



Brochure

# Motor protection and control DRAF enclosed direct-on-line starters

# DRAF enclosed direct-on-line starters

## Experience reliable and easy to install motor starting



### Improve installation efficiency

- Easy to connect and to operate
- Pre-wired control circuit and easy to follow wiring instructions
- Coil energy consumption down by 80%.



### Reliable in harsh condition

- High number of electrical and mechanical operations
- Robust IP66 and type 4X enclosure
- Double electrical insulation.



### Continuous operation

- AF contactors manage voltage fluctuation, chattering free
- Protected motor with thermal overload relay
- Safety through coordinated product.



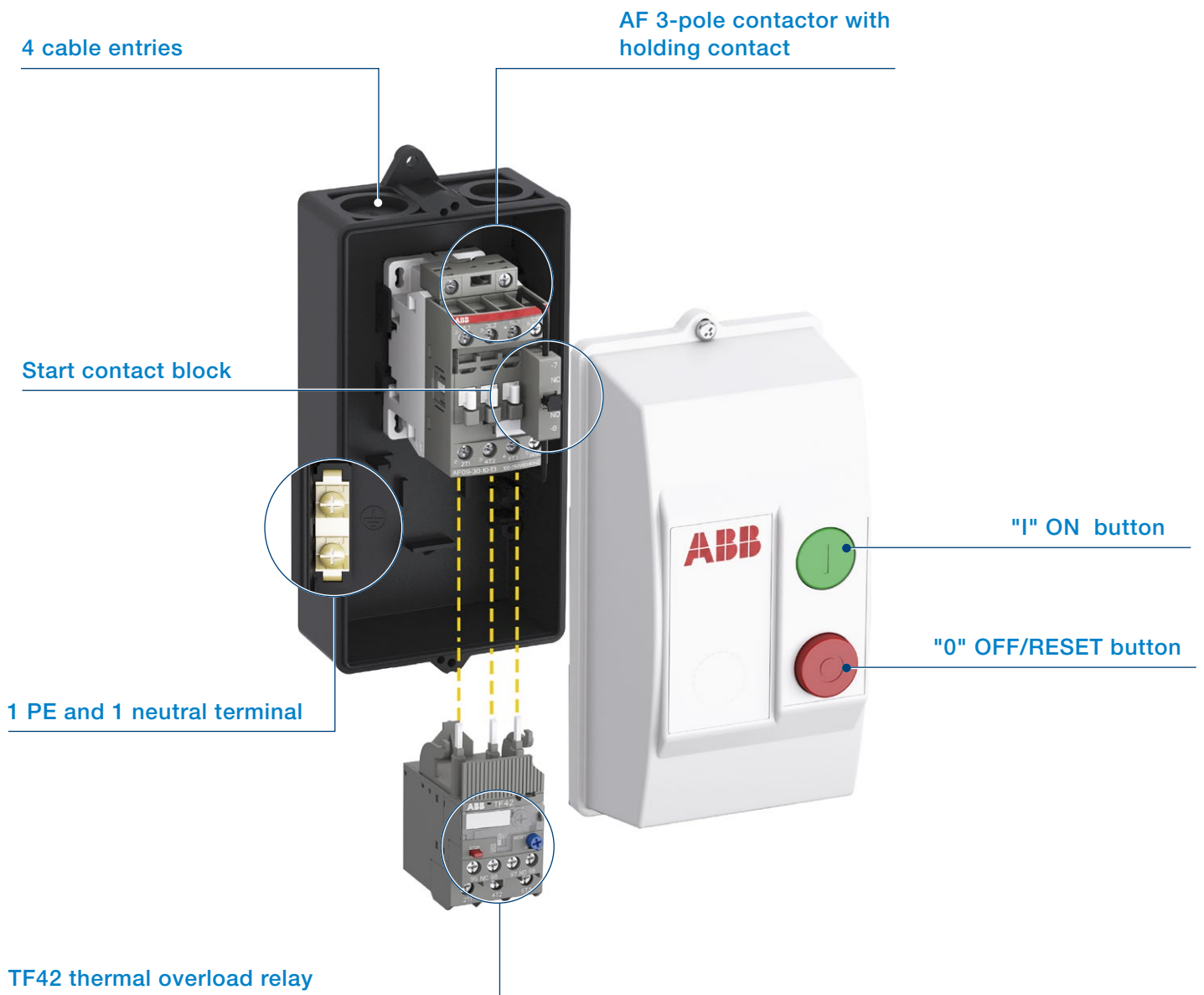
## For machine or wall mounting

### Main applications

Control of stand alone motors like for heat pumps, air conditioning units, small machine tools, compressors, pumping, irrigation...



# Motor starting solutions up to 7.5 kW and 10 hp



# DRAF09 ... DRAF16 enclosed direct-on-line starters

## Up to 7.5 kW and 10 hp, protected by thermal overload relays

### AC operated



**DRAF**  
+ TF42 to be ordered separately

#### Description

Enclosed direct-on-line (DOL) starters are used for controlling 3-phase asynchronous motors up to 690 V AC.

Each starter is delivered assembled and wired. It contains:

- IP66 and type 4X plastic enclosure with double insulation, equipped with:
  - 1 green flush "I" ON button and 1 red protruding "O" OFF/RESET button
  - 4 cable inlets and outlets via knockouts.
- 1 AF 3-pole contactor with holding contact
- 1 CB5-10 start contact block
- 1 PE and 1 neutral terminal.

#### Control supply wiring:

IEC starters type: phase-to-phase, separate supply or phase-to-neutral.

UL starters type: separate supply.

TF42 thermal overload relay to be ordered separately and chosen according to motor's nominal current (see table in the next page).

#### DRAF enclosed DOL starters

IEC - AC-3					Control supply wiring	Rated control circuit voltage Uc min ... Uc max (1)	Type	Order code	Weight Pkg (1 pce) kg
Rated operational power				max. current $\theta \leq 40^\circ\text{C}$ Ue=400 V					
220 V	380 V	500 V	690 V						
230 V	400 V								
240 V									
kW	kW	kW	kW	A					
<b>IEC starters type</b>									
2.2	4	5.5	5.5	9	Separate supply	24...60	DRAF09-11S	1SBK134237R1100	0.820
					Phase-to-neutral	100...250	DRAF09-13N	1SBK134137R1300	0.820
					Phase-to-phase	250...500	DRAF09-14P	1SBK134037R1400	0.820
3	5.5	7.5	7.5	12	Separate supply	24...60	DRAF12-11S	1SBK154237R1100	0.820
					Phase-to-neutral	100...250	DRAF12-13N	1SBK154137R1300	0.820
					Phase-to-phase	250...500	DRAF12-14P	1SBK154037R1400	0.820
4	7.5	9	9	18	Separate supply	24...60	DRAF16-11S	1SBK174237R1100	0.820
					Phase-to-neutral	100...250	DRAF16-13N	1SBK174137R1300	0.820
					Phase-to-phase	250...500	DRAF16-14P	1SBK174037R1400	0.820

(1) Select DRAF.S with separate supply for 24...60 V DC control circuit voltage (change A2 - Us wire to blue color acc. to IEC 60947-4-1).

#### UL starter type with separate control supply wiring

UL / CSA						Rated control circuit voltage Uc min ... Uc max	Type	Order code	Weight Pkg (1 pce) kg
Horse power ratings									
Single phase motor			Three phase motor						
120 V	240 V		200 V	220 V	440 V				
			208 V	240 V	480 V				
550 V	600 V								
hp	hp	hp	hp	hp	hp				
<b>UL starters type</b>									
0.75	1.5	2	2	5	7.5	24...60	DRAF09-11U	1SBK134238R1100	0.820
						100...250	DRAF09-13U	1SBK134238R1300	0.820
						250...500	DRAF09-14U	1SBK134238R1400	0.820
1	2	3	3	7.5	10	24...60	DRAF12-11U	1SBK154238R1100	0.820
						100...250	DRAF12-13U	1SBK154238R1300	0.820
						250...500	DRAF12-14U	1SBK154238R1400	0.820
1.5	3	5	5	10	15	24...60	DRAF16-11U	1SBK174238R1100	0.820
						100...250	DRAF16-13U	1SBK174238R1300	0.820
						250...500	DRAF16-14U	1SBK174238R1400	0.820

# DRAF09 ... DRAF16 enclosed direct-on-line starters

## Up to 7.5 kW and 10 hp, protected by thermal overload relays

### AC operated



TF42



Empty enclosure with push-button

#### TF42 thermal overload relays to be ordered separately

Setting range	Short-circuit protective device	Trip class	Type	Order code	Weight (1 pce)
<b>A</b>					
0.10 ... 0.13	0.5 A, Fuse type T	10	TF42-0.13	1SAZ721201R1005	0.130
0.13 ... 0.17	1.0 A, Fuse type T	10	TF42-0.17	1SAZ721201R1008	0.130
0.17 ... 0.23	1.0 A, Fuse type T	10	TF42-0.23	1SAZ721201R1009	0.130
0.23 ... 0.31	1.0 A, Fuse type T	10	TF42-0.31	1SAZ721201R1013	0.130
0.31 ... 0.41	2.0 A, Fuse type gG	10	TF42-0.41	1SAZ721201R1014	0.130
0.41 ... 0.55	2.0 A, Fuse type gG	10	TF42-0.55	1SAZ721201R1017	0.130
0.55 ... 0.74	4.0 A, Fuse type gG	10	TF42-0.74	1SAZ721201R1021	0.130
0.74 ... 1.00	6.0 A, Fuse type gG	10	TF42-1.0	1SAZ721201R1023	0.130
1.00 ... 1.30	6.0 A, Fuse type gG	10	TF42-1.3	1SAZ721201R1025	0.130
1.30 ... 1.70	10.0 A, Fuse type gG	10	TF42-1.7	1SAZ721201R1028	0.130
1.70 ... 2.30	10.0 A, Fuse type gG	10	TF42-2.3	1SAZ721201R1031	0.130
2.30 ... 3.10	10.0 A, Fuse type gG	10	TF42-3.1	1SAZ721201R1033	0.130
3.10 ... 4.20	20.0 A, Fuse type gG	10	TF42-4.2	1SAZ721201R1035	0.130
4.20 ... 5.70	20.0 A, Fuse type gG	10	TF42-5.7	1SAZ721201R1038	0.130
5.70 ... 7.60	35.0 A, Fuse type gG	10	TF42-7.6	1SAZ721201R1040	0.130
7.60 ... 10.0	35.0 A, Fuse type gG	10	TF42-10	1SAZ721201R1043	0.130
10.0 ... 13.0	40.0 A, Fuse type gG	10	TF42-13	1SAZ721201R1045	0.130
13.0 ... 16.0	40.0 A, Fuse type gG	10	TF42-16	1SAZ721201R1047	0.130
16.0 ... 20.0	63.0 A, Fuse type gG	10	TF42-20	1SAZ721201R1049	0.145

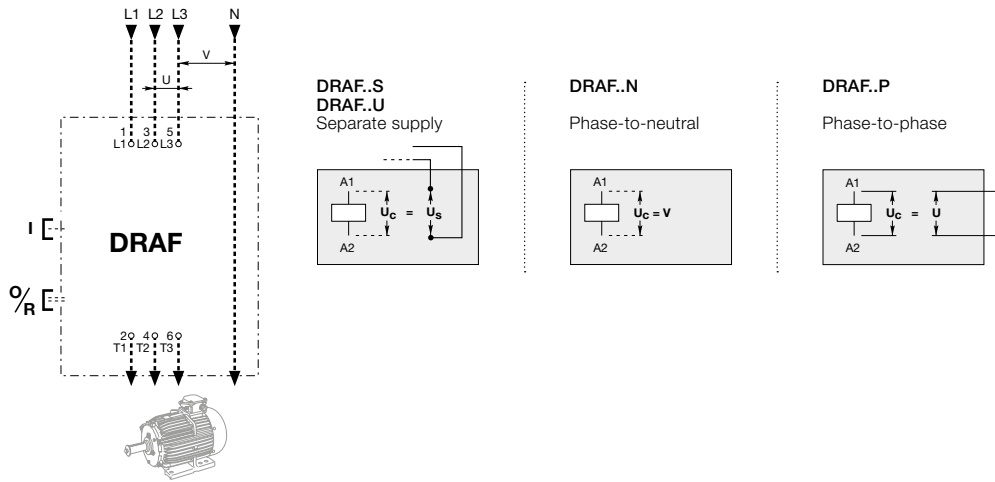
#### Empty enclosure with push-button

mm cable inlet/outlet suitable for IEC starter types	-	FR16AF-12	1SBN101337R1000	0.53
Inch cable inlet/outlet suitable for UL starter types	-	FR16AF-12U	1SBN101338R1000	0.53

To be completed with AF contactor, TF42 thermal overload relay and CB5-10 (1SBN010013R1010) start contact block.

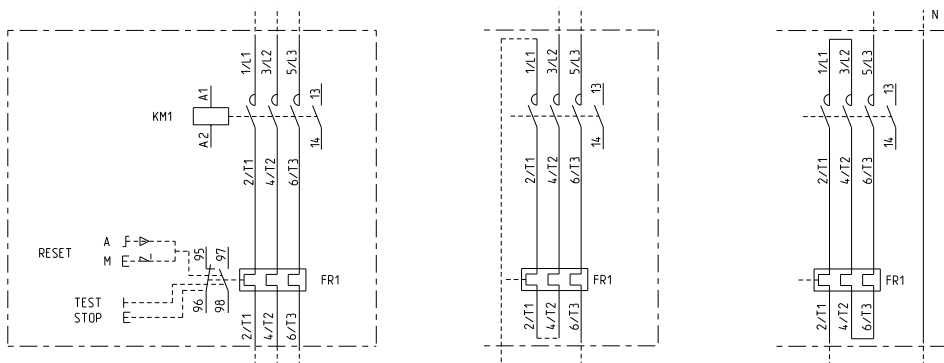
# DRAF09 ... DRAF16 enclosed direct-on-line starters

## Control supply wiring versions



## Wiring diagram

### Power circuit

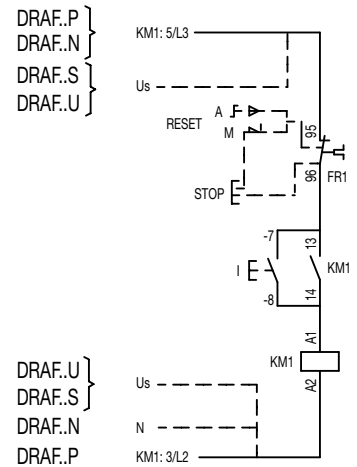


3-phase motor

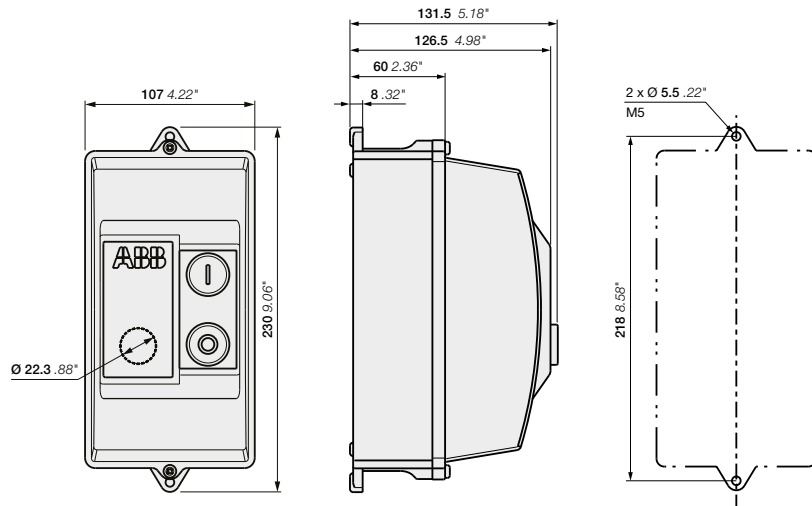
Phase-to-phase  
Single phase motor

Phase-to-neutral  
Single phase motor

### AC local control



## Main dimensions mm, inches



DRAF09, DRAF12, DRAF16

### IEC starter types - ISO M20

Cable inlet	Cable outlet
Enclosure top 2 x 20 mm 2 x 0.79"	Enclosure bottom 2 x 20 mm 2 x 0.79"

### UL starter types - NPT

Cable inlet	Cable outlet
Enclosure top 1 x 3/4" 1 x 1/2"	Enclosure bottom 1 x 3/4" 1 x 1/2"

# Notes

A series of horizontal dotted lines for writing notes, starting from the top right of the page and extending down to the bottom right.

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