current broken I _e = rated operational current, U = voltage before make U _e = rated operational voltage U _r = recovery voltage t _{0,95} = time in ms, to reach 95% of the steady-state current. P = U _e · I _e = steady-state power consumption in watts	Make	Break						
			$\frac{I}{I_e}$	$\frac{U}{U_e}$	cos φ	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	cos φ		
AC	AC 12	Control of resistive loads and solid state loads with isolation by opto couplers	1	1	0,9	1	1	0,9		
	AC 15	Control of a.c. electromagnetic loads(> 72 VA)	10	1	0,3	1	1	0,3		
			$\frac{I}{I_e}$	$\frac{U}{U_e}$	t _{0,95}	$\frac{I_c}{I_e}$	$\frac{U_r}{U_e}$	t _{0,95}		
DC	DC 12	Control of resistive loads and solid state loads with isolation by opto couplers	1	1	1 ms	1	1	1 ms		
	DC 13	Control of d.c. electromagnets	1	1	6 · P	1	1	6 · P		

The value 6 · P results from an empirical relationship with is found to represent most d.c. magnetic loads to an upper limit of P = 50 W viz 6 · P = 300 ms. Loads having power consumption greater than 50 W are assumed to consist of smaller loads in parallel. Therefore 300 ms is to be an upper limit, irrespective of the power consumption value.

Attach our switching device		V6 N6 S6	VV6 DD64	V11	V5 S2-S23	VV5 SS2	V8 D8	VV8	V10	V3	dead man's button signal button push button
Rated isolation voltage U _i in Volt		250	250	250	250	250	110	110	110	500	250
Rated operational voltage U _e in Volt		250	250	250	250	250	110	110	110	350	250
Rated operational current I _e in Ampere	AC 12	6 or 10	6 or 10	6 or 10	6	6	2	2	2	10	6
	AC 15	2 4	2 4	2 4	2	2	0,5	0,5	0,5	4	2
Contacts gold-coated	DC 12 24 V	6 8	6 8	6 8	4	4	2	2	2	8	4
	48 V	2 4	2 4	2 4	2	2	1	1	1	4	2
	110 V	0,5 1	0,5 1	0,5 1	0,2	0,2	0,1	0,1	0,1	1	0,2
	220 V	0,1 0,5	0,1 0,5	0,1 0,5	0,1	0,1	5 mA </td <td>5 mA</td> <td>5 mA</td> <td>0,5</td> <td>0,1</td>	5 mA	5 mA	0,5	0,1
	24 V	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA	5 mA
DC 13	24 V	1	1	1	3	3	1,5	1,5	1,5	1	3
	48 V	0,5	0,5	0,5	1,5	1,5	0,5	0,5	0,5	0,5	1,5
	110 V	0,2	0,2	0,2	0,1	0,1	0,05	0,05	0,05	0,2	0,1
	220 V	0,05	0,05	0,05	0,05	0,05				0,05	0,05
Short-circuit-protection in Ampere Fuse 9 L		6 10	6 10	6 10	6	6	4	4	4	10	6
	Circuit-breaker G-characteristic	6 10	6 10	6 10	6	6	4	4	4	10	6
Terminal screws Plug-in connection		M 3,5	M 3,5	M 3,5	M 3,5 6,3 x 0,8	M 3,5 6,3 x 0,8	Solder terminal			M 4 6,3 x 0,8	M 3,5 6,3 x 0,8
Conductor sizes in mm ² finely stranded with end steeves		1,5	1,5	1,5	1,5	1,5	0,5	0,5	0,5	1,5	1,5
Mechanical life in million (operation cycles) max. switching frequency c/h 1000		10	20	10	6	10	8	12	6	6	10
Mechanical shock resistance to IEC 68-2-27		Shock-amplitude > 15 Shock duration 20 ms									
Clear ances and creepage distances to IEC 947-1; 2.5.46.51		Overvoltage category III pollution grade 3									
Degree of protection to IEC 529 DIN 40050		1. numeral protection of contact and foreign bodies					2. numeral protection of water				
		IP 00 No protection					No protection				
		IP 54 Protection deposits of dust					Protection splashing of water				
		IP 65 Protection complete of dust					Protection hosed of water				
		IP 66 Protection complete of dust					Protection hosed strong of water				