

Control Components

Timers

Electromechanical



Type **KKH**

KOE

Characteristics	<ul style="list-style-type: none"> open, manual start timer manual time setting elapsed time indicator 	<ul style="list-style-type: none"> additional functions elapsed time indicator
Mounting	<ul style="list-style-type: none"> flush mounting front or side mounting 	<ul style="list-style-type: none"> surface mounting snap on or screws flush mounting with clip
Dimensions (mm)	55 x 73 x 65	surface: 45 x 70 x 99 flush: 45 x 45 x 93
Functions*	no	11, 12, 21, 22, 23 by external wiring
Time ranges	1, 5, 15, 30 min 1, 2, 3, 12, 24 h	6 time ranges, selected 0.1 s...60 h
Outputs	2 snap-action as change-over, 250 VAC, 16 A	1 timed and 1 instantaneous change-over contact, 250 VAC, 2/5 A
Supply voltage	230 VAC, 50 Hz	230 VAC, 50 Hz

Timers

Electronic



Type **KOP.F**

KOL

KOP.J

KOP.K

Characteristics	<ul style="list-style-type: none"> large rotary dial DIN dimensions multifunction multi time range multi voltage 	<ul style="list-style-type: none"> 17.5 mm multifunction multi time range multi voltage 	<ul style="list-style-type: none"> 22.5 mm mono or multifunction high immunity to interference 	<ul style="list-style-type: none"> wide range of functions LED
Mounting	<ul style="list-style-type: none"> flush mounting plug-in on 11 pin socket 	<ul style="list-style-type: none"> surface mounting snap-on DIN rail 35 mm 	<ul style="list-style-type: none"> surface mounting snap-on DIN rail 35 mm 	<ul style="list-style-type: none"> surface mounting snap-on DIN rail 35 mm
Dimensions (mm)	45 x 45 x 95	17.5 x 80 x 70	22.5 x 75 x 109	22.5 x 75 x 109
Functions*	211, 212, 217, 221, 223, 247 by external wiring	11, 12, 21, 42, 51, 60	11, 12, 16, 19, 21, 22, 23, 24, 28, 31, 32, 33, 34, 41, 42, 51	11, 12, 16, 19, 21, 22, 23, 24, 42,
Time ranges	12 time ranges, selected 0.01 s...10 h	6 time ranges, 0.05 s up to 10 h	12 time ranges, 0.05 s up to 60 h	10 time ranges, 0.05 s up to 60 h multi time 0.05 up to 60 h
Outputs	1 relay with two contacts as change-over, 250 VAC, 5 A	1 relay NO, KOL1.. 1 relay as change-over, KOL3.. 250 VAC, 5 A	1 relay as change-over, 250 VAC, 8 A	2 relays as change-over, instantaneous and/or timer, 250 VAC, 8 A
Supply voltage	24...230 VDC/VAC, 50/60 Hz	24...48 VDC or 24...240 VAC, 50/60 Hz	24...48 VDC or 24...240 VAC, 50/60 Hz	24...48 VDC or 24...240 VAC, 50/60 Hz

* 11: delayed operation; 12: delayed release; 16: delayed operation and release; 21: fleeting-on delay timer; 22: fleeting-off delay timer; 23: impulse converter; 24: impulse generator; 42: flasher relay; 28: watchdog; 31/70: asymmetrical timer; 51: star-delta timer; 19: power off delayed release

Control Relays

Analog



Digital



Type **KFE 100/101/301**

KFE 300

KFE 302

KFE 102/103

Characteristics	<ul style="list-style-type: none"> monitors over/under voltage mono fixed/adjustable mono/three phase: 5 or 10 min 	<ul style="list-style-type: none"> monitors loss of phase control, phase order, phase asymmetry and under voltage 	<ul style="list-style-type: none"> three phase surveillance of AC voltage 	<ul style="list-style-type: none"> KFE 102 measures voltage AC/DC KFE 103 measures current AC/DC
Mounting	<ul style="list-style-type: none"> snap-on DIN rail 35 mm 	<ul style="list-style-type: none"> snap-on DIN rail 35 mm 	<ul style="list-style-type: none"> snap-on DIN rail 35 mm 	<ul style="list-style-type: none"> snap-on DIN rail 35 mm
Dimensions (mm)	35 x 85 x 58	35 x 85 x 58	35 x 85 x 58	35 x 85 x 58
Setting	KFE 100: $U_{min} 0.75 U_N$; $U_{max} 1.2 U_N$ (fix) KFE 101/301: $U_{min} 0.8 U_N$; $U_{max} 1.2 U_N$	<ul style="list-style-type: none"> control asymmetry 5 to 20% under voltage phase order (fixed) loss of phase (fixed) 	<ul style="list-style-type: none"> $U_{min} 0.8 U_N$ $U_{max} 1.15 U_N$ (fix) memory option over voltage fix $1.15 U_N$ 	<ul style="list-style-type: none"> hysteresis 5 to 50% memory option KFE 102: $U_{min} 15 V$; $U_{max} 700 VDC/480 VAC$ KFE 103: $I_{min} 0.1 A$; $I_{max} 10 A AC/DC$
Time range	<ul style="list-style-type: none"> 5 or 10 min, selection by wire bridge or switch 	<ul style="list-style-type: none"> 300 ms (fixed) 	<ul style="list-style-type: none"> 0.1 to 12 sec 	<ul style="list-style-type: none"> KFE 102: 0.1 to 12 sec KFE 103: 0.1 to 12 (20) sec
Outputs	1 relay (change-over contact); 8 A, 250 VAC	1 relay (change-over contact); 8 A, 250 VAC	1 relay (change-over contact); 8 A, 250 VAC	1 relay (change-over contact); 8 A, 250 VAC
Supply voltage	KFE 100/101: 230 VAC; 50/60 Hz; KFE 301: 400 VAC; 50/60 Hz; $P \leq 4 VA$	400 VAC; 50/60 Hz; $P \leq 4 VA$	400 VAC; 50/60 Hz; $P \leq 4 VA$	230 VAC; 50/60 Hz; $P \leq 4 VA$
Function control	<ul style="list-style-type: none"> fault and power supply LED 	<ul style="list-style-type: none"> phase fault, fault asymmetry and power supply LED 	<ul style="list-style-type: none"> fault and power supply LED 	<ul style="list-style-type: none"> display
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Control Relays

Thermistor



Type **KFT 100**

KFT 200

Characteristics	<ul style="list-style-type: none"> temperature monitor PTC short circuit detection PTC broken wire detection reset by supply interruption 	<ul style="list-style-type: none"> temperature monitor memory function PTC short circuit detection PTC broken wire detection reset by supply interruption
Mounting	<ul style="list-style-type: none"> surface mounting snap on DIN rail 35 mm 	<ul style="list-style-type: none"> surface mounting snap on DIN rail 35 mm
Dimensions (mm)	22.5 x 75 x 96	22.5 x 75 x 96
Setting	automatic reset	manual or automatic reset
Outputs	1 relay (NO contact) 10 A, 250 VAC	1 relay (change-over contact) 10 A, 250 VAC
Supply voltage	230 VAC; 50/60 Hz; $P \leq 3 VA$	230 VAC; 50/60 Hz; $P \leq 3 VA$
Function control	red LED for fault green LED for power supply	red LED for fault green LED for power supply
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Counter

Energy Meter



Type **AAD1**

Characteristics	<ul style="list-style-type: none"> single phase direct measurement class 1 precision PTB approval S0+/S0- output 1000 imp/kWh nominal current $I_N = 5 A$, $I_{max} 25 A$ according EN61036
Mounting	<ul style="list-style-type: none"> surface mounting snap on DIN rail 35 mm
Dimensions (mm)	17.5 x 85 x 59
Counting capacity	999.999.9
Display	<ul style="list-style-type: none"> mechanical, 4 mm high digit decimal places in red
Supply voltage	230 VAC, 50/60 Hz; $P \leq 8 VA$
Function control	flashing red LED
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