

# 3TG10 Power Relays/Miniature Contactors

4-pole, 4 kW

## Technical specifications

Type			3TG10
General data			
<b>Endurance</b>			
<ul style="list-style-type: none"><li>• Mechanical</li><li>• Electrical<ul style="list-style-type: none"><li>- AC-1 at <math>I_e</math></li><li>- AC-3 at <math>I_e</math></li></ul></li></ul>	Operating cycles		3 million
	Operating cycles		0.1 million
	Operating cycles		0.4 million
<b>Rated insulation voltage <math>U_i</math></b> (degree of pollution 3)		V	400
<b>Rated impulse withstand voltage <math>U_{imp}</math></b>		kV	4
<b>Safe isolation</b> between the coil and the contacts according to EN 60947-1, Appendix N			V Up to 300
<b>Permissible ambient temperature</b>	During operation <sup>1)</sup>	°C	-25 ... + 55
	During storage	°C	-50 ... + 80
<b>Degree of protection</b> according to IEC 60947-1 and EN 60529 (VDE 0470 Part 1)			IP00, drive system IP20
<b>Power consumption of the magnetic coils</b> (when coil is cold and $1.0 \times U_s$ )	AC operation 45 ... 450 Hz	VA	4.4
	P.f.		0.9 (hum-free)
	DC operation	W	4
<b>Magnetic coil operating range</b>			0.85 ... $1.1 \times U_s$
<b>Operating times</b> (Total break time = OFF-delay + Arcing time)			
<ul style="list-style-type: none"><li>• ON-delay</li></ul>			
- Closing NO	- DC operation	ms	11 ... 50
	- AC operation	ms	10 ... 50
	- DC operation	ms	21 ... 39
	- AC operation	ms	20 ... 30
- Opening NC	- DC operation	ms	21 ... 39
	- AC operation	ms	20 ... 30
	- DC operation	ms	19 ... 35
	- AC operation	ms	20 ... 30
<ul style="list-style-type: none"><li>• OFF-delay</li></ul>			
- Closing NC	- DC operation	ms	5 ... 45
	- AC operation	ms	5 ... 45
	- DC operation	ms	19 ... 35
	- AC operation	ms	20 ... 30
- Opening NO	- DC operation	ms	19 ... 35
	- AC operation	ms	20 ... 30
	- DC operation	ms	19 ... 35
	- AC operation	ms	20 ... 30
Arcing time			ms 10 ... 15
<b>Shock resistance</b>			
<ul style="list-style-type: none"><li>• Rectangular pulse</li><li>• Sine pulse</li></ul>	AC operation and DC operation	g/ms	5.1/5 and 3.5/10
	AC operation and DC operation	g/ms	7.9/5 and 5.2/10
<b>Switching frequency <math>z</math></b> in operating cycles/hour rated operation	According to AC-1	1/h	1000
	According to AC-2	1/h	500
	According to AC-3	1/h	1000
	No-load switching frequency	1/h	10000
Short-circuit protection			
<b>Fuse links</b> gL/gG operational class LV HRC 3NA, DIAZED 5SB, NEOZED 5SE according to IEC 60947-4/ DIN VDE 0660 Part 102			
<ul style="list-style-type: none"><li>• Miniature circuit breakers</li></ul>	• Type of coordination "1"	A	25
	• Type of coordination "2"	A	10
	Characteristic C	A	10
AC capacity			
<b>Utilization category AC-1, switching resistive loads</b>			
<b>Rated operational current <math>I_e</math></b> up to 400 V at 55 °C <sup>1)</sup>		A	20 for screw terminal, 16 for flat connector
<b>Rated power <math>U_e</math></b> for AC loads with p.f. = 1, 230/220 V			
<ul style="list-style-type: none"><li>• For screw terminal</li><li>• For flat connector</li></ul>		kW	7.5 (13 at 400 V)
		kW	6 (10 at 400 V)
Minimum conductor cross-section for load with $I_e$		mm <sup>2</sup>	2.5
<b>Utilization category AC-2 and AC-3</b>			
<b>Operational current for AC-3 at 400 V rated value</b>		A	8.4
Rated power for slipring or squirrel-cage motors with 50 Hz and 60 Hz and at 400 V		W	4000
<b>Utilization category AC-5a</b> (permissible nominal impedance: $\geq 0.5 \Omega$ )			
<b>Switching gas discharge lamps</b>			
<ul style="list-style-type: none"><li>• Per main current path at 230 V, 50 Hz</li></ul>			
Rated power/rated operational current per lamp			
<ul style="list-style-type: none"><li>• Uncorrected</li></ul>	18 W	0.37 A	43
	36 W	0.43 A	37
	58 W	0.67 A	24
<ul style="list-style-type: none"><li>• Lead-lag circuit</li></ul>	18 W	2 x 0.11 A	2 x 81
	36 W	2 x 0.21 A	2 x 42
	58 W	2 x 0.32 A	2 x 28

<sup>1)</sup> If the three main current paths carry a load of 20 A, the following applies if  $I > 10$  A for the fourth conducting path: permissible ambient temperature 40 °C.

# 3TG10 Power Relays/Miniature Contactors

4-pole, 4 kW

Type					3TG10
AC capacity					
<b>Switching gas discharge lamps with correction, solid-state ballast</b>					
Per main current path 230 V, 50 Hz					
Rated power per lamp/capacitance/ rated operational current per lamp					
• Shunt compensation	L18 W	4.5 µF	0.11 A	Units	15
	L36 W	4.5 µF	0.21 A	Unit(s)	15
	L58 W	7 µF	0.32 A	Unit(s)	10
• With solid-state ballast (1 lamp)	L18 W	6.8 µF	0.10 A	Unit(s)	39
	L36 W	6.8 µF	0.18 A	Unit(s)	39
	L58 W	10 µF	0.27 A	Unit(s)	26
• With solid-state ballast (2 lamps)	L18 W	10 µF	0.18 A	Unit(s)	2 x 26
	L36 W	10 µF	0.35 A	Unit(s)	2 x 26
	L58 W	22 µF	0.52 A	Unit(s)	2 x 12
<b>Utilization category AC-5b, switching incandescent lamps</b>					
Per main current path at 230 V, 50 Hz					kW 1.6
Load rating with DC					
<b>Utilization category DC-1, switching resistive load (<math>L/R \leq 15</math> ms)</b>					
<b>Rated operational currents <math>I_e</math></b>					
• 1 conducting path			up to 24 V	A	16
			60 V	A	6
			110 V	A	2
			220 / 240 V	A	0.8
• 2 conducting paths in series			up to 24 V	A	16
			60 V AC	A	16
			110 V AC	A	6
			220 / 240 V	A	1.6
• 3 conducting paths in series			up to 24 V	A	18
			60 V AC	A	18
			110 V AC	A	16
			220 / 240 V	A	6
• 4 conducting paths in series			up to 24 V	A	20
			60 V AC	A	20
			110 V AC	A	20
			220 / 240 V	A	20
<b>Utilization category DC-3 and DC-5</b>					
<b>Shunt-wound and series-wound motors (<math>L/R \leq 15</math> ms)</b>					
<b>Rated operational currents <math>I_e</math></b>					
• 1 conducting path			up to 24 V	A	10
			60 V AC	A	0.5
			110 V AC	A	0.15
			220 / 240 V	A	0
• 2 conducting paths in series			up to 24 V	A	16
			60 V AC	A	5
			110 V AC	A	0.35
			220 / 240 V	A	0
• 3 conducting paths in series			up to 24 V	A	16
			60 V AC	A	16
			110 V AC	A	10
			220 / 240 V	A	1.75
• 4 conducting paths in series			up to 24 V	A	18
			60 V AC	A	16
			110 V AC	A	10
			220 / 240 V	A	2
Conductor cross-sections					
<b>With screw terminal</b>					M3
• Finely stranded with end sleeve (DIN 46228 Form A/D/C)					mm <sup>2</sup> 2 x (0.75 ... 2.5)
• Solid					mm <sup>2</sup> 2 x (1 ... 2.5), 1 x 4
<b>With flat connector</b>					
• Finely stranded 6.3 mm plug-in sleeve according to DIN 46245/46247					
- 6.3 ... 1					mm <sup>2</sup> 0.5 ... 1
- 6.3 ... 2.5					mm <sup>2</sup> 1 ... 2.5
CSA and UL rated data (screw terminal)					
<b>Rated insulation voltage</b>				AC V	600
<b>Uninterrupted current</b>				Open and enclosed A	20
<b>Maximum horsepower ratings</b> (CSA and UL approved values) Rated power for induction motors with 60 Hz					1-phase/ 3-phase
at 115 V					hp 0.5/ --
200 V					hp 1/ 3
230 V					hp 1.5/ 3
460 V					hp 0/ 5
575 V					hp 0/ 5
600 V					hp 0/ 5

For short-circuit protection with overload relays  
see Protection Equipment: Overload Relays