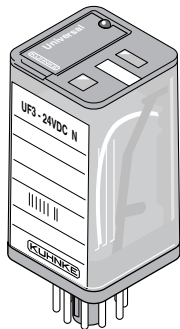




Relay Universal UF2/UF3

- Standard type  
- Twin contacts for high contact making reliability
- With LED and protection diode on request



Order Code

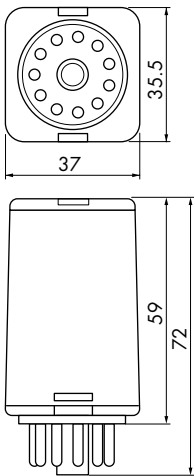
Order code	U	F	3		-	24 V	DC	N	
Type of relay	U								
Model									
F Plug in type for socket, international 8-pole socket or 11 pole socket resp.		F							
Contact arrangement									
2 C/O			2						
3 C/O			3						
Contact material, type of contact									
- Single contact AgNi (no code letter)				-					
B Single contact AgNi gold-plated				B					
F Twin contacts AgNi				F					
G Twin contacts AgNi gold-plated				G					
Nominal operation coil voltage (see coil data)									
24 V						24 V			
Coil current type									
DC Direct current							DC		
AC Alternating current 50 / 60 Hz							AC		
Version									
N With position indicator, with manual override, without override lever								N	
1 With position indicator, with manual override, with override lever								1	
Extensions									
- None (no code letter)									-
F Protection diode (on request)									F
L Luminous indicator (on request)									L



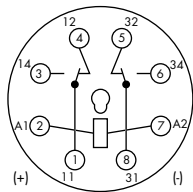
Contact Data

	UF2 / UF3			
Contact arrangement	2 or 3 C/O			
Type of contact	Single contact		Twin contact	
Contact material	AgNi	AgNi gold-plated	AgNi	AgNi gold-plated
Nominal contact current	10 A		4 A	
Inrush current	≤ 20 A		≤ 10 A	
Nominal contact voltage	250 VAC / DC		250 VAC	
Max. switching capacity (resistive)	3000 VA		1000 VA	
Min. switching capacity	50 mA / 20 VDC	1 mA / 100 mVDC	20 mA / 10 VDC	1 mA / 100 mVDC

Dimensions, Connection Diagram(s)

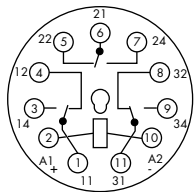


UF2 / UF3



Viewed on connector pins

UF2



Viewed on connector pins

UF3

General Data

	UF2 / UF3		
Pull-in-time	approx. 12 ms		
Drop-out time	approx. 10 ms		
Bounce time	approx. 5 ms		
Mechanical service life	> 20 x 10 ⁶ switching cycles		
Test voltage			
Coil - contact	2500 VAC		
(C/O) - (C/O)	2500 VAC		
Contact - contact	1500 VAC		
Insulation group VDE 0110b/2.79	C250, B380		
Ambient temperature	-25 °C to +60 °C DC -25 °C to +40 °C AC		
Vibration resistance (30 - 100 Hz)	> 4 g		
Weight	approx. 90 g		
Operating range	DC Class 1 (0.8 – 1.1 U _N)	AC 50 Hz Class 1 (0.8 – 1.1 U _N)	AC 60 Hz Class 2 (0.85 – 1.1 U _N)
Pull-in after coil excitation with U _N at T _U	20 °C	20 °C	20 °C
Drop-out	> 0.05 U _N	> 0.15 U _N	> 0.15 U _N



Coil Data

Coil voltage DC			Coil voltage AC			
UF2 / UF3			UF2/UF3			
Nom. operation coil power approx. 1.2 W Inrush current approx. 0.6 W			Nom. operation coil power approx. 2.2 / 2.0 VA Inrush current approx. 1.5 x Nominal current			
Nominal voltage (V)	Nominal resistance (Ω)	Nominal current (mA)	Nominal voltage (V)	Nominal resistance (Ω)	Nominal current 50 Hz (mA)	Nominal current 60 Hz (mA)
12	96	125	24	74	107	91
24	384	63	60	474	43	36
60	2400	25	115	1710	23	19
110	7660	14	230	7500	17	10
220	30630	7.2				

Electrical Service Life

Electrical Service Life AC

90 % operating

— resistive load Single contacts

· · · · · inductive load Single contacts

— · — resistive load Twin contacts

— — — inductive load Twin contacts

$\cos \varphi = 0.4 \dots 0.7$

Switching capacity DC

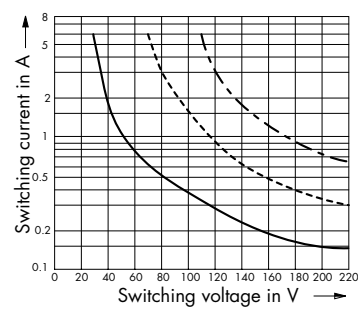
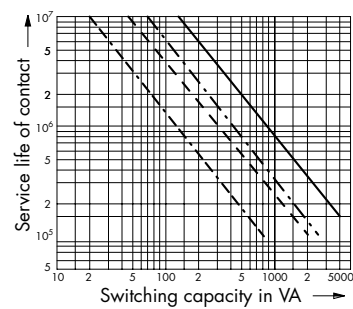
Below limiting characteristic: service life of contacts

1×10^6 switching cycles (90 % operating)

resistive load — 1 contact

· · · · · 2 contacts in series

— · — 3 contacts in series





Universal Standard Types in Stock

available from stock in packets of 10 pcs each

DC			AC		
UF2-12VDC1	UF3-12VDC1	UF2G-24VDC1	UF2-24VAC1	UF3-12VAC1	UF3B-230VACN
UF2-24VDC1	UF3-12VDCN	UF3B-24VDC1	UF2-24VAC1L	UF3-24VAC1	UF3F-24VACN
UF2-24VDC1FL	UF3-24VDC1	UF3B-24VDC1FL	UF2-24VACN	UF3-24VAC1L	UF3F-230VAC1
UF2-24VDCN	UF3-24VDC1FL	UF3B-24VDC1L	UF2-110VAC1	UF3-24VACN	UF3F-230VACN
UF2-110VDCN	UF3-24VDC1L	UF3B-24VDCN	UF2-120VAC1	UF3-48VAC1	UF3G-110VAC1
	UF3-24VDCN	UF3F-24VDC1	UF2-230VAC1	UF3-110VAC1	UF3G-230VAC1
	UF3-24VDCNF	UF3F-24VDCN	UF2-230VAC1L	UF3-110VACN	UF3G-230VACN
	UF3-24VDCNFL	UF3F-24VDCNF	UF2-230VACN	UF3-115VAC1L	
	UF3-24VDCNL	UF3F-60VDCN		UF3-120VAC1	
	UF3-48VDC1	UF3F-110VDCN		UF3-230VAC1	
	UF3-48VDCN	UF3G-24VDC1		UF3-230VAC1L	
	UF3-60VDCN	UF3G-24VDC1FL		UF3-230VACN	
	UF3-110VDC1	UF3G-24VDCN		UF3-230VACNL	
	UF3-110VDC1FL	UF3G-24VDCNL			
	UF3-110VDCN	UF3G-60VDCN			
	UF3-125VDCN	UF3G-110VDCN			
	UF3-220VDC1				
	UF3-220VDCN				

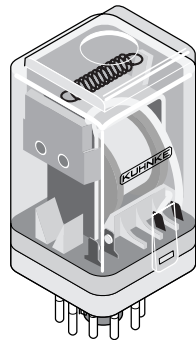
Order Specifications for Accessories UF

	UF2	UF3
Socket for		
Screw connection with quick-action fastening / retaining spring	Z392 / Z434 Z395	Z345 / Z441 Z393 / Z434 Z396
Screw connection with quick-action fastening and protection diode		Z345.12 / Z441
Screw connection with quick-action fastening and RC combination		Z345.32 / Z441
Modules for socket Z396 / Z395		
Protection diode for 6 - 220 VDC	Z396.50	Z396.50
Protection / luminous diode for 24 VDC	Z396.52	Z396.52
RC combination for 110 / 230 VAC	Z396.53	Z396.53
Protection module with varistor for 24 VAC	Z396.54	Z396.54
Protection module with varistor for 230 VAC	Z396.55	Z396.55
Luminous indicator 230 VAC	Z396.58	Z396.58
Multi-function time module	Z396.64	Z396.64
Retaining spring	Z441 / Z434	Z441 / Z434



Relay Universal MF

- Standard type 
- Large contact gap, switching voltage therefore 400 VAC



Order Code

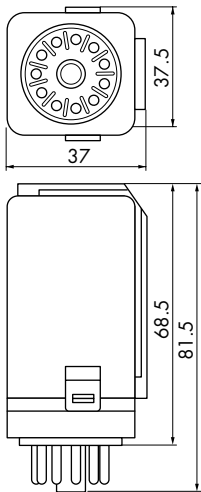
Order code	M	F	3		-	24 V	DC
Type of relay	M						
Model							
F Plug in type for socket		F					
Contact arrangement							
2 C/O			2				
3 C/O			3				
Contact material, type of contact							
- Hard silver (no code letter)				-			
C AgCdO				C			
Nominal operation coil voltage (see coil data)							
24 V						24 V	
Coil current type							
DC Direct current							DC
AC Alternating current 50 Hz (60 Hz on request)							AC

Contact Data

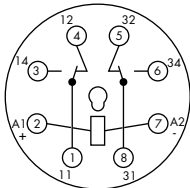
	MF2 / MF3
Contact arrangement	2 or 3 C/O
Type of contact	Single contact
Contact material	Hard silver, AgCdO
Nominal contact current	6 A
Inrush current	≤ 20 A
Nominal contact voltage	400 VAC
Max. switching capacity (resistive)	3000 VA
Min. switching capacity	50 mA / 20 VDC



Dimensions, Connection Diagram(s)

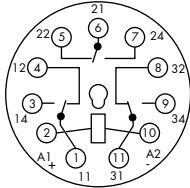


MF2 / MF3



Viewed on connector pins

MF2



Viewed on connector pins

MF3

General Data

	MF2 / MF3	
Pull-in-time	approx. 15 ms	
Drop-out time	approx. 10 ms	
Bounce time	approx. 10 ms	
Mechanical service life	> 20 x 10 ⁶ switching cycles DC > 10 x 10 ⁶ switching cycles AC	
Test voltage		
Coil - contact	2500 VAC	
(C/O) - (C/O)	2500 VAC	
Contact - contact	1000 VAC	
Insulation group VDE 0110b/2.79	C250, B380	
Ambient temperature	-25 °C to +70 °C	
Vibration resistance (30 - 100 Hz)	> 4 g	
Weight	approx. 120 g	
Operating range	DC Class 1 (0.8 – 1.1 U _N)	AC 50 Hz Class 1 (0.8 – 1.1 U _N)
Pull-in after coil excitation with U _N at T _U	20 °C	20 °C
Drop-out	> 0.05 U _N	> 0.15 U _N



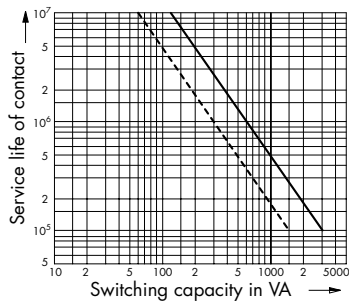
Coil Data

Coil voltage DC	MF2 / MF3		Coil voltage AC, 50 Hz	MF2		MF3	
	Nom. operation coil power appr. 1.5 W Pull-in power appr. 0.7 W			Nom. operation coil power appr. 1.8 VA Inrush current appr. 1.7 x nom. current		Nom. operation coil power appr. 3.8 VA Inrush current appr. 1.7 x nom. current	
	Nominal voltage (V)	Nominal resistance(Ω)		Nominal current (mA)	Nominal voltage (V)	Nominal resistance (Ω)	Nominal current (mA)
12	103	120	12	17.9	170	9.25	340
24	442	54	24	85.2	71	45.2	140
40	1030	39	42	268	40	127	93
60	2410	25	60	547	28	268	62
110	7710	14	110	1910	16	1030	31
220	29400	7.5	230	7710	8	3890	17

Electrical Service Life

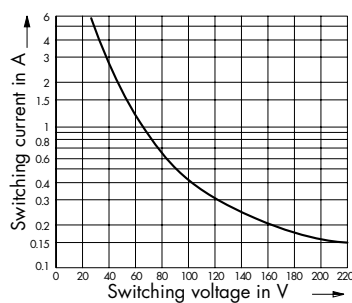
Electrical Service Life AC

90 % operating
—— resistive load
- - - - inductive load
cos φ = 0.4 ... 0.7



Switching capacity DC

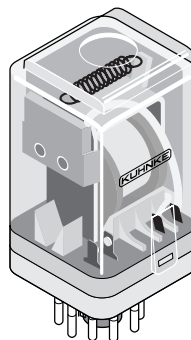
Below limiting characteristic: service life of contacts
1 x 10⁶ switching cycles (90 % operating)
resistive load





Relay Universal MF2 for Current Monitoring

- Standard type 
- Large contact gap, switching voltage therefore 400 VAC
- Monitoring of DC and AC currents



Order Code

Order code	M	F	2	-	0	40
Type of relay	M					
Model						
F Plug-in type with socket		F				
Contact arrangement						
2 C/O			2			
Coil current type						
0 Direct current					0	
1 Alternating current 50 Hz (60 Hz on request)					1	
Coil number (see order specs)						
40						40

Order Specifications

for current relay MF2 for the monitoring of DC filament bulbs and other DC loads

P \ U	6 VDC	12 VDC	24 VDC	60 VDC	110 VDC	115 VDC	220 VDC
10 W	MF2-052	MF2-046	MF2-040	-	-	-	-
25 W	MF2-056	MF2-052	MF2-046	MF2-040	MF2-034	MF2-030	-
40 W	-	MF2-056	MF2-052	MF2-040	MF2-034	MF2-037	MF2-030
60 W	-	-	MF2-052	MF2-046	MF2-040	MF2-040	MF2-034
65 W	-	-	MF2-052	MF2-046	MF2-040	MF2-040	MF2-034
80 W	-	-	MF2-056	MF2-046	MF2-046	MF2-044	MF2-037
100 W	-	-	MF2-056	MF2-052	MF2-046	MF2-046	MF2-040
150 W	-	-	-	MF2-052	MF2-046	MF2-046	MF2-040
200 W	-	-	-	MF2-056	MF2-052	MF2-052	MF2-046

for current relay MF2 for the monitoring of AC filament bulbs and other AC loads

P \ U	6 VAC 50 Hz	12 VAC 50 Hz	24 VAC 50 Hz	60 VAC 50 Hz	110 VAC 50 Hz	115 VAC 50 Hz	230 VAC 50 Hz
10 W	MF2-151	MF2-146	MF2-143	-	-	-	-
25 W	-	MF2-157	MF2-151	MF2-143	MF2-137	MF2-137	MF2-130
40 W	-	MF2-157	MF2-151	MF2-144	MF2-137	MF2-137	MF2-134
60 W	-	-	MF2-157	MF2-151	MF2-144	MF2-144	MF2-137
65 W	-	-	MF2-157	MF2-151	MF2-144	MF2-144	MF2-137
80 W	-	-	MF2-157	MF2-151	MF2-144	MF2-144	MF2-137
100 W	-	-	-	MF2-151	MF2-146	MF2-146	MF2-143
150 W	-	-	-	MF2-157	MF2-151	MF2-151	MF2-144
200 W	-	-	-	MF2-157	MF2-152	MF2-151	MF2-146

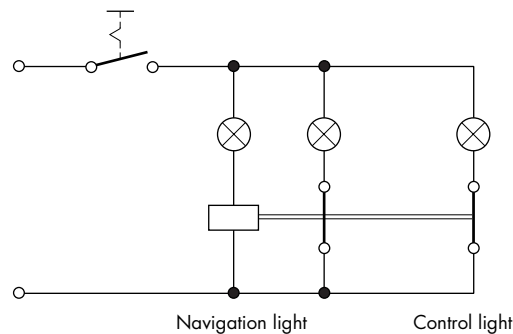


Contact Data

	MF2 for current monitoring
Contact arrangement	2 C/O
Type of contact	Single contact
Contact material	Hard silver
Nominal contact current	6 A
Inrush current	≤ 20 A
Nominal contact voltage	400 VAC
Max. switching capacity (resistive)	3000 VA
Min. switching capacity	50 mA / 20 VDC

Dimensions, Connection Diagram(s)

See relay universal MF



Application
Example: Navigation lights
Use as monitoring relay
in accordance with connection diagram

General Data

	MF2 for current monitoring
Pull-in-time	approx. 15 ms
Drop-out time	approx. 10 ms
Bounce time	approx. 10 ms
Mechanical service life	> 20 x 10 ⁶ switching cycles DC > 10 x 10 ⁶ switching cycles AC
Test voltage	
Coil - contact	2500 VAC
(C/O) - (C/O)	2500 VAC
Contact - contact	1000 VAC
Insulation group VDE 0110b/2.79	C250, B380
Ambient temperature	-25 °C to +40 °C
Vibration resistance (30 - 100 Hz)	> 4 g
Weight	approx. 120 g
Operating range	0.9 – 1.1 I _N
Residual direct current ripple	< 25 %

Order Specifications for Accessories MF

	MF2	MF3
Socket for		
Screw connection with quick-action fastening /retaining spring	Z392 / Z434 Z395	Z345 / Z434 Z393 / Z434 Z396



Time Relay Universal 130

- Time relay for relay universal series
- 2 C/O



Order Code

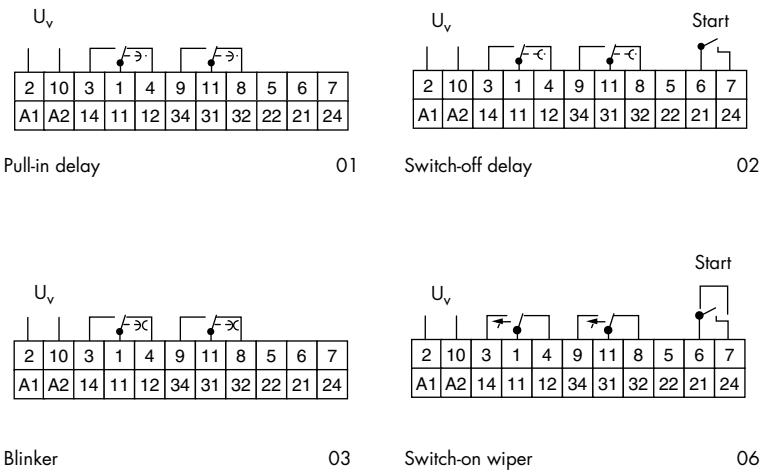
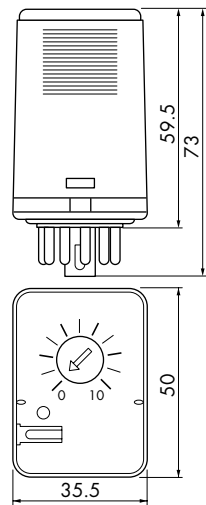
Order code	130	-	2	-	01	-	2	-	3	-	24 VDC/AC
Type of relay	130										
Contact arrangement											
2 C/O			2								
Function											
01 Pull-in delay					01						
02 Switch-off delay					02						
03 Blinker					03						
06 Switch-on wiper					06						
Connection diagram											
2 11 pole							2				
Nominal time range / Impulse frequency											
3 0.1 - 3 s approx.									3		
30 0.5 - 30 s approx.									30		
180 2.0 - 180 s approx.									180		
600 4.0 - 600 s (on request)									600		
for function 03											
50 5 - 50 pulses/min approx.									50		
200 40 - 200 pules/min approx.									200		
Nominal voltage											
24 VDC/AC											24 VDC/AC
110 VAC											110 VAC
230 VAC											230 VAC

Contact Data

	130
Contact arrangement	2 C/O
Type of contact	Single contact
Contact material	AgCdO
Nominal contact current	8 A
Inrush current	≤ 15 A
Nominal contact voltage	250 VAC
Max. switching capacity	2000 VA
Min. switching capacity	100 mA / 5 VDC



Dimensions, Connection Diagram(s)



General Data

	130
Mechanical service life	> 5 x 10 ⁶ switching cycles
Electrical service life	> 1 x 10 ⁵ switching cycles
Test voltage	
Inputs - contact	2500 VAC
Insulation group VDE 0110b/2.79	C250
Ambient temperature	0 °C to +40 °C
Weight	approx. 60 g
Operating range	DC / AC Class 1 0.8 - 1.1 U _N
Pull-in after coil excitation with U _N at T _U	20 °C
Nominal frequency	40 - 60 Hz
Rated power	0.8 W

Control Circuit

Relay	130 ... 01, 130 ... 03, 130 ... 06	130 ... 02
Contact voltage	Supply voltage	≤ 15 V
Contact current	≤ 150 mA	≤ 15 mA
Contact load	approx. 1 VA	≤ 0.2 W
Input impedance	approx. 180 Ω	1 kΩ
Pulse duration		≤ 70 ms

Order Specifications for Accessories

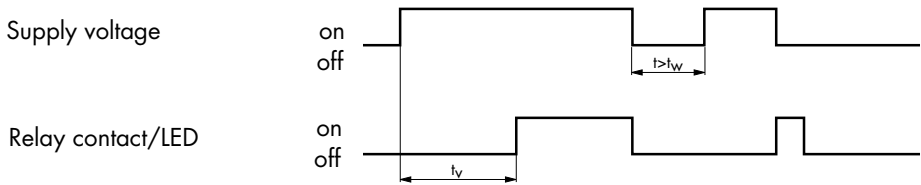
Relay		130
Socket for	Screw connection with quick-action fastening	Z345
		Z393



Function

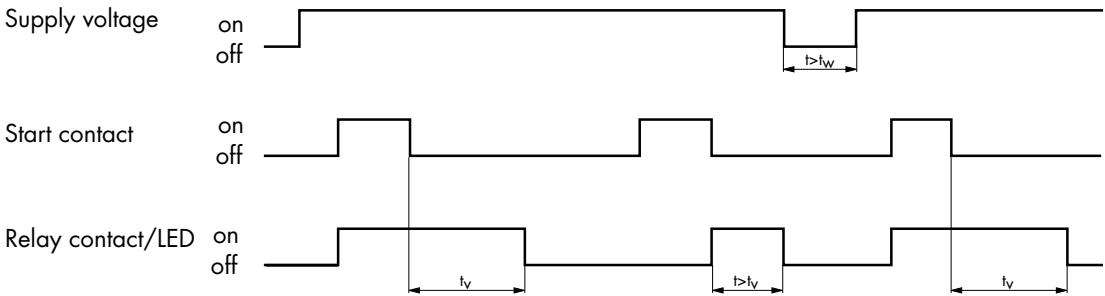
Pull-in delay 01

Switching with supply voltage



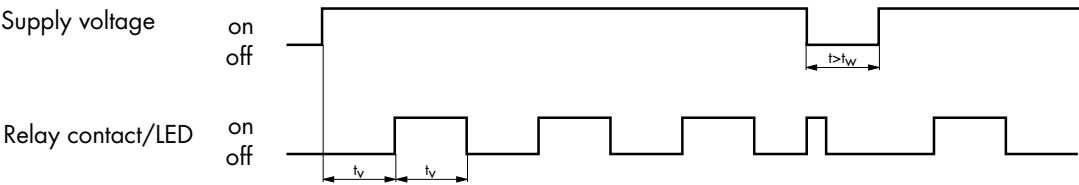
Switch-off delay 02

Switching with start contact



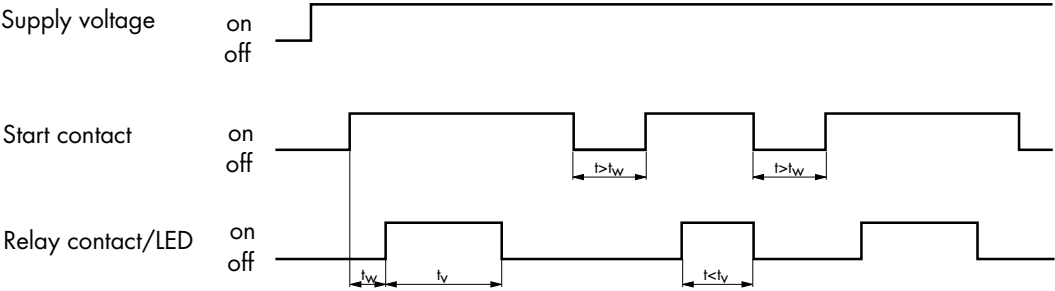
Blinker 03

Switching with supply voltage

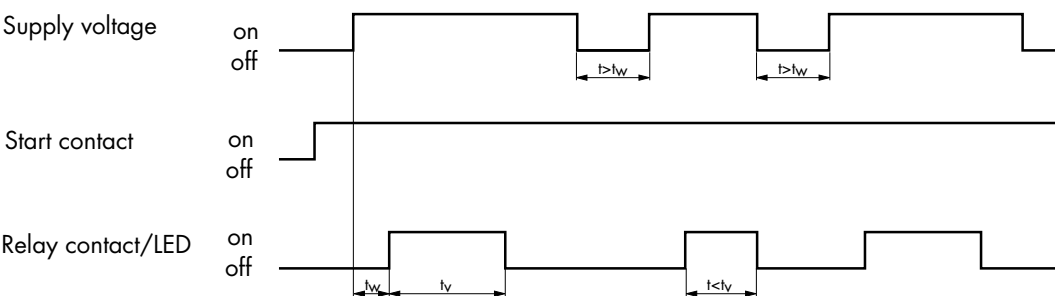


Switch-on wiper 06

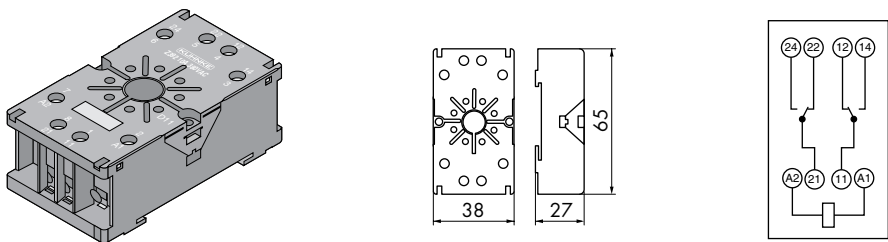
Switching with start contact



Switching with supply voltage

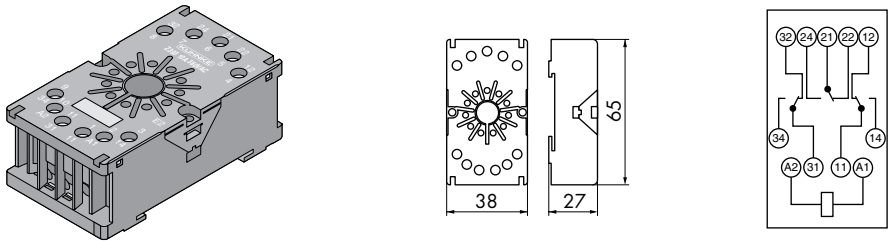


Socket Z392



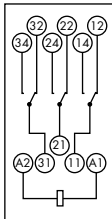
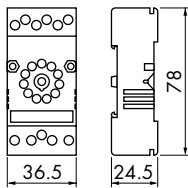
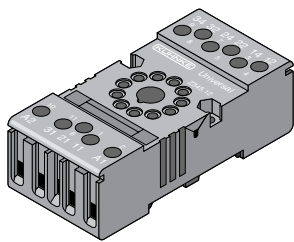
Socket	Z392
Socket design	logical, additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head screws metric M3
Torque in accordance with DIN EN 60999	0.5 Nm
Nominal current	10 A
Insulation group VDE 0110b/2.79	C250, B380
Electrical shock protection	in accordance with VBG4 (professional association), VDE 0106 part 100
Weight	63 g
Retaining spring	Z434

Socket Z393

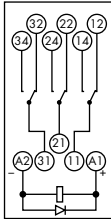


Socket	Z393
Socket design	additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head screws metric M3
Torque in accordance with DIN EN 60999	0.5 Nm
Nominal current	10 A
Insulation group VDE 0110b/2.79	C250, B380
Electrical shock protection	in accordance with VBG4 (professional association), VDE 0106 part 100
Weight	63 g
Retaining spring	Z434

Socket Z345

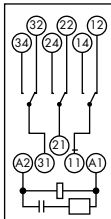


Z345



Z345.12

Protection diode up to 220 VDC

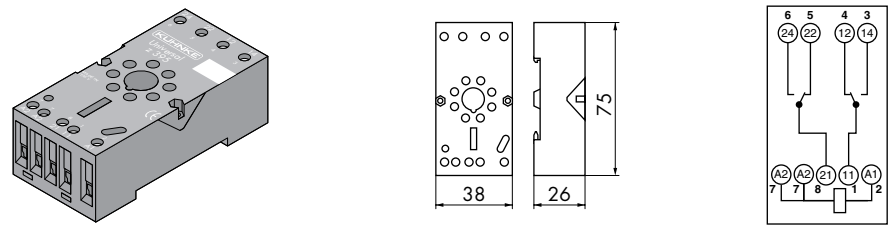


Z345.32

RC-protection unit 110 / 230 VAC

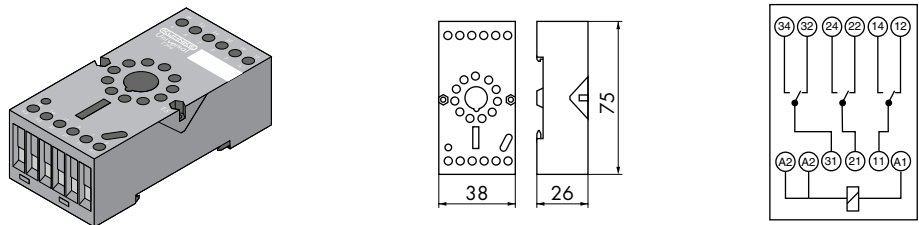
Socket	Z345
Socket design	logical, additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head screws metric M2.6
Torque in accordance with DIN EN 60999	0.5 Nm
Nominal current	10 A
Insulation group VDE 0110b/2.79	C250, B380
Electrical shock protection	in accordance with VBG4 (professional association), VDE 0106 part 100
Weight	50 g
Retaining spring	Z441

Socket Z395



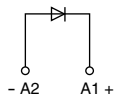
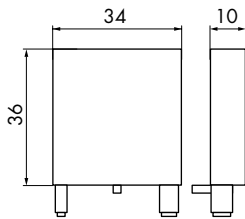
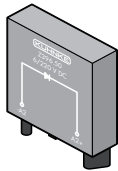
Socket	Z395
Socket design	logical, additional modules supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 1.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head screws metric M3
Torque in accordance with DIN EN 60999	0.5 Nm
Nominal current	10 A
Insulation group VDE 0110b/2.79	C250, B380
Electrical shock protection	in accordance with VBG4 (professional association), VDE 0106 part 100
Weight	68 g

Socket Z396

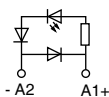


Socket	Z396
Socket design	logical, additional modules supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 1.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head screws metric M3
Torque in accordance with DIN EN 60999	0.5 Nm
Nominal current	10 A
Insulation group VDE 0110b/2.79	C250, B380
Electrical shock protection	in accordance with VBG4 (professional association), VDE 0106 part 100
Weight	68 g

Modules for Socket Z395/Z396



Z396.50
Protection diode



Z396.52
Protection / luminous diode
for 24 VDC



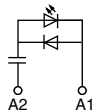
Z396.53
RC-protection unit
for 110 - 240 VAC



Z396.54
Varistor for 24 VAC



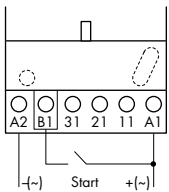
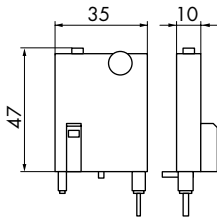
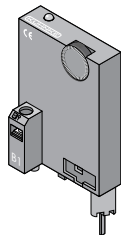
Z396.55
Varistor for 230 VAC



Z396.58
Luminous diode for 230 VAC

Universal Timer Module Z396.64 for Socket Z396

- Timer module for relay universal series
- Multi voltage of 24 - 240 VDC/AC
- Multi-functional with 8 functions
- Multi time range from 50 ms - 240 h



Technical data see pages 17 - 18.

Contact Data

When using relay UF3 and socket Z396

	3 change-over contacts (C/O)			
Contact arrangement				
Type of contact	Single contact		Twin contact	
Contact material	AgNi	AgNi gold-plated	AgNi	AgNi gold-plated
Nominal contact current	10 A		4 A	
Inrush current	≤ 20 A		≤ 10 A	
Nominal contact voltage	250 VAC		250 VAC	
Max. switching capacity (resistive)	3000 VA		1000 VA	
Min. switching capacity	50 mA / 20 VDC	1 mA / 100 mVDC	20 mA / 10 VDC	1 mA / 100 mVDC

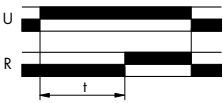
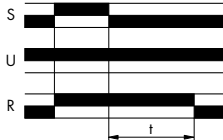
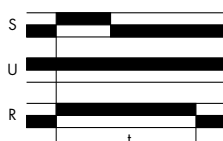
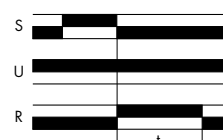
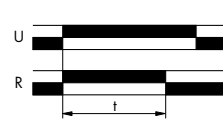
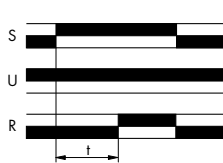
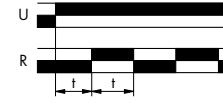
General Data

Voltage range supply	24 V to 240 VAC, 24 V to 250 VDC -15 % to +10 % in relation to U_N
Voltage range control contact	at 24 V min. 80 % of supply voltage at 230 V min. 95 % of supply voltage
Duty cycle	100 %
Frequency	48 Hz to 63 Hz
Power failure bridging time	max. 10 ms
Recovery time	max. 100 ms at 25 °C, max. 150 ms at 55 °C
Adjustments	Time ranges and functions selectable via DIP switch Time setting via potentiometer
Temperature range	-25 °C to +55 °C
Indicators	Green "Power on" LED Green LED flashes during delay time
Supply voltage terminal	plug-in to socket Z396
Control voltage terminal	Terminal B1

Time Ranges

Time ranges, time range limit	Adjustment range
1 s	0.05 - 1 s
10 s	0.5 - 10 s
1 min	3 s - 60 s
10 min	30 s - 600 s
1 h	3 min - 60 min
10 h	30 min - 600 min
1 day/24 h	1.2 h - 24 h
10 day/240 h	12 h - 240 h

Time Functions

Function	Description of function	Function diagram
E	Switch-on delay Start by switching the supply voltage	
R	Switch-off delay Start with control contact	
Ws	Switch-on wiper Start with control contact	
Wa	Switch-off wiper Start with control contact	
Wu	Switch-on wiper Start by switching the supply voltage	
Es	Switch-on delay Start with control contact	
Bp	Blinker 0 - starting Start by switching the supply voltage	
Bi	Blinker 1 - starting Start by switching the supply voltage	