

## Motor starter for motors with integrated thermal contacts TFE



- 1-phase version 230 V (1~)
- Thermal/magnetic trip
- Thermal contact
- Operating range 0.4 – 10.0 A; 230 V AC

Order reference	Type Code	Description Rated operational current setting range	Packing (units)	Weight (in g)	Part No.
TFE2 230		Standard unit 0,40 – 10,0 A	1	280	210 078

## Motor starter for motors with integrated thermal contacts TFA



- 3-phase version 400 V (3~)
- Electronic trip
- Thermal contact
- Operating range 0.10 – 25.0 A; 400 V AC

Order reference	Type Code	Description Rated operational current setting range	Packing (units)	Weight (in g)	Part No.
TFA2 400		Standard unit 0,10 – 25,0 A	1	340	210 061

### Use and function

**The manual motor starters of the series TFA and TFE protect the electronic motors from damages caused by thermal overload.**

Contrary to the manual motor starters of the series MKE2 / OKE 2 the adapted motor current is not monitored but the coil temperature.

For this the motor needs to be equipped with a thermal contact (Klixon, PTC-resistance). When critical temperatures are achieved these will get highly resistive. As a result the motor protection stops the power supply.

The applications are motors which are used in very dusty environments (e.g. fans, saws...). The motor cooling is often effected by deposits.

Technical Data TFE2 / TFA2	
Rated insulation voltage $U_i$ acc. to IEC 947-4-2 / VDE 0110	500 V AC
Permissible ambient temperature	
Storage temperature	-25...+ 70 °C
open	-25...+ 60 °C
enclosed type	-25...+ 40 °C
Temperature compensation	no
Climatic resistance	IEC 68 T2-3, 2-30
Glow wire resistance acc. to IEC 695-2-1	Intensity 850°C
Working position any position	preferably vertical
Permissible altitude	3000 m
Permissible vibration resistance IEC 68-2-6	25 Hz b./± 1 mm Amplitude (2,5 g)
Permissible impact direction sine impact (critical direction IEC 68-2-27)	5 g (11 ms)
Surface mounting screws DIN-rail	2 x M4** integrated
Mechanical life in cycles	100.000
Maximum switching operations Cycles/hour	60

\*\*not included in the scope of delivery

Conductor cross-section TFE2 / TFA2		
Manual motor starters	rigid cable 1 x	1 ... 6,0 mm <sup>2</sup>
	rigid cable 2 x	1 ... 4,0 mm <sup>2</sup>
	flexible cable* 1 x	1 ... 6,0 mm <sup>2</sup>
	flexible cable* 2 x	1 ... 2,5 mm <sup>2</sup>
Auxiliary contact	rigid cable 1 x	1 ... 2,5 mm <sup>2</sup>
	rigid cable 2 x	1 ... 2,5 mm <sup>2</sup>
	flexible cable* 1 x	1 ... 2,5 mm <sup>2</sup>
	flexible cable* 2 x	1 ... 2,5 mm <sup>2</sup>
Undervoltage/ shunt release	rigid cable 1 x	1 ... 2,5 mm <sup>2</sup>
	rigid cable 2 x	1 ... 2,5 mm <sup>2</sup>
	flexible cable* 1 x	1 ... 2,5 mm <sup>2</sup>
	flexible cable* 2 x	1 ... 2,5 mm <sup>2</sup>
Enclosure/ PE/N terminal	rigid cable 1 x	1 ... 4,0 mm <sup>2</sup>
	rigid cable 2 x	1 ... 4,0 mm <sup>2</sup>
	flexible cable* 1 x	1 ... 2,5 mm <sup>2</sup>
	flexible cable* 2 x	1 ... 2,5 mm <sup>2</sup>
Degree of Protection acc. to DIN 40050 open type enclosed type		IP 20 IP 55...65

\* with cable end sleeve

Undervoltage release OKE2 / MKE2		
Energizing voltage % von $U_c$	≥ 85	
De-energizing voltage % von $U_c$	35 .. 70	
Relative Duty factor % von $U_c$	100	
Power consumption	Closing	6,0 VA
	Holding	3,0 VA

Technical Data TFE2 / TFA2	
Main current paths Number	3
Rated operational voltage $U_e$ up to	16 A 550 V AC 25 A 500 V AC
Rated operational current $I_e$	25 A
Permissible frequency only for magnetic short-circuit release	40...60 Hz
Current setting ranges $I_e$ TFE2 / TFA2 Acc to VDE 0660 Part 102 A, IEC 947-4-1	0,4-10 / 0,1-25
Numbers of ranges TFE2 / TFA2	1 / 1
Current dissipation loss Main current paths at $I_e$ max./Phase	ca. 4,2 W
Tripping curves	10A
Electro-magnetic trip	8 - 13 x $I_n$

Auxiliary contact OKE2 / MKE2	
Auxiliary current paths Rated insulation voltage IEC 947	230 V
Thermal current $I_{th2}$	6 A
Short-circuit protection back-up fuse gL MCB B 6 A	10 A B 6 A

Max. switching capacity TFE2 / TFA2	
Auxiliary contact $I_e$ at AC 15 up to	
24 V AC	6 A
230 V AC	4 A
400 V AC	3 A
500 V AC	1 A
may be used for low voltage and PLC inputs acc. to DIN 19240	

Shunt release OKE2 / MKE2		
Energizing voltage % von $U_c$	approx. 70	
Power consumption	Closing	6,0 VA
	Holding	3,0 VA

# Manual Motor Starters TFE2 / TFA2

## Accessories TFE2 / TFA2

Order reference	Description	Packing (units)	Weight (in g)	Part No
<b>Auxiliary contacts*</b>				
Hi 10	Auxiliary contact 1 N.O., right	1	7,5	202 288
Hi 01	Auxiliary contact 1 N.C., right	1	7,5	202 301
Hi 11 (nur TFE)	Auxiliary contact 1 N.O./1 N.C.	1	7,5	202 325
<b>Enclosure/Special accessories</b>				
A IP 55	Enclosure, protection IP 55, up to 16 A	1	210	202 554
B IP 55	Enclosure with large terminal box, protection IP 55	1	450	202 561
E IP 54	Front plate, protection IP 54	1	125	202 622
<b>Enclosure-accessories</b>				
NAK	Emergency-OFF-device IP 55	1	55	202 653
V	Padlock blockade device IP 55	1	40	202 660
AZ	Supplementary set for enclosure, protection IP 41 to IP 55	1	25	216 742

\*Auxiliary contacts, shunt and undervoltage releases must be factory installed.

## Enclosure / Padlock



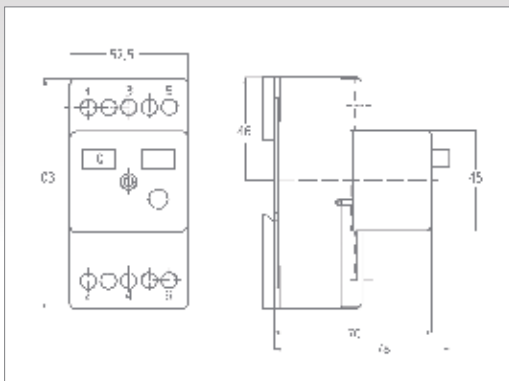
Enclosure A

Enclosure A +  
Emergency-OFF-device NAK

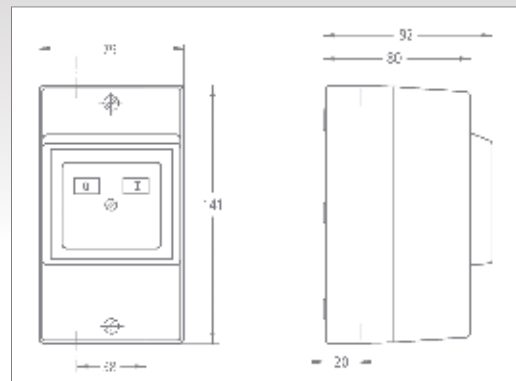
Enclosure B +  
Padlock blockade device V

Front plate E

## Dimensions / Circuit Diagrams TFE2 / TFA2

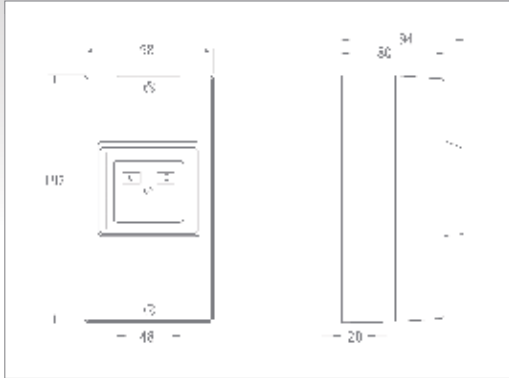


Manual motor starter TFE2 / TFA2

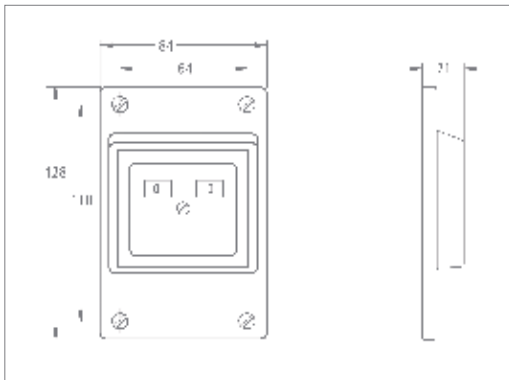


Enclosure A

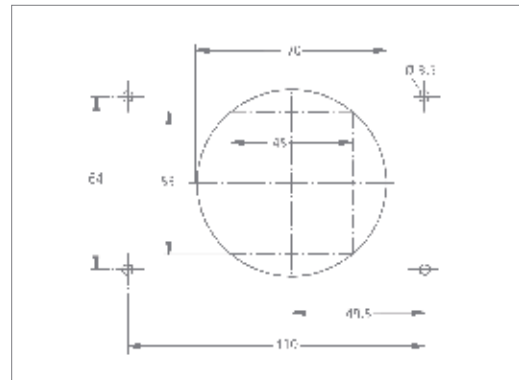
## Dimensions / Circuit Diagrams TFE2 / TFA2



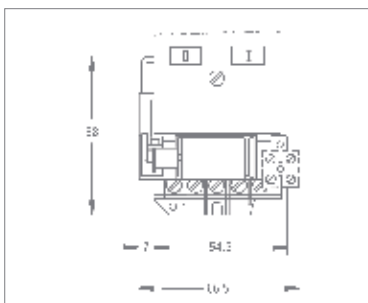
Enclosure B



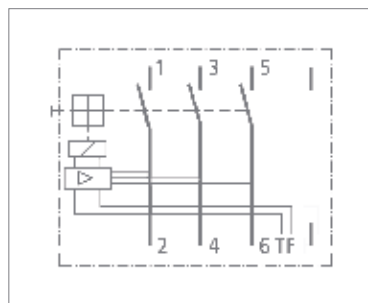
Front plate E



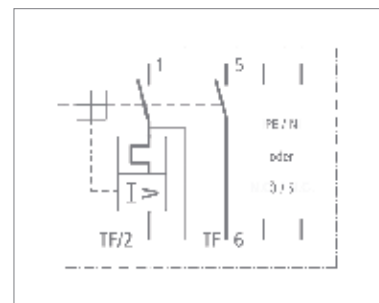
Mounting template for Front plate E



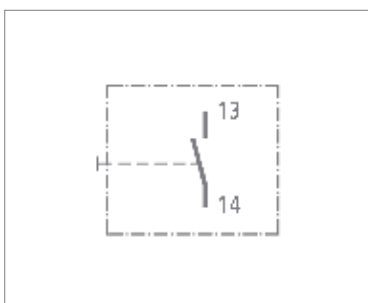
Undervoltage release US (TFA2)



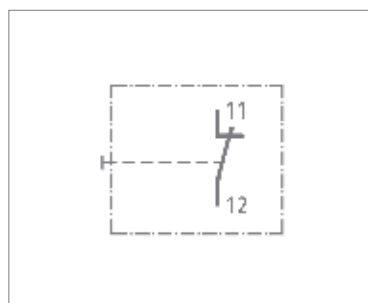
Manual motor starter TFA2



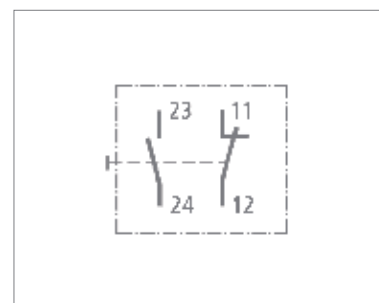
Manual motor starter TFE2  
optional 1N.O. and/or 1N.C.



Auxiliary contact Hi 10 (1 N.O.)



Auxiliary contact Hi 01 (1 N.C.)



Auxiliary contact Hi 11 (1 N.O. / N.C.)