

The following page(s) are extracted from multi-page Kuhnke product catalogues or CDROMs and any page number shown is relevant to the original document. The PDF sheets here may have been combined to provide the fullest possible technical information about the specific product(s) you have selected. In the original hard copy catalogues the data may have been in more than one section.

Hard copy product catalogues, and CDROMs have been published describing Kuhnke Pneumatics, Solenoids, Relays and Electronics; some divided into different books. A list of current publications is available on the main Kuhnke website www.kuhnke.co.uk or from our sales offices.

Contact Details

Kuhnke sales and service in the UK & Republic of Ireland.

H. Kuhnke Ltd
Unit 21 Abbey Enterprise Centre
Premier Way
Romsey
Hampshire
SO51 9AQ
Great Britain

T: +44 (0)1794 514445

F: +44 (0)1794 513514

Email: sales@kuhnke.co.uk

Website: www.kuhnke.co.uk


Worldwide delivery service available.

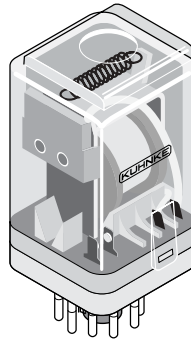
Important Note

The information shown in these documents is for guidance only. No liability is accepted for any errors or omissions. The designer or user is solely responsible for the safe and proper application of the parts, assemblies or equipment described.



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

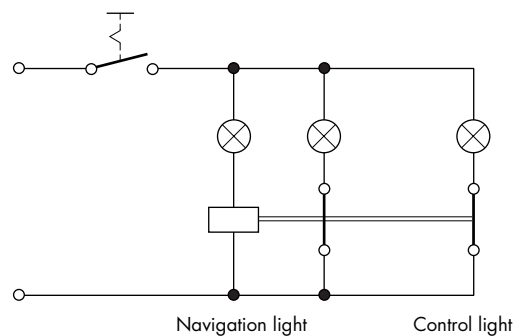


Contact Data

	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

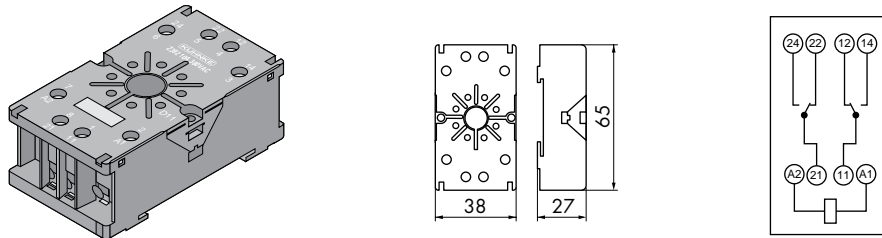
General Data

	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

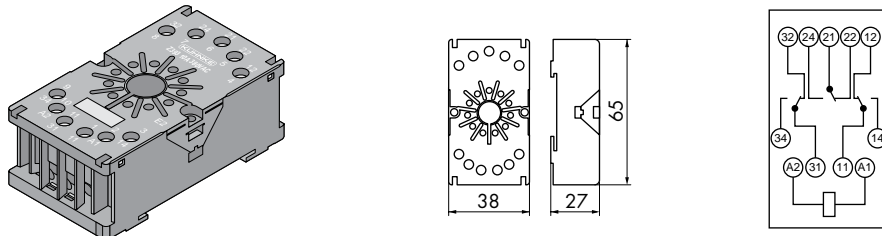
	MF2	MF3
Socket for		
Screw connection with quick-action fastening /retaining clip	Z392 / Z434 Z395	Z345 / Z434 Z393 / Z434 Z396

Socket Z392



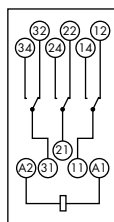
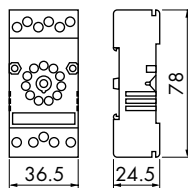
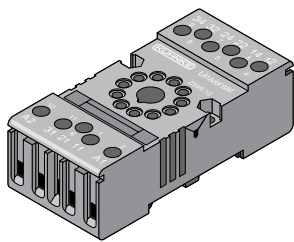
Socket	Z392
Socket design	logical, additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	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 clip	Z434

Socket Z393

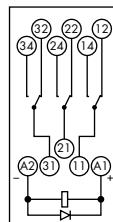


Socket	Z393
Socket design	additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	Head 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 clip	Z434

Socket Z345

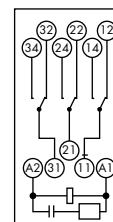


Z345



Z345.12

Protection diode up to 220 VDC

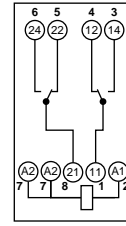
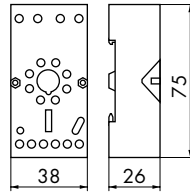
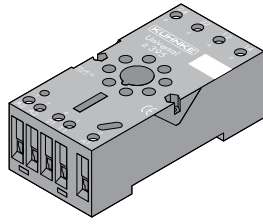


Z345.32

RC-protection unit 110 / 230 VAC

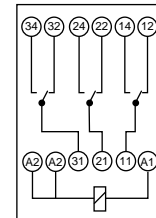
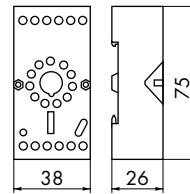
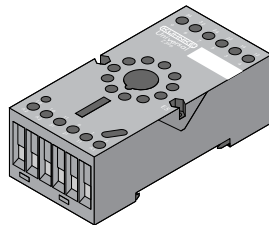
Socket	Z345
Socket design	logical, additional modules not supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 2.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	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 clip	Z441

Socket Z395



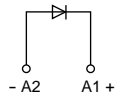
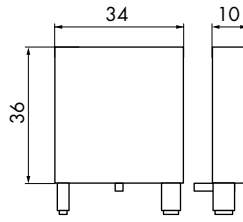
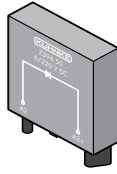
Socket	Z395
Socket design	logical, additional modules supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 1.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	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

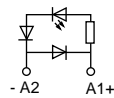


Socket	Z396
Socket design	logical, additional modules supported
Terminal capacity	
solid conductor	2 x 2.5 mm ²
flexible conductor with ferrule	2 x 1.5 mm ²
Terminal designation	in accordance with EN50005 and IEC67
Mounting	Rail EN50022-35 x 7.5/15 Screw mounting 2 x M3 or central M4
Screw terminals	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



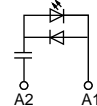
Z396.53
RC-protection unit
for 110 - 240 VAC



Z396.54
Varistor for 24 VAC



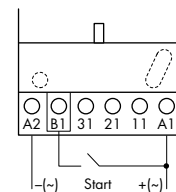
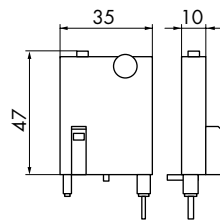
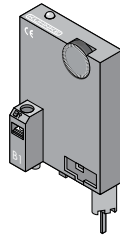
Z396.55
Varistor for 230 VAC



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.

Accessories for Relay Universal

Contact Data

When using relay UF3 and socket Z396

3 change-over contacts (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		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

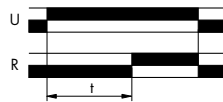
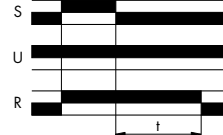
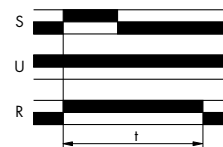
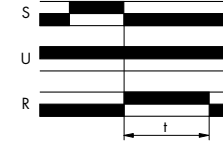

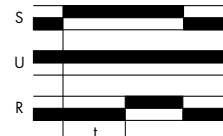
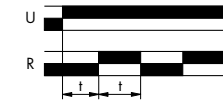
General Data

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	