

1SBC009500R1002



Motor Nominal Powers and Currents

The currents given below concern standard, 1 500 r.p.m. 50 Hz, three-phase cage motors.
These values are for your information and may vary according to the motor manufacturer and depending on the number of poles.

Motor power		Motor nominal current at:					
kW	PS = hp	380 V 380-400 V	415 V	440 V	500 V	600 V	660-690 V
		A	A	A	A	A	A
0.06	1/12	0.22	0.20	0.19	0.16	0.12	—
0.09	1/8	0.33	0.30	0.28	0.24	0.21	—
0.12	1/6	0.42	0.40	0.37	0.33	0.27	—
0.18	1/4	0.64	0.60	0.55	0.46	0.40	—
0.25	1/3	0.88	0.85	0.76	0.59	0.56	—
0.37	1/2	1.22	1.15	1.06	0.85	0.77	0.7
0.55	3/4	1.50	1.40	1.25	1.20	1.02	0.9
0.75	1	2.00	2.00	1.67	1.48	1.22	1.1
1.1	1.5	2.60	2.50	2.26	2.10	1.66	1.5
1.5	2	3.50	3.50	3.03	2.60	2.22	2.0
2.2	3	5.0	5.0	4.31	3.8	3.16	2.9
2.5	3.4	5.7	5.5	4.90	4.3	3.59	3.3
3	4	6.6	6.5	5.80	5.1	4.25	3.5
3.7	5	8.2	7.5	7.10	6.2	5.20	4.4
4	5.5	8.5	8.4	7.60	6.5	5.60	4.9
5	6.8	10.5	10.0	9.4	8.1	6.9	6.0
5.5	7.5	11.5	11.0	10.3	8.9	7.5	6.7
6.5	8.8	13.8	12.5	12.0	10.4	8.7	8.1
7.5	10	15.5	14.0	13.5	11.9	9.9	9.0
8	11	16.7	15.4	14.4	12.7	10.6	9.7
9	12.5	18.3	17	15.8	13.9	11.6	10.6
11	15	22.0	21	19.3	16.7	14.1	13.0
12.5	17	25.0	23	21.9	19.0	16.1	15.0
15	20	30.0	28	26.3	22.5	19.3	17.5
18.5	25	37.0	35	32.0	28.5	23.5	21.0
20	27	40	37	34.6	30.6	25.4	23
22	30	44	40	37.1	33.0	27.2	25
25	34	50	47	42.1	38.0	30.9	28
30	40	60	55	50.1	44.0	37.1	33
37	50	72	66	61.9	54.0	45.4	42
40	54	79	72	67.0	60.0	49.1	44
45	60	85	80	73.9	64.5	54.2	49
51	70	97	90	83.8	73.7	61.4	56
55	75	105	96	90.3	79.0	66.2	60
59	80	112	105	96.9	85.3	71.1	66
75	100	140	135	123	106	90.3	82
80	110	147	138	131	112	96.3	86
90	125	170	165	146	128	107.0	98
100	136	188	182	162	143	119.0	107
110	150	205	200	178	156	131.0	118
129	175	242	230	209	184	153	135
132	180	245	242	214	186	157	140
140	190	260	250	227	200	167	145
147	200	273	260	236	207	173	152
160	220	295	280	256	220	188	170

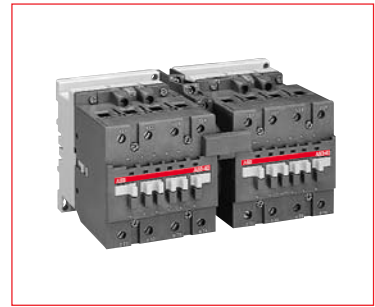
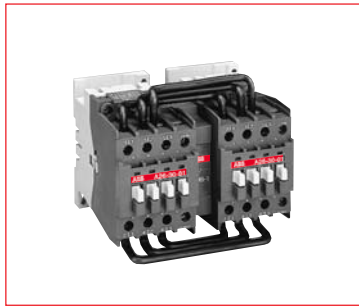
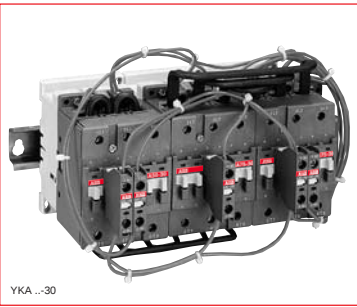


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Open Type Starters

Protection by Thermal O/L Relay



3-phase motor

1 operating direction

2 operating directions

–

Starting

Star-delta

Direct

Mains changeover contactors

Rated operational current (400 V)

119 A AC-3

37 A AC-3

125 A AC-1

Rated operational power

63 kW

18.5 kW

–

Starter type

YKA ...30 / YKA ...30E

VOA ...30M

VOA ...40Z

Thermal O/L relay

TA ... (order separately)

–

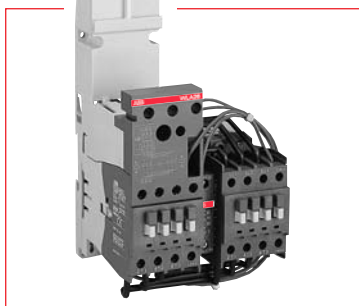
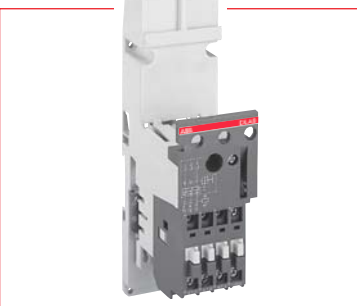
Section

2

3

4

Protection by associated manual motor starter



3-phase motor

1 operating direction

2 operating directions

Starting

Direct

Rated operational current (400 V)

25 A AC-3

Rated operational power

11 kW

Starter type

DLA ...30

WLA ...30

Manual motor starter

MS 325 ... (order separately)

Section

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Enclosed Starters

1

Protection by thermal O/L relay



3-phase motor

1 operating direction

2 operating directions

Starting

Direct

Star-delta

Direct

Rated operational current (400 V)

75 A AC-3

119 A AC-3

75 A AC-3

Rated operational power

37 kW

63 kW

37 kW

Starter type

DWA / DYA / DRA / DEA

YRA / YEA

WRA / WEA

Thermal O/L relay

TA ... (order separately)

Section

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Protection by associated manual motor starter



3-phase motor

1 operating direction

2 operating directions

Starting

Direct

Star-delta

Direct

Rated operational current (400 V)

25 A AC-3

Rated operational power

11 kW

Starter type

DRA D / DRA DB / DRA DB+BU

YRA D / YRA DB / YRA DB+BU

WRA D / WRA DB / WRA DB+BU

Starting type

MS 325 ... (factory mounted)

D : Emergency stop by manual motor starter handle
DB : Emergency stop by manual motor starter handle - Undervoltage coil
DB+BU : Emergency stop by mushroom headed button - Undervoltage coil

Section

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D.O.L. Starting of Three-Phase Asynchronous Motors

General

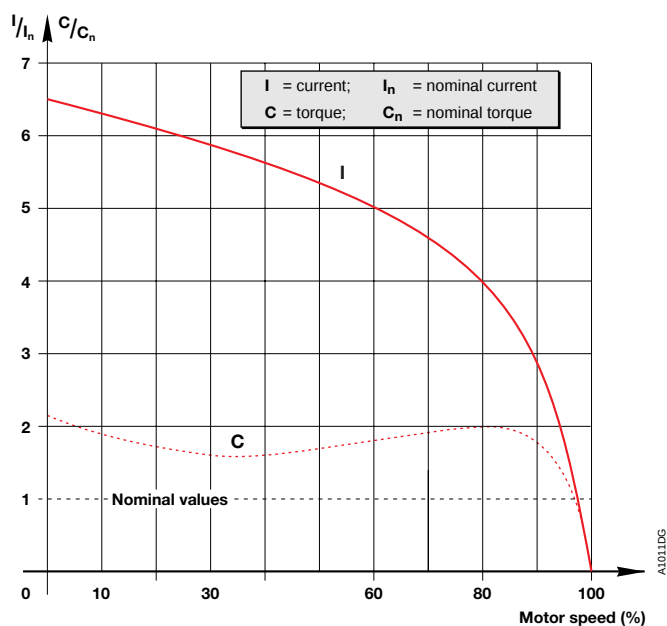
A combination starter performs the following functions:

- circuit isolation and short-circuit protection,
- motor "ON" - "OFF" control,
- overload protection.

The isolation and short-circuit protection functions must be performed by a fuse isolator switch, a fuse switch or a circuit-breaker. Fuse ratings recommended in this document should be used.

The "ON" - "OFF" control and overload protection functions are performed by a contactor and thermal O/L relay combination.

Full voltage D.O.L. starting is a simple, economic solution characterised by a high starting torque (1.9 to 2.1 times full-speed torque) and a starting current 5.5 to 7 times nominal current.



Star-Delta Starting of Three-Phase Asynchronous Motors

1

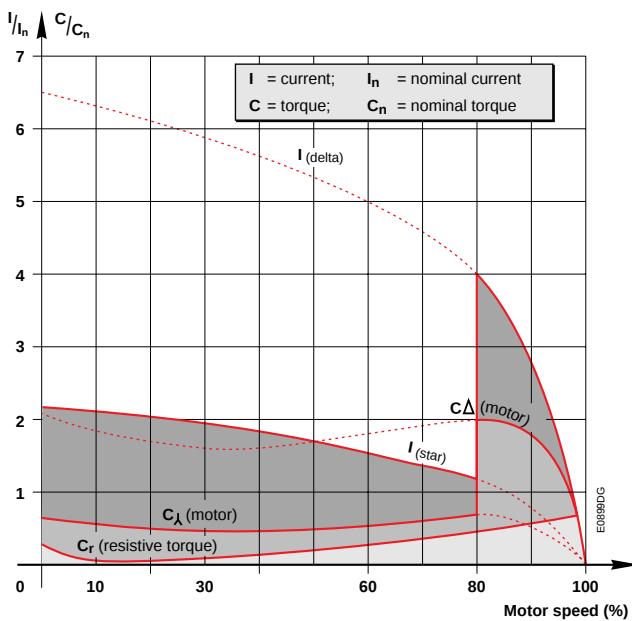
General

On starting, the motor has to overcome the resistive torque and inertia of the driven machine. During this phase, current must remain within the limits acceptable by the mains.

Inertia, resistive torque and mains are commonly fixed data.

Although the type of starting reduces the inrush current as required, it also reduces the torque supplied by the motor. The result is a speed build-up time that varies according to the starting process used.

Star-delta starting



Technical Data

On starting:

- current inrush is reduced to a third of direct starting current,
 - motor torque is reduced to a third of direct starting torque.
- High transient currents are commonly read during star-delta switching.

Utilization

During the initial starting phase ("star" connection), the resistive torque of the driven machine must remain, irrespective of speed, less than the "star" motor torque until "star-delta" switching occurs.

This starting mode is therefore ideal for machines with no-load starting and little inertia:

- machine-tools,
- centrifugal compressors,
- wood working machines, etc.

In order to prevent an over high current peak, at least 80% of nominal speed must be reached on "star-delta" switching .

Precautions

Motor nominal voltage in delta connection must be equal to that of the mains.

Example:

A motor for 380 V star-delta starting must be designed for 380 V in "delta" connection. Its usual designation is "380 V/660 V motor". The motor must be constructed with 6 terminal windings.

Operation

Starting is a three-stage process:

1st stage - "Star" connection

Press the "On" button on the control circuit to close the KM2 "star" contactor. The KM1 "line" contactor then closes and the motor starts. Countdown of programmed starting time (normally 6 to 10 s) then begins.

2nd stage - "Star" to "delta" switching

When the programmed starting time is up, the KM2 "star" contactor opens.

3rd stage - "Delta" connection

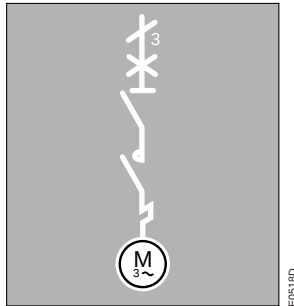
After 50 ms have elapsed, the KM3 "delta" contactor closes, and the motor accelerates until it reaches nominal speed.

Note: the 50 ms period elapsing between opening of the "star" contactor and closing of the "delta" contactor prevents arc short-circuits.

General Information

Co-ordination with SCPD

Co-ordination



In compliance with standards IEC 947-4-1 and EN 60 947-4-1, we define for the contactors and starters the type, rating and characteristics of the short-circuit protection devices SCPD which allow selective protection against overloads and ensure protection against short circuits.

Basic Functions

In order to protect the connecting cable and the motor, the switchgear must ensure the four following essential functions:

- Protection against overloads - This protection concerns the motor and the cable and is ensured by the starter overload relay.
- Motor control - This function is commonly carried out by the contactor.
- Protection against short-circuits.
- Isolation.

The latter two functions can be carried out by a circuit-breaker or by a switch-disconnector-fuse protecting the motor and the cable against short circuits and ensuring isolation with positive contact indication.

Applicable Standards

IEC 947-4-1 (EN 60 947-4-1) precisely defines the different points to be considered in order to carry out correct co-ordination.

Complete co-ordination for a combination includes the following points:

- Selectivity test between the overload relay and the short-circuit protection device SCPD.
- Short-circuit condition tests:
 - at prospective "r" currents - These currents depend on the rated operational current of the starter (I_e AC-3) and are given by the standard (Table XI). For example: $r = 1\text{ kA}$ for $I_e \text{ AC-3} \leq 16\text{ A}$; $r = 3\text{ kA}$ for $16\text{ A} < I_e \text{ AC-3} \leq 63\text{ A}$; $r = 5\text{ kA}$ for $63\text{ A} < I_e \text{ AC-3} \leq 125\text{ A}$ etc.
 - at the rated short-circuit current "Iq" - This is the maximum current that the combination can withstand, for example 50 kA.

Types of Co-ordination

IEC 947-4-1 (EN 60 947-4-1) defines two types of co-ordination according to the expected level of service continuity. Acceptable extreme damage for the switchgear is divided into two types.

Type 1: In short-circuit conditions, the contactor or starter does not endanger persons or installations and will not be able to then operate without being repaired or having parts replaced.

Type 2: In short-circuit conditions, the contactor or starter does not endanger persons or installations and will be able to operate afterwards. The risk of contacts welding is acceptable.

The Complete ABB Offer

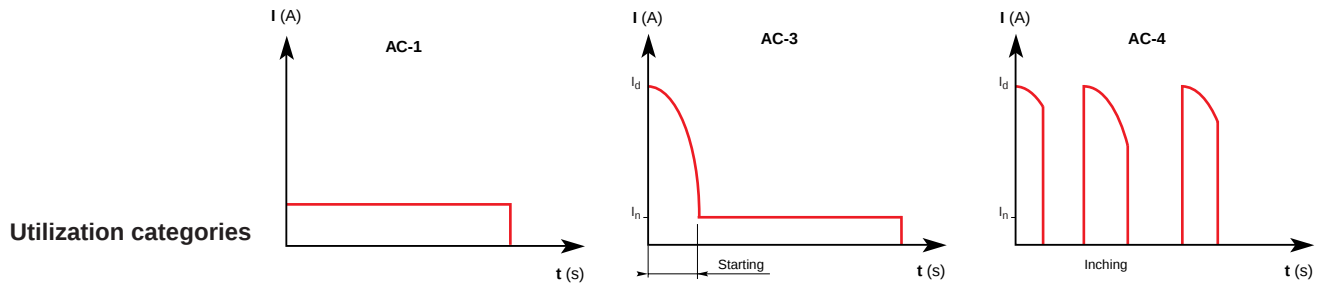
ABB has acquired years of experience with respect to problems of co-ordination and is able to make a complete offer based on tests performed in its qualified laboratories.

A complete collection of co-ordination tables, according to IEC 947-4-1 (EN 60 947-4-1), is available on request.

General Information

Utilization Categories

1



A contactor's duty is characterised by the utilization category together with the rated operational voltage and current indicated.

Utilization categories for contactors according to IEC 947-4-1:

Alternating current

AC-1 Non-inductive or slightly inductive loads, resistance furnaces.

AC-2 Slip-ring motors: starting, switching off.

AC-3 Cage motors: starting, switching off running motors.

AC-4 Cage motors: starting, plugging, inching.

Making and Breaking Conditions for Utilization Categories

Utilization category		Durability test conditions						Occasional operation					
		Making conditions			Breaking conditions			Making conditions			Breaking conditions		
		I/I_e	U/U_e	Cos. φ or L/R (ms)	I/I_e	U/U_e	Cos. φ or L/R (ms)	I_c/I_e	U_r/U_e	Cos. φ or L/R (ms)	I_c/I_e	U_r/U_e	Cos. φ or L/R (ms)
AC-1		1	1	0.95	1	1	0.95	1.5	1.05	0.8	1.5	1.05	0.8
AC-2		2.5	1	0.65	2.5	1	0.65	4	1.05	0.65	4	1.05	0.65
AC-3	$I_e \leq 17\text{ A}$	6	1	0.65	1	0.17	0.65	10	1.05	0.45	8	1.05	0.45
	$17 < I_e \leq 100\text{ A}$	6	1	0.35	1	0.17	0.35	10	1.05	0.45	8	1.05	0.45
	$I_e > 100\text{ A}$	6	1	0.35	1	0.17	0.35	10	1.05	0.35	8	1.05	0.35
AC-4	$I_e \leq 17\text{ A}$	6	1	0.65	6	1	0.65	12	1.05	0.45	10	1.05	0.45
	$17 < I_e \leq 100\text{ A}$	6	1	0.35	6	1	0.35	12	1.05	0.45	10	1.05	0.45
	$I_e > 100\text{ A}$	6	1	0.35	6	1	0.35	12	1.05	0.35	10	1.05	0.35

Key:

$U(I)$ = applied voltage (current)

U_r = recovery voltage

L/R = test circuit time constant

$U_e(I_e)$ = rated operational voltage (current)

I_c = making and breaking current expressed in d.c. or in a.c. like the r.m.s. value of the symmetrical components

General Information

CE Marking, Machine Directive

CE Marking

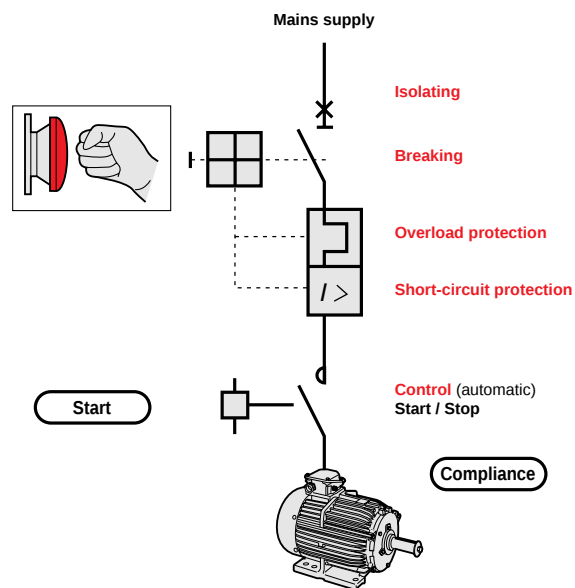


CE marking is part of a procedure for exclusively administrative use and is intended to guarantee the free movement of the product within the European Community.

CE marking is proof of conformity with the European Directives concerning the product.

CE marking must not be confused with a quality label.

Machine Directive



Machine Directive 89/392/CEE is granting the free circulation of the machines within the CEE and consequently also guarantee both a high and homogeneous safety level.

This Directive is applicable to manufacturers of new or secondhand machines. It has been completed by the Social Directive 89/659/CEE which refers to the utilization of labour machinery already in operation and involves the employer directly.

The Machine Directive defines a certain number of safety requirements for the machines, or their sub-assemblies as well as their electrical equipment. It states more particularly the arrangements related to electrical control systems for reducing inconveniently operation risks (example : main isolation function by means of a switch-disconnectors...).

Since the 1st January 1996, each machine manufacturer must abide by the Directive for selling his new or secondhand machines in Europe (identification by means of the CE marking).

Since the 1st January 1997, each machine enduser must have carried out the conformity revision of his own machines in order to comply with the Social Directive requirements.

General Information

Protection Degrees

1

General

In an installation, the degree of protection required for electrical equipment depends on the environmental characteristics. The degree of protection, ensured by the enclosure of equipment or by the cubicle containing the equipment is expressed by the IP code which gives the level of protection against access to hazardous parts, the ingress of foreign bodies and/or the ingress of water, in compliance with IEC 529, EN 60529, IEC 947-1 and EN 60947-1. Besides the IP symbol, the complete code has two figures followed (optionally) by two additional letters. A short description of the elements used in IP coding is given below.

Element	Figures or letters	Specifications for installation protection	Protection of persons
Codes	IP		
First figure		Against ingress of foreign bodies:	Against access to hazardous parts with:
	0	No protection	No protection
	1	Diameter ≥ 50 mm	Back of hand
	2	Diameter ≥ 12.5 mm	Finger
	3	Diameter ≥ 2.5 mm	Tool
	4	Diameter ≥ 1 mm	Wire
	5	Limited protection against dust	Wire
	6	Total protection against dust	Wire
Second figure		Against entrance of water having a harmful effect:	
	0	No protection	—
	1	Vertical dripping	
	2	Dripping at a vertical angle of $\leq 15^\circ$	
	3	Rain at a vertical angle of $\leq 60^\circ$	
	4	Splashing	
	5	Low pressure water jet	
	6	Powerful water jets	
	7	Temporary immersion	
	8	Permanent immersion	
Additional letter (optional) for use with:		Against ingress of foreign bodies:	Against access to hazardous parts with:
First figure 0	A	Stopped by a barrier with a 50 mm Ø sphere	Back of hand
First figure 0 or 1	B	Entrance of test finger limited to 80 mm	Finger
First figure 1 or 2	C	Wire with 2.5 mm Ø and length of 100 mm	Tool
First figure 2 or 3	D	Wire with 1 mm Ø and length of 100 mm	Wire
Additional letter (optional)		Specific additional information:	
	H	High voltage apparatus	—
	M	Moving parts which are moving during water test	
	S	Moving parts which are stationary during water test	
	W	Specified atmospheric conditions	

Note: The type of enclosure or cubicle in which the equipment must be installed prevails with respect to the degree of protection.

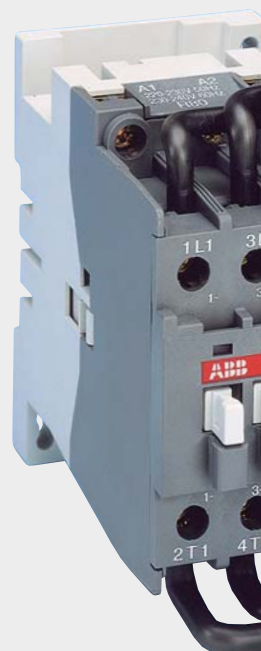
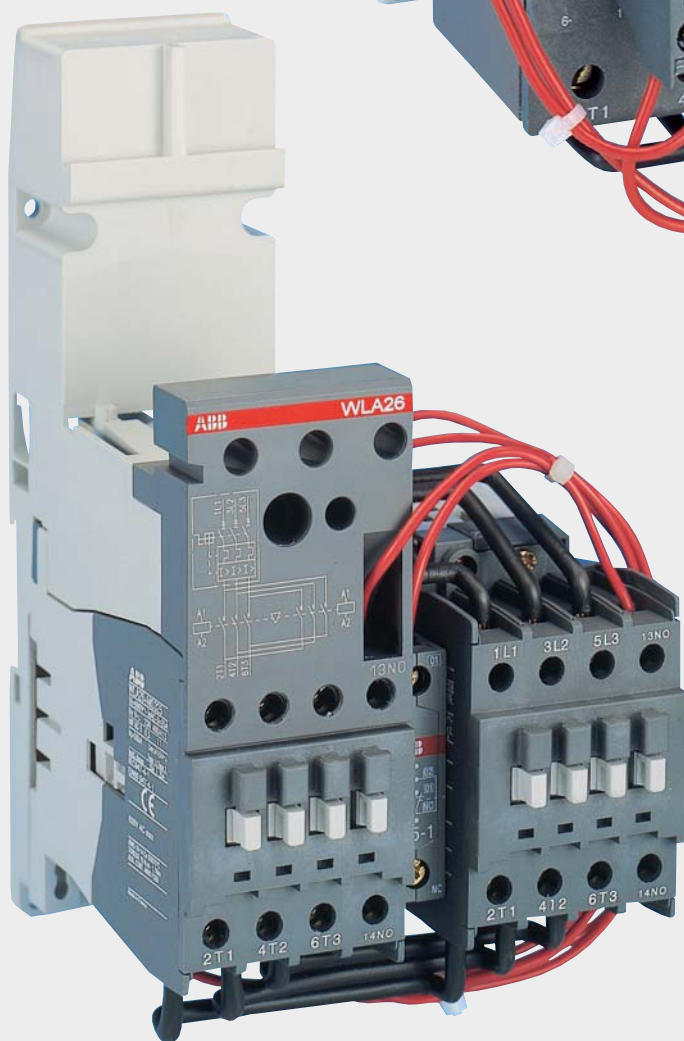
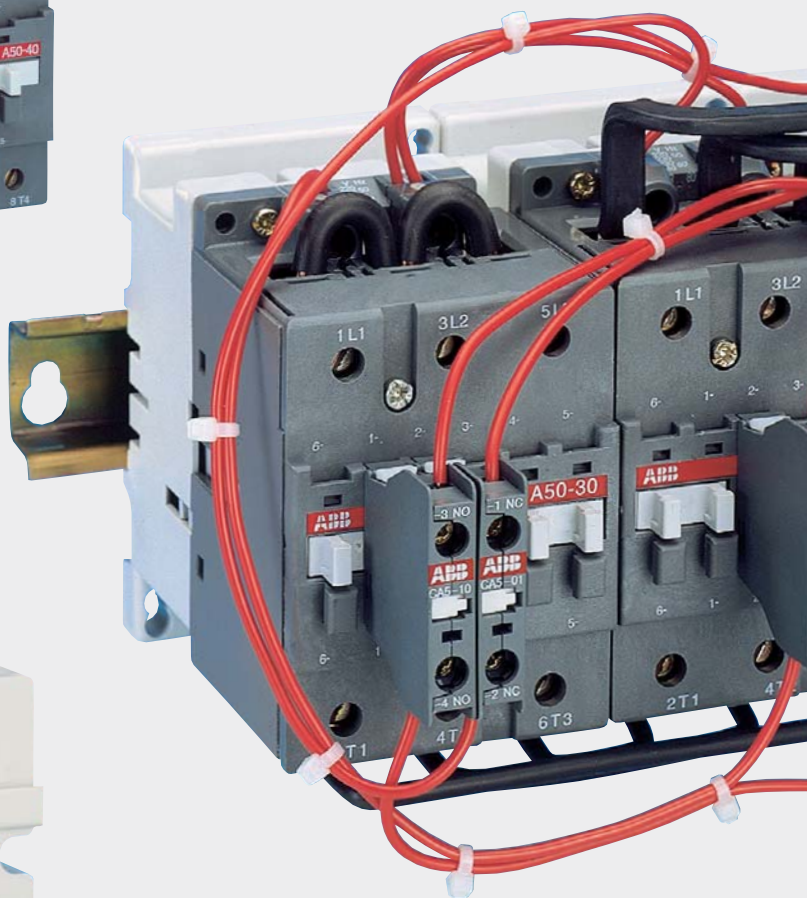




ABB Open type Starters

Contents

Star-Delta Starters, Protection by Thermal O/L Relay

YKA ...-30	2/1
Starters in Kit Form	2/8
YKA ...-30E with Mechanical Interlock	2/10
Starters with Mechanical Interlock, in Kit Form	2/16

Reversing Contactors

VOA ...-30M	3/1
Reversing Contactors, in Kit Form	3/6

Mains Changeover Contactors

VOA ...40Z	4/1
Mains Changeover Contactors, in Kit Form	4/2

D.O.L. Starters with Base for Manual Motor-starter

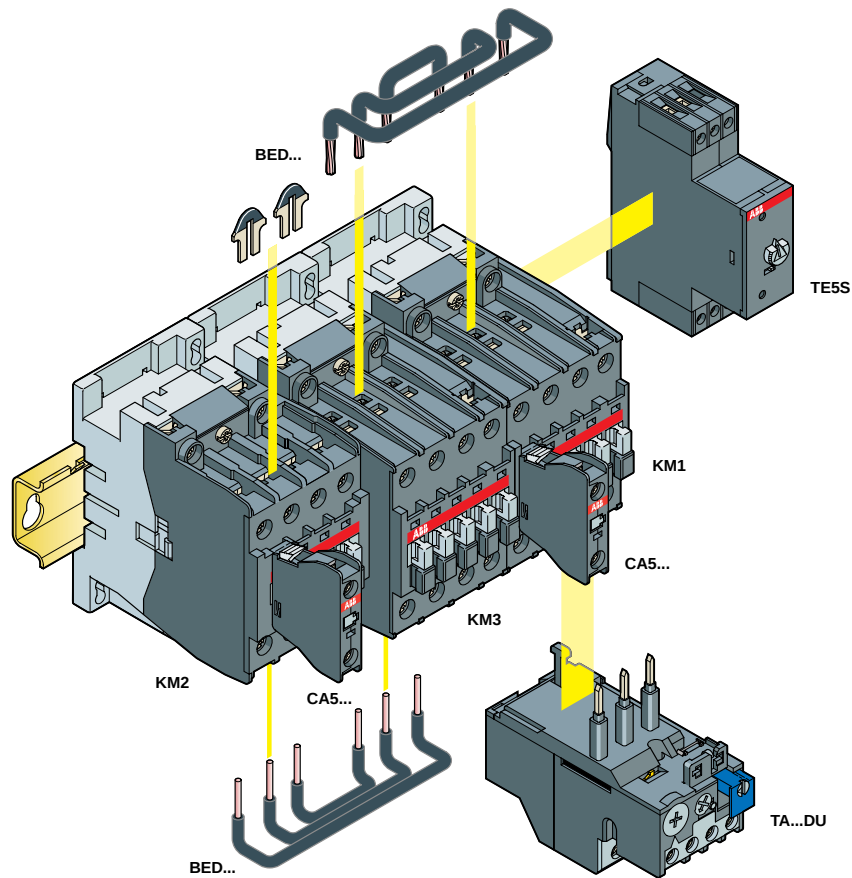
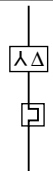
DLA	5/1
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Reversing Starters with Base for Manual Motor-starter

WLA	6/1
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Star-Delta Starters, Open Type Version

Protection by Thermal O/L Relay



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Starters with electrical interlock

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>> Star-delta starters in kit form	page 2/8

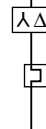
Starters with mechanical and electrical interlock

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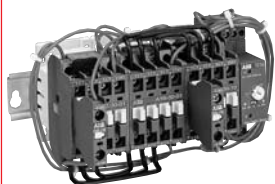
YKA ..-30 Star-Delta Starters

Open Type Version

Protection by Thermal O/L Relay

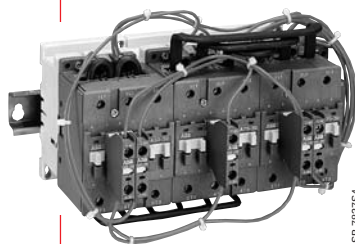


2



YKA 16-30

SB7834S4



YKA 75-30

SB7837S4

Application

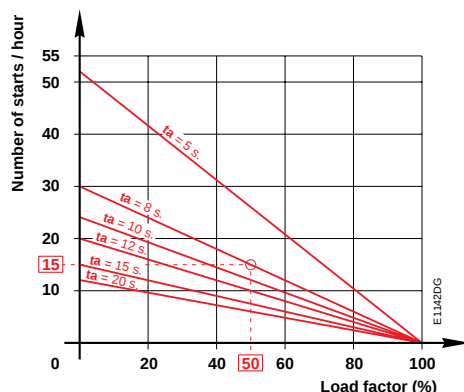
Starters for the control of three-phase asynchronous motors:

- up to an operational voltage of 690 V, 50 or 60 Hz,
- in compliance with standard IEC 947-4-1,
- air temperature close to contactors $\leq 55^{\circ}\text{C}$.

Maximum duty as per the chart below.

(Switching frequency/hour, according to acceleration time and load factor).

Respect of the following conditions enables utilization of the starter without excessive overheating of the connections or nuisance tripping of the thermal O/L relay.



Example:

- Switching frequency = **15 starts/hr**
- Acceleration time "ta" = **7s** (use the 8 s curve)
- Maximum load factor = **50 %**

This corresponds to a 4-minute operating cycle (15 starts/hr) with 7 seconds acceleration, 2 minutes operation and 2 minutes rest.

Description

Each starter is delivered assembled, bare, cabled by us and contains:

- 1 KM1 "line" contactor,
- 1 KM2 "star" contactor,
- 1 KM3 "delta" contactor,
- the hold-in contacts,
- the electrical interlocking contacts for both the "star" and "delta" contactors,
- the space for the thermal O/L relay (direct mounting).

The thermal O/L relay must be supplied separately for you to mount and connect in the "delta" circuit. The **setting current** value of the thermal O/L relay must be equal to **motor rated current I_n x 0.58**; choose the thermal O/L relay with the right setting range for the setting current in question.

- 1 TE5S electronic timer with time lapse,
- the power circuit connections,
- the control circuit connections.

YKA 9 to YKA 26 : The assembly is mounted on a 35 x 7.5 mm mounting rail acc. to EN 50022

YKA 30 to YKA 75 : The assembly is mounted on a 35 x 15 mm mounting rail acc. to EN 50022

Degree of protection: – IP20 for the main terminals of contactors A 9 ... A 40
– IP10 for the main terminals of contactors A 50 ... A 75
– IP20 for the control circuit terminals.

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YKA ..-30 Star-Delta Starters

Open Type Version

Protection by Thermal O/L Relay



Ordering details - (Order the thermal O/L relay separately, see page 2/3)

Rated operat. current AC-3 400 V A	Power AC-3 4-pole motor - 50/60 Hz			Short-circuit protection *		Type	Order code	Weight in kg
	380 V	415 V	690 V	Type 1 co-ordination as per EN 60947-4-1 / IEC 947-4-1 380-400 V				
	kW	kW	kW	aM fuses	gG fuses	State control voltage [...]	to be completed with control voltage code □	Packing 1 piece
15.5	7.5	7.5	5.5	16	25	YKA 9-30 [...]	1SBK 142 301R8 □ 00	1.612
22	11	11	7.5	25	35	YKA 12-30 [...]	1SBK 162 301R8 □ 00	1.612
30	15	15	11	32	50	YKA 16-30 [...]	1SBK 182 301R8 □ 00	1.612
44	22	22	15	50	63	YKA 26-30 [...]	1SBK 242 301R8 □ 00	2.119
50	25	25	18.5	63	100	YKA 30-30 [...]	1SBK 282 301R8 □ 00	3.124
72	37	37	37	80	100	YKA 40-30 [...]	1SBK 322 301R8 □ 00	3.135
85	45	45	45	100	125	YKA 50-30 [...]	1SBK 352 301R8 □ 00	4.130
105	55	55	59	125	160	YKA 63-30 [...]	1SBK 372 301R8 □ 00	4.136
119	63	70	63	160	200	YKA 75-30 [...]	1SBK 412 301R8 □ 00	4.477

* For other short-circuit protection devices, please consult our co-ordination tables

Control circuit

Designed for "separate control supply":

The star-delta starters are delivered with their control circuit not connected to the power circuit.

The control circuit supply is to be connected according to the wiring diagram when putting the starter into service.

Please consult us for "direct control supply".

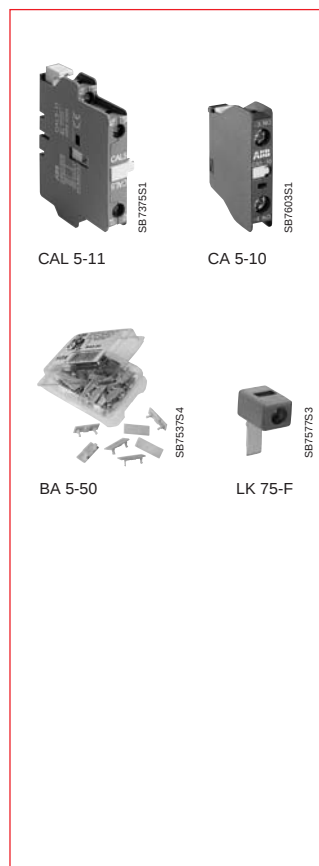
Control voltage code

Voltage	Code	Control circuit
V 50 Hz	V 60 Hz	8 □
24	24	1 must be connected
110	110 ... 120	4 – to a separate
110 ... 115	115 ... 127	9 supply
220 ... 230	230 ... 240	0 – or phase-to-phase
230 ... 240	240 ... 260	8 – or phase-to-neutral
380 ... 400	400 ... 415	5
400 ... 415	415 ... 440	6
415 ... 440	440	7*

* Unsuitable for YKA 50-30 ... YKA 75-30 starters.

Ordering details, contactors accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1 SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1 SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mtd cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1 SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1 SBN 07 3552 R1002	2	0.006



>> Starters in kit form page 2/8 >> Thermal O/L relay page 2/3
>> Wiring diagrams page 2/4 >> Dimensions page 2/5

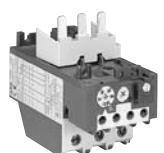
YKA ..-30 Star-Delta Starters

Open Type Version

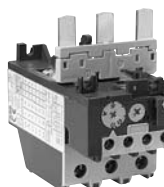
Protection by Thermal O/L Relay



TA 25 DU



TA 42 DU



TA 75 DU



DS 25 A

DR 25 A

Coil voltage code for DS 25-A/DR 25-A

Voltage (V) 50/60 Hz	Coil voltage code	☐
24	1	
48	2	
110	3	
220/380	5	
500	6	

Ordering details, thermal O/L relay

Starter	Setting range (1)			Type	Order code	Weight in kg Packing 1 piece
	A	...	A			
YKA 9-30 to	0.1	...	0.16	TA 25 DU 0.16	1SAZ 21 1201 R1005	0.150
	0.16	...	0.25	TA 25 DU 0.25	1SAZ 21 1201 R1009	0.150
YKA 30-30	0.25	...	0.4	TA 25 DU 0.4	1SAZ 21 1201 R1013	0.150
	0.4	...	0.63	TA 25 DU 0.63	1SAZ 21 1201 R1017	0.150
	0.63	...	1.0	TA 25 DU 1.0	1SAZ 21 1201 R1021	0.150
	1.0	...	1.4	TA 25 DU 1.4	1SAZ 21 1201 R1023	0.150
	1.3	...	1.8	TA 25 DU 1.8	1SAZ 21 1201 R1025	0.150
	1.7	...	2.4	TA 25 DU 2.4	1SAZ 21 1201 R1028	0.150
	2.2	...	3.1	TA 25 DU 3.1	1SAZ 21 1201 R1031	0.150
	2.8	...	4.0	TA 25 DU 4.0	1SAZ 21 1201 R1033	0.150
	3.5	...	5.0	TA 25 DU 5.0	1SAZ 21 1201 R1035	0.150
	4.5	...	6.5	TA 25 DU 6.5	1SAZ 21 1201 R1038	0.150
	6.0	...	8.5	TA 25 DU 8.5	1SAZ 21 1201 R1040	0.150
	7.5	...	11	TA 25 DU 11	1SAZ 21 1201 R1043	0.150
	10	...	14	TA 25 DU 14	1SAZ 21 1201 R1045	0.150
	13	...	19	TA 25 DU 19	1SAZ 21 1201 R1047	0.150
	18	...	25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24	...	32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
YKA 40-30	18	...	25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22	...	32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
	29	...	42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
YKA 50-30 to	18	...	25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
	22	...	32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
YKA 75-30	29	...	42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
	36	...	52	TA 75 DU 52	1SAZ 32 1201 R1004	0.330
	45	...	63	TA 75 DU 63	1SAZ 32 1201 R1005	0.330
	60	...	80	TA 75 DU 80	1SAZ 32 1201 R1006	0.330

(1) The **setting current** value is the motor rated current I_n x 0.58

Example: For a motor rated current of 30 A, the **setting current** will be $30 \text{ A} \times 0.58 = 17.4 \text{ A}$.

Choose the thermal O/L relay **TA 25 DU 19** - setting range **13 ... 19 A**.

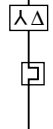
Ordering details, thermal O/L relay accessories

Description	Type State control voltage [...]	Order code to be completed with control voltage code [...]	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
Remote tripping coil for TA 25 DU	DS 25-A- [...]	1 SAZ 20 1501 R000 [...]	1	0.100
Remote resetting coil for TA 25 DU	DR 25-A- [...]	1 SAZ 20 1504 R000 [...]	1	0.100

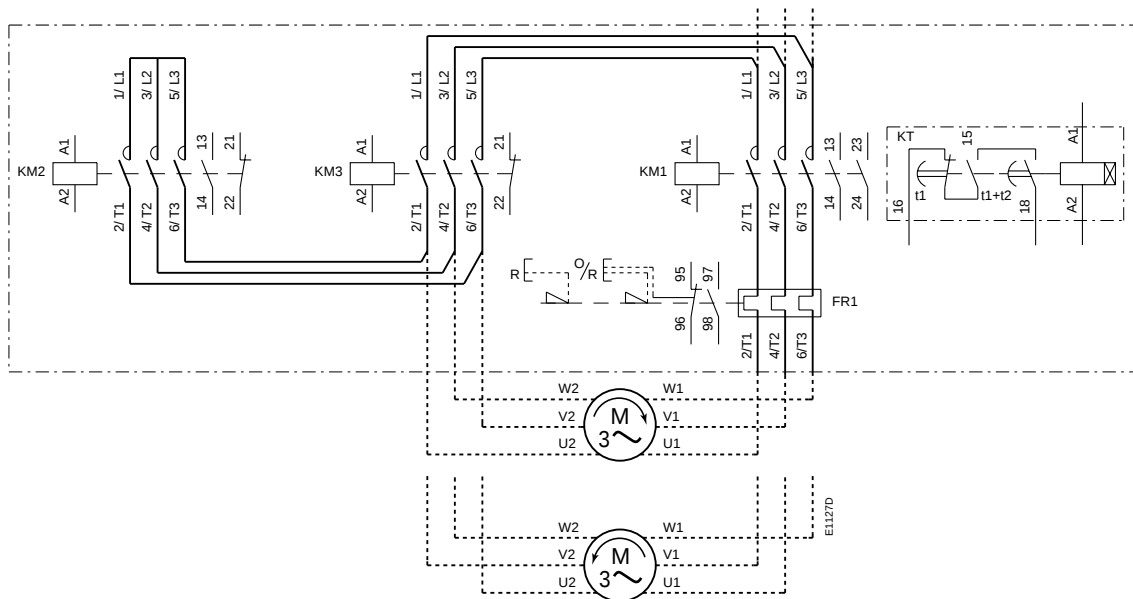
YKA ..-30 Star-Delta Starters

Open Type Version

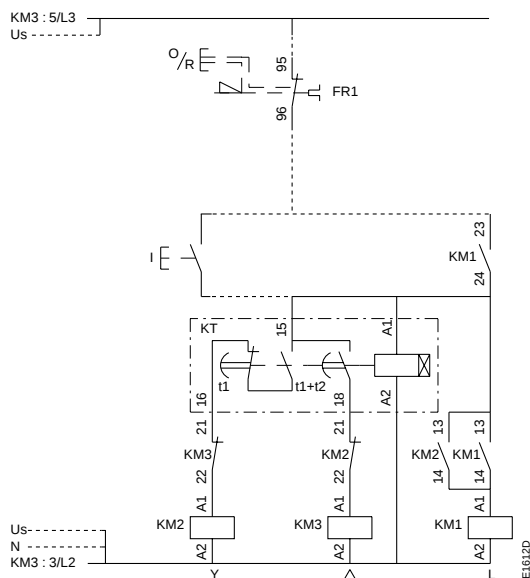
Protection by Thermal O/L Relay



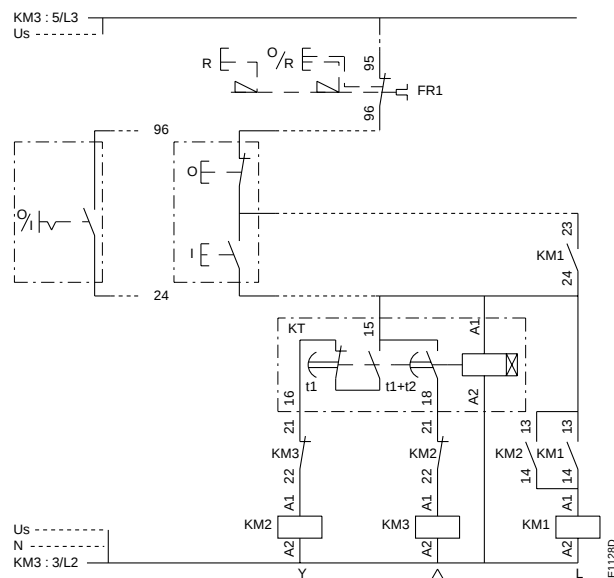
Wiring Diagrams



Power Circuit



Local Control

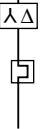


Remote Control

YKA ..-30 Star-Delta Starters

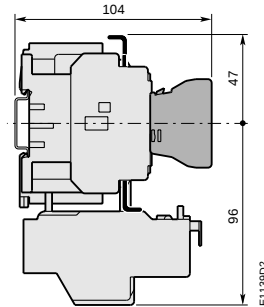
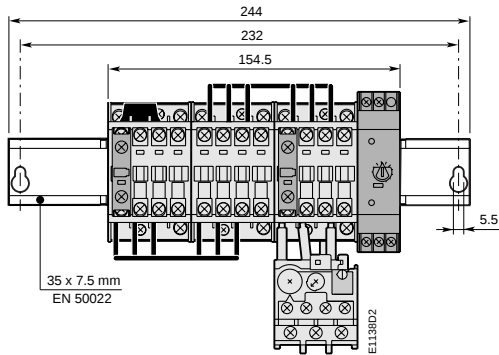
Open Type Version

Protection by Thermal O/L Relay

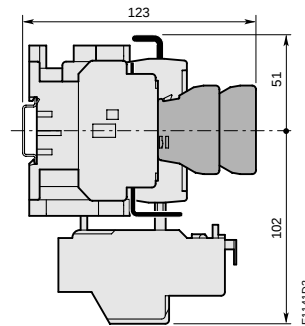
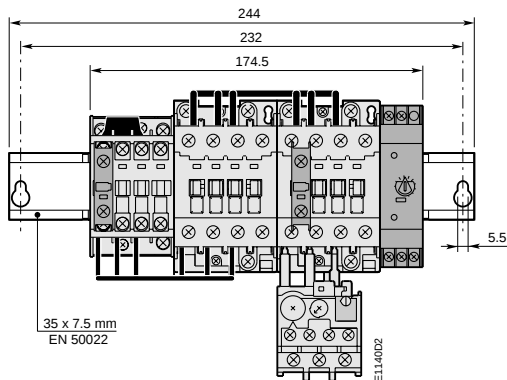


2

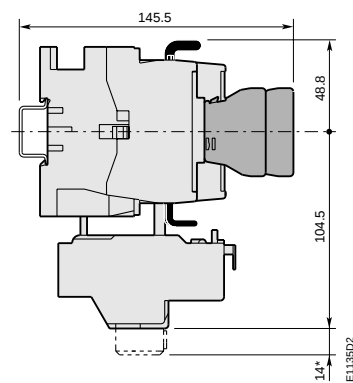
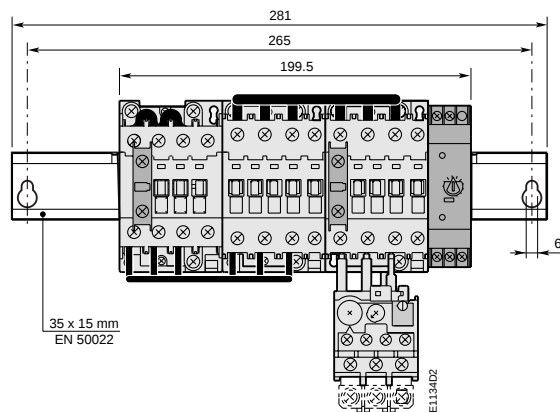
Dimensions (in mm)



YKA 9-30 ... YKA 16-30 + TA 25



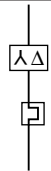
YKA 26-30 + TA 25



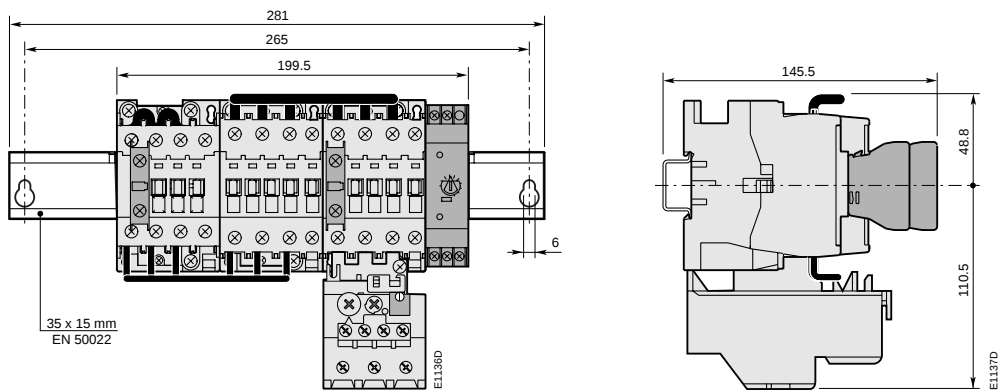
YKA 30-30 + TA 25

* for TA 25 DU 32 only

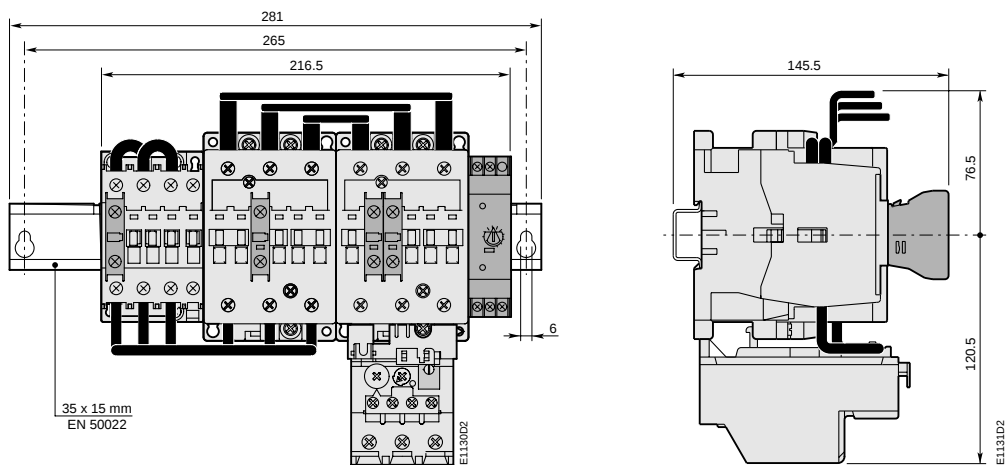
YKA ..-30 Star-Delta Starters Open Type Version Protection by Thermal O/L Relay



Dimensions (in mm)

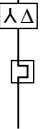


YKA 40-30 + TA 42

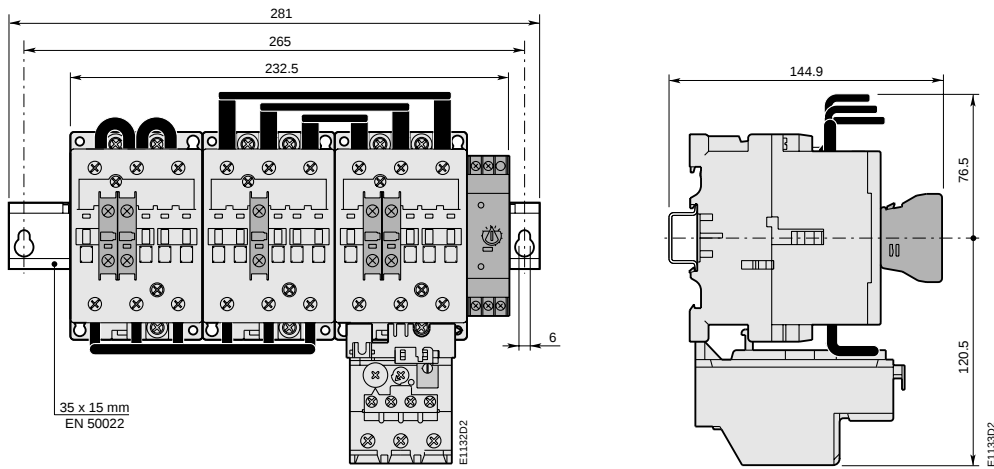


YKA 50-30 ... YKA 63-30 + TA 75

YKA ..-30 Star-Delta Starters Open Type Version Protection by Thermal O/L Relay



Dimensions (in mm)

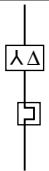


YKA 75-30 + TA 75

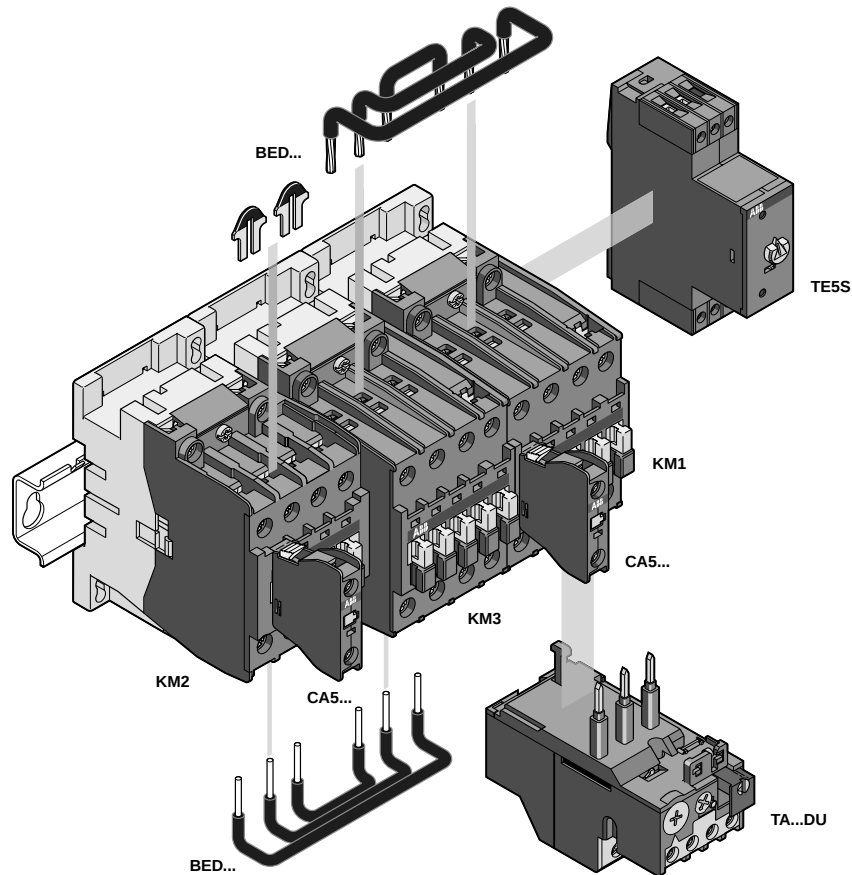
Star-Delta Starters, in Kit Form

Open Type Version

Protection by Thermal O/L Relay



Components for starters in kit form (ordering details on next page)



E1121D2

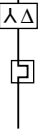
Details of power connections

BED 16-1 2.5 mm² cable insulated rigid, solid copper	BED 26-1 4 mm² cable insulated rigid, solid copper	BED 40-1 (a) + (b) 4 mm² cable (c) 10 mm² cable insulated rigid stranded copper	BED 50-1 / BED 75-1 (a) 16 mm² cable (b) 6 mm² cable insulated rigid stranded copper (c) 8 x 3 mm bar insulated copper	BED 95 / BED 110 12 x 3 mm bar insulated copper
--	--	--	--	---

Star-Delta Starters, in Kit Form

Open Type Version

Protection by Thermal O/L Relay



2

Contactors and thermal O/L relay

Rated operat. current AC-3	Power AC-3 4-pole motor 50/60 Hz		Line contactor		△ Contactor		Thermal O/L relay (1) FR1 (see page 2/3) Type Order code	Required accessories (see table below) Reference letter
	Nominal voltage V	kW	Contactor					
			KM1	KM2	KM3			
			Type and state coil voltage : □□□ Order code to be completed with coil voltage code : □ (see page 2/2)					
15.5	380-400	7.5	A 9-30-10 □□ 1SBL 14 1001 R8 □10	A 9-30-01 □□ 1SBL 14 1001 R8 □01	A 9-30-01 □□ 1SBL 14 1001 R8 □01	TA 25 DU □□ 1SAZ 21 1201 R10 □□	A	
14	415	7.5						
6.7	690	5.5						
22	380-400	11	A 12-30-10 □□ 1SBL 16 1001 R8 □10	A 9-30-01 □□ 1SBL 14 1001 R8 □01	A 12-30-01 □□ 1SBL 16 1001 R8 □01	TA 25 DU □□ 1SAZ 21 1201 R10 □□	A	
21	415	11						
9	690	7.5						
30	380-400	15	A 16-30-10 □□ 1SBL 18 1001 R8 □10	A 12-30-01 □□ 1SBL 16 1001 R8 □01	A 16-30-01 □□ 1SBL 18 1001 R8 □01	TA 25 DU □□ 1SAZ 21 1201 R10 □□	A	
28	415	15						
13	690	11						
44	380-400	22	A 26-30-10 □□ 1SBL 24 1001 R8 □10	A 16-30-01 □□ 1SBL 18 1001 R8 □01	A 26-30-01 □□ 1SBL 24 1001 R8 □01	TA 25 DU □□ 1SAZ 21 1201 R10 □□	B	
40	415	22						
17.5	690	15						
50	380-400	25	A 30-30-10 □□ 1SBL 28 1001 R8 □10	A 26-30-01 □□ 1SBL 24 1001 R8 □01	A 30-30-01 □□ 1SBL 28 1001 R8 □01	TA 25 DU □□ 1SAZ 21 1201 R10 □□	C	
47	415	25						
21	690	18.5						
72	380-400	37	A 40-30-10 □□ 1SBL 32 1001 R8 □10	A 26-30-01 □□ 1SBL 24 1001 R8 □01	A 40-30-01 □□ 1SBL 32 1001 R8 □01	TA 42 DU □□ 1SAZ 31 1201 R10 □□	C	
66	415	37						
42	690	37						
85	380-400	45	A 50-30-00 □□ 1SBL 35 1001 R8 □00	A 30-30-01 □□ 1SBL 28 1001 R8 □01	A 50-30-00 □□ 1SBL 35 1001 R8 □00	TA 75 DU □□ 1SAZ 32 1201 R10 □□	D	
80	415	45						
49	690	45						
105	380-400	55	A 63-30-00 □□ 1SBL 37 1001 R8 □00	A 40-30-01 □□ 1SBL 32 1001 R8 □01	A 63-30-00 □□ 1SBL 37 1001 R8 □00	TA 75 DU □□ 1SAZ 32 1201 R10 □□	D	
96	415	55						
66	690	59						
119	380-400	63	A 75-30-00 □□ 1SBL 41 1001 R8 □00	A 50-30-00 □□ 1SBL 35 1001 R8 □00	A 75-30-00 □□ 1SBL 41 1001 R8 □00	TA 75 DU □□ 1SAZ 32 1201 R10 □□	E	
126	415	70						
70	690	63						
140	380-400	75	A 95-30-00 □□ 1SFL 43 1001 R8 □00	A 75-30-00 □□ 1SBL 41 1001 R8 □00	A 95-30-00 □□ 1SFL 43 1001 R8 □00	TA 110 DU □□ 1SAZ 41 1201 R10 □□	F	
135	415	75						
98	690	90						
170	380-400	90	A 110-30-00 □□ 1SFL 45 1001 R8 □00	A 95-30-00 □□ 1SFL 43 1001 R8 □00	A 110-30-00 □□ 1SFL 45 1001 R8 □00	TA 110 DU □□ 1SAZ 41 1201 R10 □□	G	
182	415	100						
140	690	132						

(1) The setting current value is : motor rated current $I_n \times 0.58$.

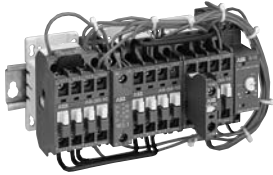
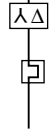
Required accessories

Ref. letter	Connection set Type Order code	KM1 Aux. contacts Type Order code	KM2 Aux. Contacts Type Order code	KM3 Aux. Contacts Type Order code	Timer Type Order code	Plate Type Order code
A	BED 16-1 1SBN 08 1403 R1001					-
B	BED 26-1 1SBN 08 2403 R1001	CA 5-10 1SBN 01 0010 R1010	CA 5-10 1SBN 01 0010 R1010	—	According to the control voltage (50/60Hz)	-
C	BED 40-1 1SBN 08 2803 R1001				24 V TE5S-24 1SBN 02 0010 R1001	-
D	BED 50-1 1SBN 08 3503 R1001	2 x CA 5-10 1SBN 01 0010 R1010	CA 5-10 1SBN 01 0010 R1010	CA 5-01 1SBN 01 0010 R1001	110...120 V TE5S-120 1SBN 02 0010 R1002	-
E	BED 75-1 1SBN 08 4103 R1001		1 x CA 5-10		220...240 V TE5S-240 1SBN 02 0010 R1003	-
F	BED 95 1 SFN 08 4303 R1000	2 x CA 5-10 1SBN 01 0010 R1010	1SBN 01 0010 R1010 1 x CA 5-01	CA 5-01 1SBN 01 0010 R1001	380...440 V TE5S-440 1SBN 02 0010 R1004	PN110-41 1SFN 09 4303 R1000
G	BED 110 1 SFN 08 4503 R1000		1SBN 01 0010 R1001			PN110-41 1SFN 09 4303 R1000

YKA ..-30E Star-Delta Starters

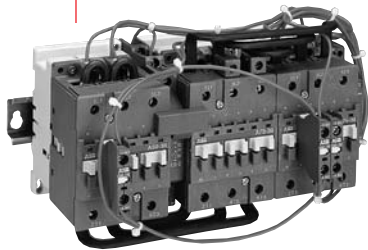
Open Type Version, with Interlock

Protection by Thermal O/L Relay



YKA 9-30 E

SB782754



YKA 75-30 E

SB782454

Application

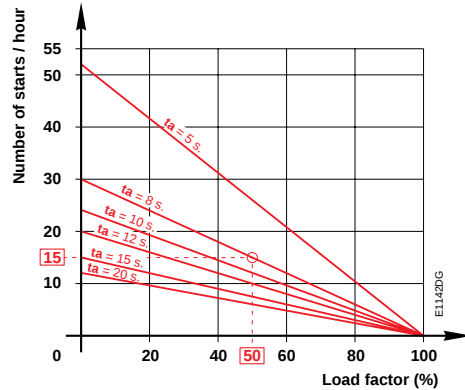
Starters for the control of three-phase asynchronous motors:

- in compliance with standard IEC 947-4-1,
- up to an operational voltage of 690 V, 50 or 60 Hz,
- air temperature close to contactors $\leq 55^{\circ}\text{C}$

Maximum duty as per the chart below.

(Switching frequency/hour, according to acceleration time and load factor).

Respect of the following conditions enables utilization of the starter without excessive overheating of the connections or nuisance tripping of the thermal O/L relay.



Example:

- Switching frequency = **15 starts/hr**
- Acceleration time "ta" = **7s** (use the 8 s curve)
- Maximum load factor = **50 %**

This corresponds to a 4-minute operating cycle (15 starts/hr) with 7 seconds acceleration, 2 minutes operation and 2 minutes rest.

Description

Each starter is delivered assembled, bare, cabled by us and contains:

- 1 KM1 "line" contactor,
 - 1 KM2 "star" contactor,
 - 1 KM3 "delta" contactor,
 - the hold-in contacts,
 - 1 "star" and "delta" contactor mechanical and electrical interlock device,
 - the space for the thermal O/L relay (direct mounting).
- The thermal O/L relay must be supplied separately for you to mount and connect in the "delta" circuit. The **setting current** value of the thermal O/L relay must be equal to **motor rated current I_n x 0.58**; choose the thermal O/L relay with the right setting range for the setting current in question.
- 1 TE5S electronic timer with time lapse,
 - the power circuit connections,
 - the control circuit connections.

The assembly is mounted on a mounting rail acc. to EN 50022:

- 35 x 7.5 mm for **YKA 9** to **YKA 26** types
- 35 x 15 mm for **YKA 30** to **YKA 75** types

Degree of protection: – IP20 for the main terminals of contactors A 9 ... A 40
 – IP10 for the main terminals of contactors A 50 ... A 75
 – IP20 for the control circuit terminals

>> Ordering details page 2/11
 >> Starters in kit form page 2/16
 >> Wiring diagrams page 2/13

>> Accessories page 2/12
 >> Dimensions page 2/14

YKA ..-30E Star-Delta Starters

Open Type Version, with Interlock

Protection by Thermal O/L Relay



Ordering details - (Order the thermal O/L relay separately, see page 2/12)

Rated operat. current AC-3 400 V A	Power AC-3 4-pole motor - 50/60 Hz			Short-circuit protection *		Type	Order code	Weight in kg
	380 V	400 V	415 V	690 V	Type 1 co-ordination as per EN 60947-4-1 / IEC 947-4-1 380-400 V aM fuses gG fuses			
	kW	kW	kW	kW		State control voltage ☐	to be completed with control voltage code ☐	Packing 1 piece
15.5	7.5	7.5	5.5	16	25	YKA 9-30E ☐	1SBK 142 501R8 ☐ 00	1.655
22	11	11	7.5	25	35	YKA 12-30E ☐	1SBK 162 501R8 ☐ 00	1.655
30	15	15	11	32	50	YKA 16-30E ☐	1SBK 182 501R8 ☐ 00	1.655
44	22	22	15	50	63	YKA 26-30E ☐	1SBK 242 501R8 ☐ 00	2.162
50	25	25	18.5	63	100	YKA 30-30E ☐	1SBK 282 501R8 ☐ 00	3.167
72	37	37	37	80	100	YKA 40-30E ☐	1SBK 322 501R8 ☐ 00	3.178
85	45	45	45	100	125	YKA 50-30E ☐	1SBK 352 501R8 ☐ 00	4.197
105	55	55	59	125	160	YKA 63-30E ☐	1SBK 372 501R8 ☐ 00	4.203
119	63	70	63	160	200	YKA 75-30E ☐	1SBK 412 501R8 ☐ 00	4.544

* For other short-circuit protection devices, please consult our co-ordination tables

Control circuit

Designed for "separate control supply":

The star-delta starters are delivered with their control circuit not connected to the power circuit.
The control circuit supply is to be connected according to the wiring diagram when putting the starter into service.

Please consult us for "direct control supply".

Control voltage code

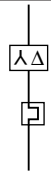
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz		
24	24	1	must be connected
110	110 ... 120	4	– to a separate
110 ... 115	115 ... 127	9	supply
220 ... 230	230 ... 240	0	– or phase-to-phase
230 ... 240	240 ... 260	8	– or phase-to-neutral
380 ... 400	400 ... 415	5	
400 ... 415	415 ... 440	6	
415 ... 440	440	7*	

* Unsuitable for YKA 50-30E ... YKA 75-30E starters.

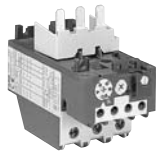
YKA ..-30E Star-Delta Starters

Open Type Version, with Interlock

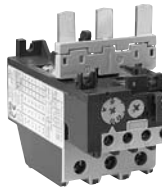
Protection by Thermal O/L Relay



TA 25 DU



TA 42 DU



TA 75 DU



CAL 5-11



CA 5-10



BA 5-50



LK 75-F



DS 25 A



DR 25 A

Coil voltage code for DS 25-A/DR 25-A

Voltage (V) 50/60 Hz	Coil voltage code	
24	1	
48	2	
110	3	
220/380	5	
500	6	

Ordering details, thermal O/L relay

Starter	Setting range (1)	Type	Order code	Weight in kg Packing 1 piece
	A ... A			
YKA 9-30E	0.1 ... 0.16	TA 25 DU 0.16	1SAZ 21 1201 R1005	0.150
to	0.16 ... 0.25	TA 25 DU 0.25	1SAZ 21 1201 R1009	0.150
YKA 30-30E	0.25 ... 0.4	TA 25 DU 0.4	1SAZ 21 1201 R1013	0.150
	0.4 ... 0.63	TA 25 DU 0.63	1SAZ 21 1201 R1017	0.150
	0.63 ... 1.0	TA 25 DU 1.0	1SAZ 21 1201 R1021	0.150
	1.0 ... 1.4	TA 25 DU 1.4	1SAZ 21 1201 R1023	0.150
	1.3 ... 1.8	TA 25 DU 1.8	1SAZ 21 1201 R1025	0.150
	1.7 ... 2.4	TA 25 DU 2.4	1SAZ 21 1201 R1028	0.150
	2.2 ... 3.1	TA 25 DU 3.1	1SAZ 21 1201 R1031	0.150
	2.8 ... 4.0	TA 25 DU 4.0	1SAZ 21 1201 R1033	0.150
	3.5 ... 5.0	TA 25 DU 5.0	1SAZ 21 1201 R1035	0.150
	4.5 ... 6.5	TA 25 DU 6.5	1SAZ 21 1201 R1038	0.150
	6.0 ... 8.5	TA 25 DU 8.5	1SAZ 21 1201 R1040	0.150
	7.5 ... 11	TA 25 DU 11	1SAZ 21 1201 R1043	0.150
	10 ... 14	TA 25 DU 14	1SAZ 21 1201 R1045	0.150
	13 ... 19	TA 25 DU 19	1SAZ 21 1201 R1047	0.150
	18 ... 25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24 ... 32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
YKA 40-30E	18 ... 25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22 ... 32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
	29 ... 42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
YKA 50-30E	18 ... 25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
to	22 ... 32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
YKA 75-30E	29 ... 42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
	36 ... 52	TA 75 DU 52	1SAZ 32 1201 R1004	0.330
	45 ... 63	TA 75 DU 63	1SAZ 32 1201 R1005	0.330
	60 ... 80	TA 75 DU 80	1SAZ 32 1201 R1006	0.330

(1) The **setting current** value is the motor rated current I_n x 0.58

Example: For a motor rated current of 30 A, the **setting current** will be $30 \text{ A} \times 0.58 = 17.4 \text{ A}$.

Choose the thermal O/L relay TA 25 DU 19 - setting range 13 ... 19 A.

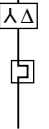
Ordering details, contactors accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1 SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1 SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mntd cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1 SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1 SBN 07 3552 R1002	2	0.006

Ordering details, thermal O/L relay accessories

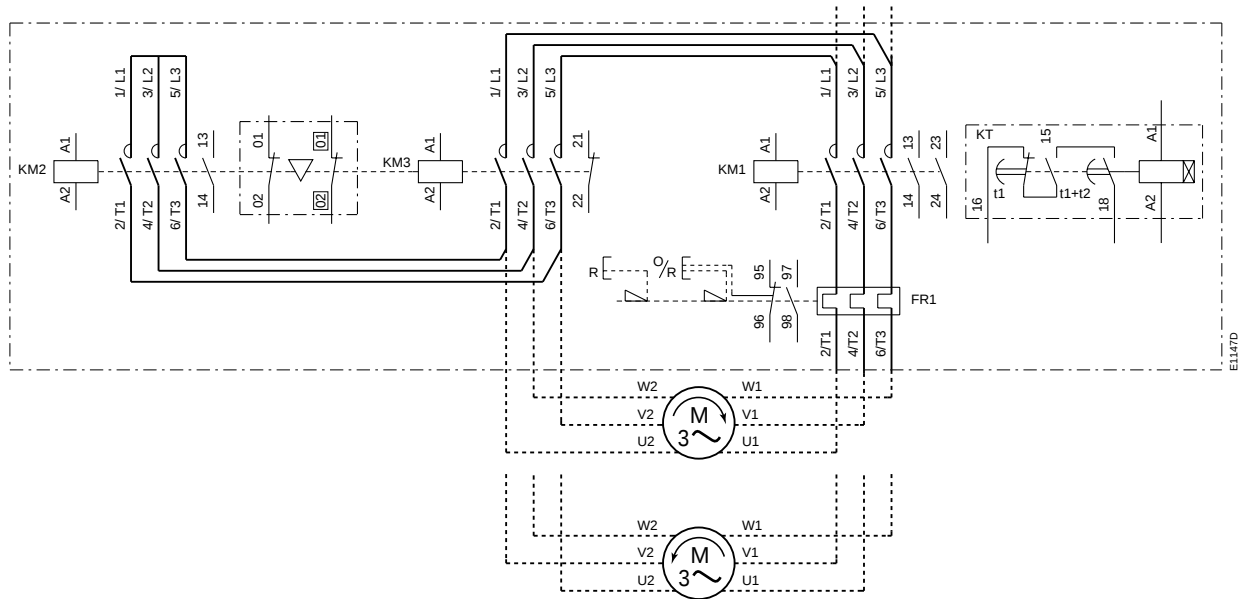
Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
Remote tripping coil for TA 25 DU	DS 25-A- []	1 SAZ 20 1501 R000 []	1	0.100
Remote resetting coil for TA 25 DU	DR 25-A- []	1 SAZ 20 1504 R000 []	1	0.100

YKA ..-30E Star-Delta Starters Open Type Version, with Interlock Protection by Thermal O/L Relay

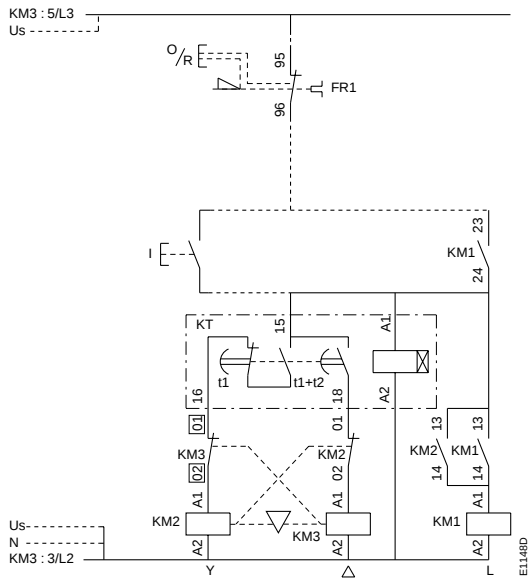


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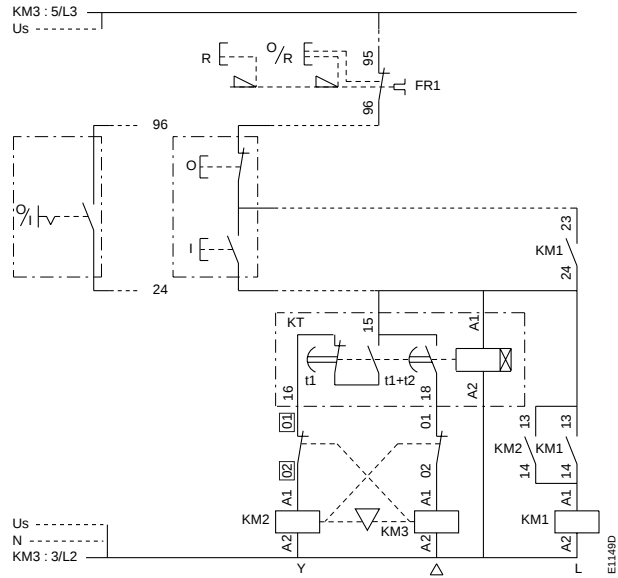
Wiring diagrams



Power circuit

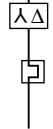


Local control

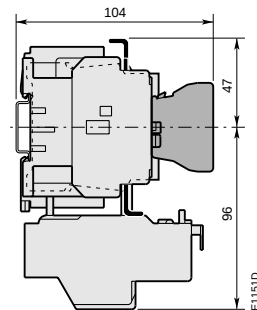
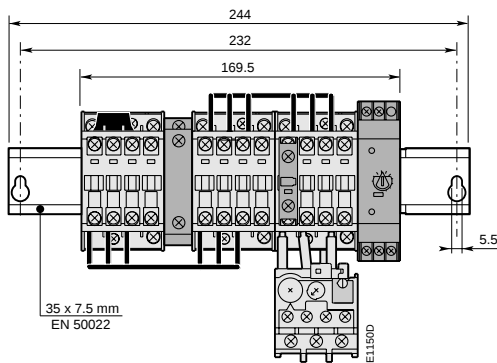


Remote control

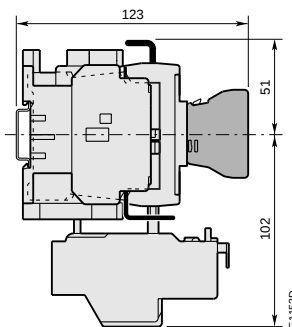
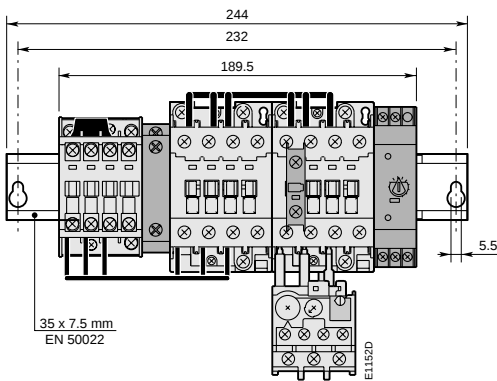
YKA ..-30E Star-Delta Starters Open Type Version, with Interlock Protection by Thermal O/L Relay



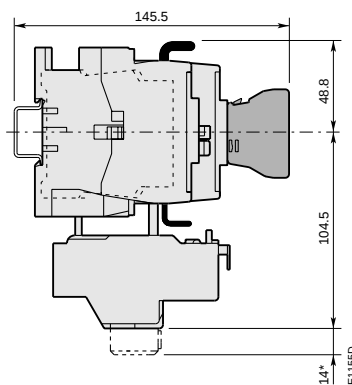
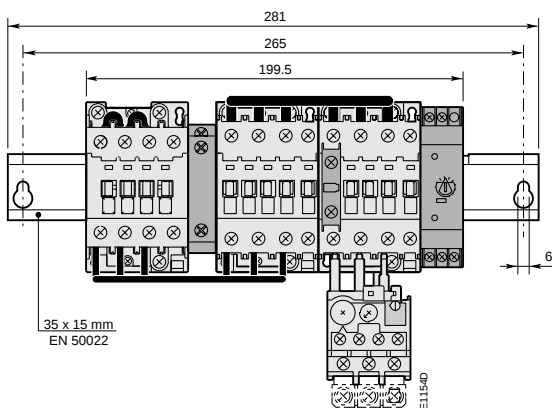
Dimensions (in mm)



YKA 9-30E ... YKA 16-30E + TA 25



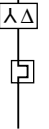
YKA 26-30E + TA 25



YKA 30-30E + TA 25

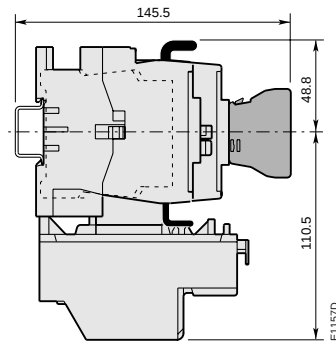
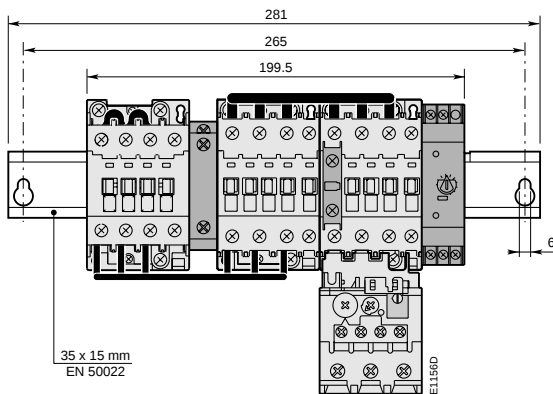
* for TA 25 DU 32 only

YKA ..-30E Star-Delta Starters Open Type Version, with Interlock Protection by Thermal O/L Relay

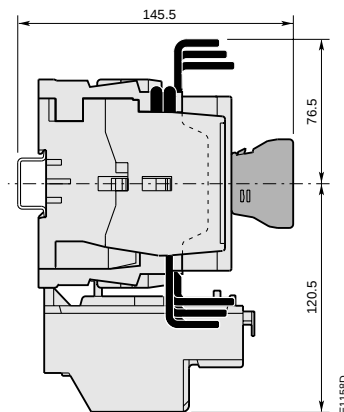
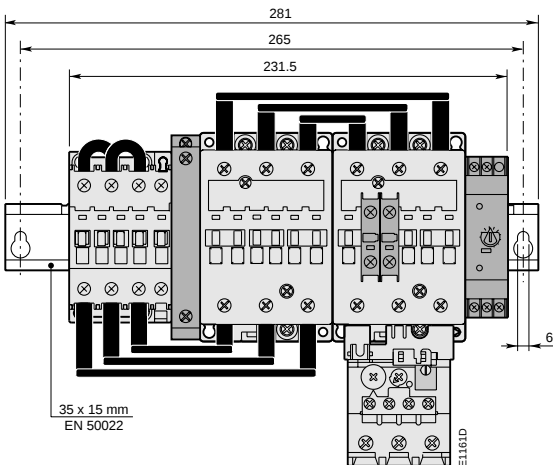


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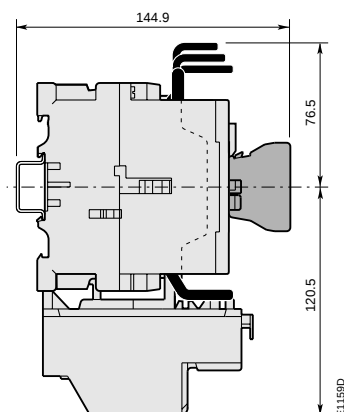
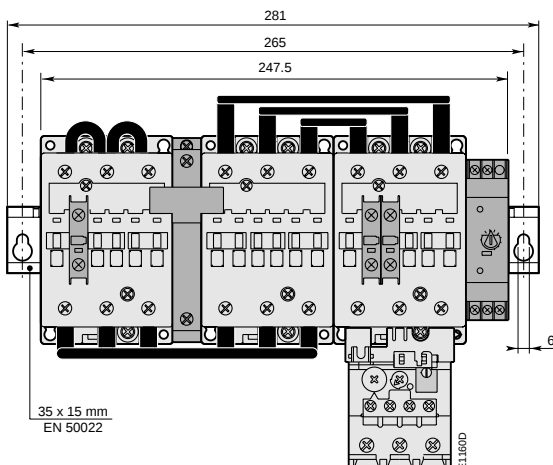
Dimensions (in mm)



YKA 40-30E + TA 42

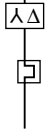


YKA 50-30E ... YKA 63-30E + TA 75

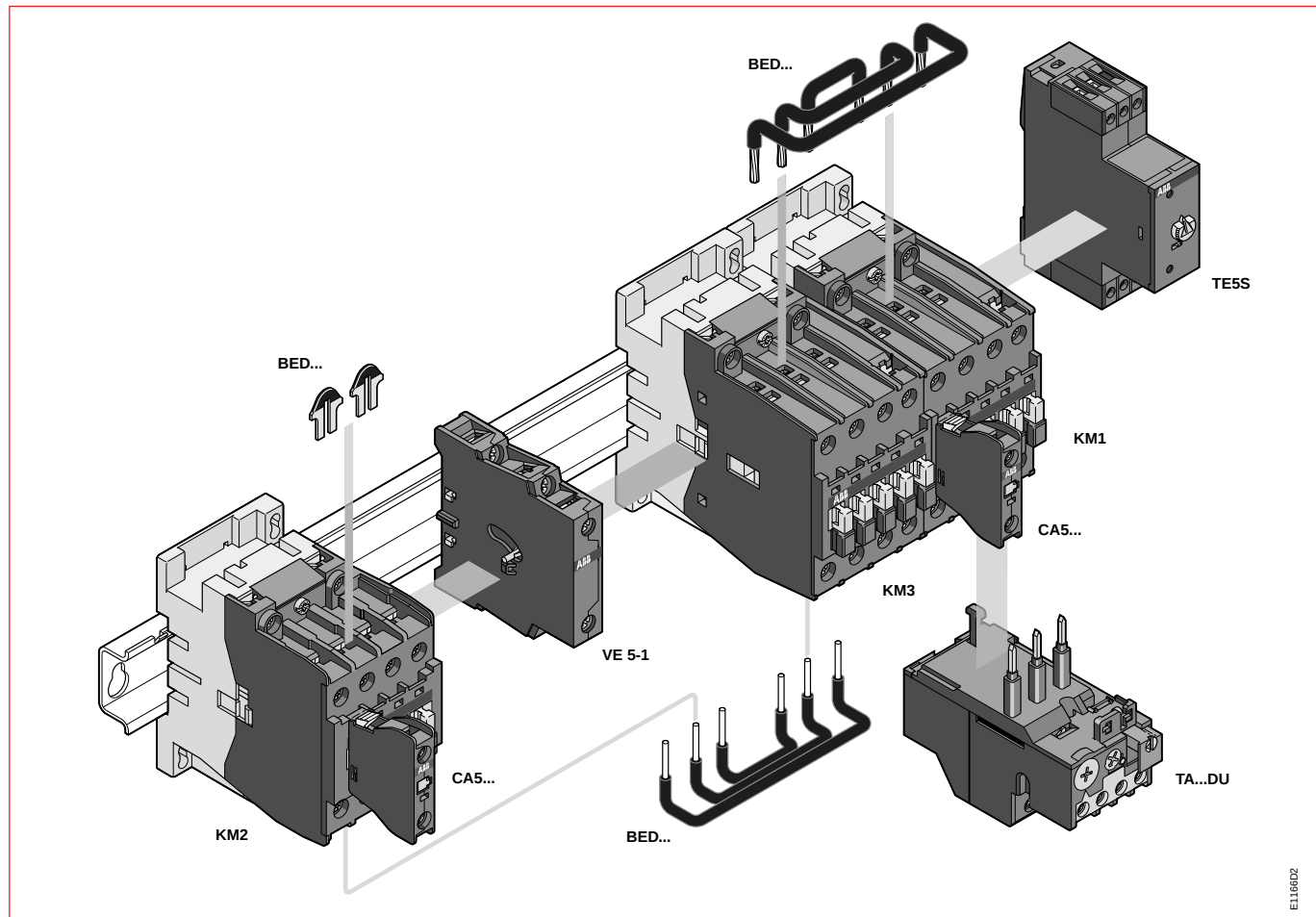


YKA 75-30E + TA 75

Star-Delta Starters, in Kit Form Open Type Version, with Interlock Protection by Thermal O/L Relay



Components for starters in kit form (Ordering details on next page)



Details of power connections

BED 16 2.5 mm² cable insulated rigid solid copper	BED 26 4 mm² cable insulated rigid solid copper	BED 40 4 mm² cable 10 mm² cable insulated rigid stranded copper	BED 50 16 mm² cable insulated rigid stranded copper 8 x 3 mm bar insulated copper	BED 75 16 mm² cable insulated rigid stranded copper 8 x 3 mm bar insulated copper
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Star-Delta Starters, in Kit Form Open Type Version, with Interlock Protection by Thermal O/L Relay



2

Contactors and thermal O/L relay

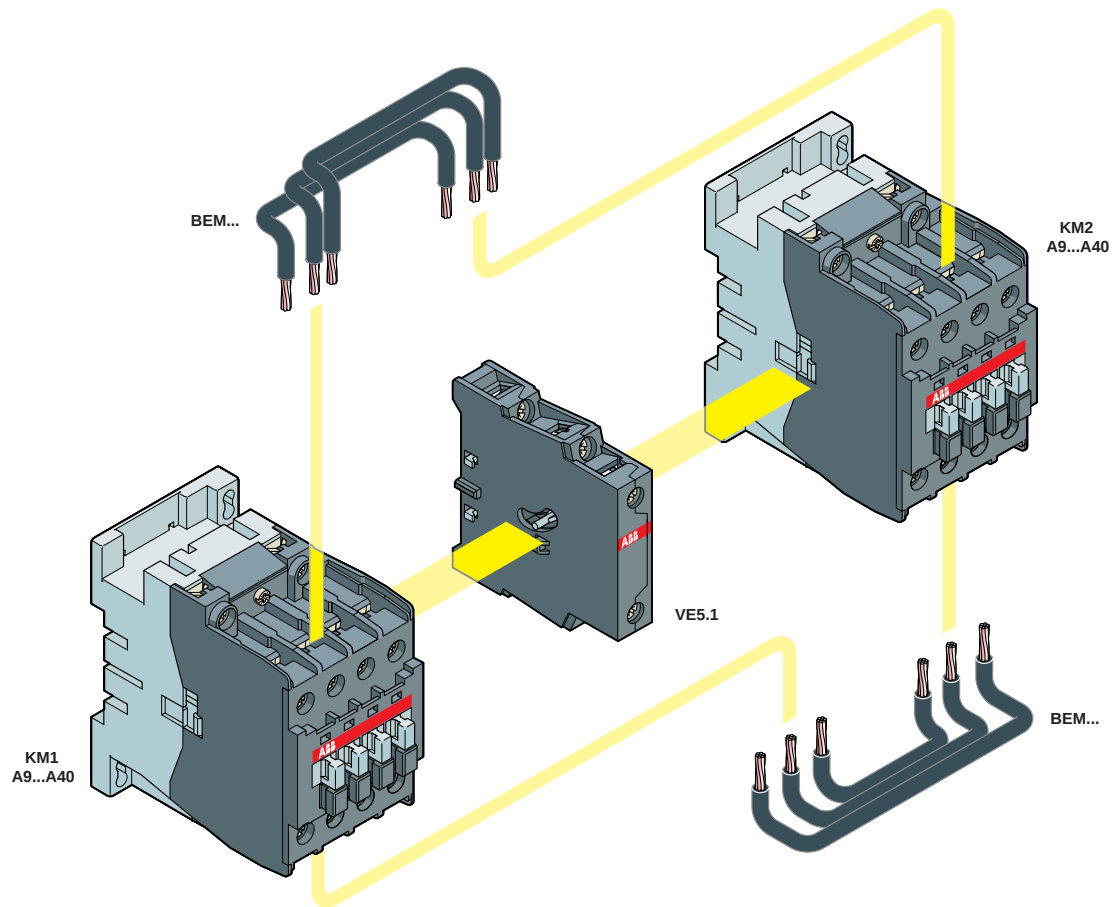
Rated operat. current AC-3	Power AC-3 4-pole motor 50/60 Hz		Line contactor	△ Contactor	△ Contactor	Thermal O/L relay (1) FR1 (see page 2/12)	Required accessories (see table below)
	Nominal voltage V	kW	KM1	KM2	KM3	Type Order code	Reference letter
A	15.5	380-400	7.5	A 9-30-10	A 9-30-10	TA 25 DU	A
	14	415	7.5	1SBL 14 1001 R8 □10	1SBL 14 1001 R8 □10	1SAZ 21 1201 R10 □□	
	6.7	690	5.5				
22	380-400	11	A 12-30-10	A 9-30-10	A 12-30-10	TA 25 DU	A
	21	415	11	1SBL 16 1001 R8 □10	1SBL 14 1001 R8 □10	1SAZ 21 1201 R10 □□	
	9	690	7.5				
30	380-400	15	A 16-30-10	A 12-30-10	A 16-30-10	TA 25 DU	A
	28	415	15	1SBL 18 1001 R8 □10	1SBL 16 1001 R8 □10	1SAZ 21 1201 R10 □□	
	13	690	11				
44	380-400	22	A 26-30-10	A 16-30-10	A 26-30-10	TA 25 DU	B
	40	415	22	1SBL 24 1001 R8 □10	1SBL 18 1001 R8 □10	1SAZ 21 1201 R10 □□	
	17.5	690	15				
50	380-400	25	A 30-30-10	A 26-30-10	A 30-30-10	TA 25 DU	C
	47	415	25	1SBL 28 1001 R8 □10	1SBL 24 1001 R8 □10	1SAZ 21 1201 R10 □□	
	21	690	18.5				
72	380-400	37	A 40-30-10	A 26-30-10	A 40-30-10	TA 42 DU	C
	66	415	37	1SBL 32 1001 R8 □10	1SBL 24 1001 R8 □10	1SAZ 31 1201 R10 □□	
	42	690	37				
85	380-400	45	A 50-30-00	A 30-30-10	A 50-30-00	TA 75 DU	D
	80	415	45	1SBL 35 1001 R8 □00	1SBL 28 1001 R8 □10	1SAZ 32 1201 R10 □□	
	49	690	45				
105	380-400	55	A 63-30-00	A 40-30-10	A 63-30-00	TA 75 DU	D
	96	415	55	1SBL 37 1001 R8 □00	1SBL 32 1001 R8 □10	1SAZ 32 1201 R10 □□	
	66	690	59				
119	380-400	63	A 75-30-00	A 50-30-00	A 75-30-00	TA 75 DU	E
	126	415	70	1SBL 41 1001 R8 □00	1SBL 35 1001 R8 □00	1SAZ 32 1201 R10 □□	
	70	690	63				

(1) The setting current value is: motor rated current $I_n \times 0.58$.

Required accessories

Ref letter	Connection set Type Order code	KM1 Aux. contacts Type Order code	KM2 Aux. contacts Type Order code	KM3 Aux. contacts Type Order code	Timer Type Order code	Mech. interlock. Type Order code
A	BED 16 1SBN 08 1403 R1000				According to the control voltage (50/60Hz) 24 V TE5S-24 1SBN 02 0010 R1001 110...120 V TE5S-120 1SBN 02 0010 R1002 220...240 V TE5S-240 1SBN 02 0010 R1003 380...440 V TE5S-440 1SBN 02 0010 R1004	
B	BED 26 1SBN 08 2403 R1000	CA 5-10 1SBN 01 0010 R1010	—	—		VE 5-1 1SBN 03 0110 R1000
C	BED 40 1SBN 08 2803 R1000					
D	BED 50 1SBN 08 3503 R1000	2 x CA 5-10 1SBN 01 0010 R1010	—	—		
E	BED 75 1SBN 08 4103 R1000	2 x CA 5-10 1SBN 01 0010 R1010	CA 5-10 1SBN 01 0010 R1010	—		VE 5-2 1SBN 03 0210 R1000

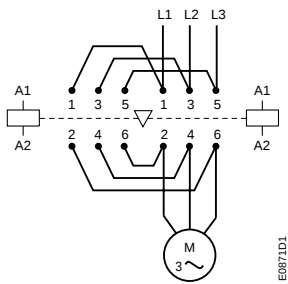
Reversing Contactors Open Type Version



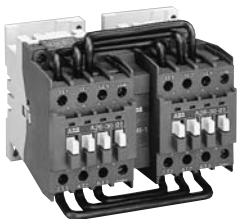
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VOA ..-30M Reversing Contactors

Open Type Version



VOA 9-30M



VOA 26-30M

Application

Reversing contactors for 3-phase asynchronous motors:

- for a maximum operating voltage of 690 V, 50 or 60 Hz,
- for a switching frequency ≤ 600 operations/hour,
- at ambient temperature ≤ 55 °C,
- in conformity with the IEC 947-4-1 standard.

Description, factory-assembled reversing contactors

The reversing contactors are delivered open, wired with their power connections. The control circuit is to be wired by the customer. Protection IP20 for the connecting terminals.

The **VOA ..-30M** reversing contactors are provided for fixing on a plate, or rail 35 x 7.5 mm or 35 x 15 mm according to EN 50022, and comprises:

- 2 side-by-side mounted **A 9-30-01 ... A 40-30-01** 3-pole contactors with the same rating, whose N.C. auxiliary contact is intended for electrical interlocking.
- 1 **VM 5-1** mechanical interlocking device, mechanically preventing one of the contactors from closing as long as the other is closed.
- 1 **BEM ...-30** power connection set connecting the main poles of the contactors.

(Technical data according to the table below).

Type	Insulated copper connections	Cross-section	For reversing contactors
BEM 16-30	rigid solid	2.5 mm ²	VOA 9-30M, VOA 12-30M, VOA 16-30M
BEM 26-30	rigid stranded	6 mm ²	VOA 26-30M
BEM 40-30	rigid stranded	10 mm ²	VOA 30-30M, VOA 40-30M

The hold-in function, if necessary, will be carried out with the help of **CA 5-10** type N.O. auxiliary contacts (1 on each contactor) to be supplied separately (see page 3/2).

VOA ..-30M Reversing Contactors Open Type Version



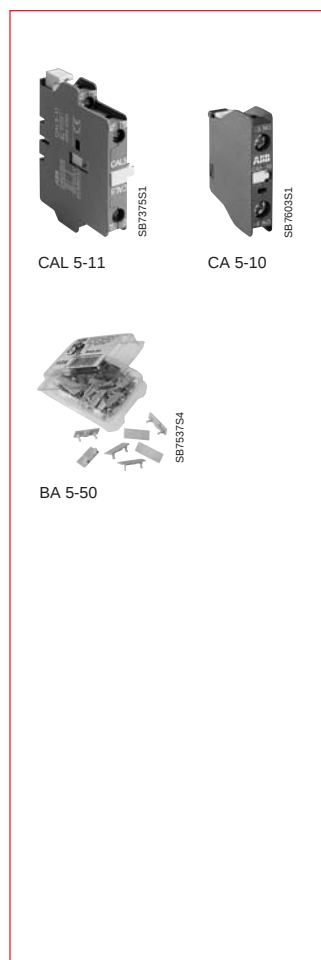
Ordering details

Rated operat. current AC-3 400 V A	Power AC-3 4-pole motor - 50/60 Hz 380 V 415 V 690 V			Type	Order code	Weight in kg
	kW	kW	kW	State control voltage ☐	to be completed with control voltage code ☐	Packing 1 piece
9	4	4	5.5	VOA 9-30M ☐	1SBK 141 600R8 ☐ 00	0.940
12	5.5	5.5	7.5	VOA 12-30M ☐	1SBK 161 600R8 ☐ 00	0.940
17	7.5	9	9	VOA 16-30M ☐	1SBK 181 600R8 ☐ 00	0.940
26	11	11	15	VOA 26-30M ☐	1SBK 241 600R8 ☐ 00	1.470
32	15	15	18.5	VOA 30-30M ☐	1SBK 281 600R8 ☐ 00	1.710
37	18.5	18.5	22	VOA 40-30M ☐	1SBK 321 600R8 ☐ 00	1.720

Control voltage code

Voltage		Code
V 50 Hz	V 60 Hz	8 ☐
24	24	1
42	42	2
48	48	3
110	110 ... 120	4
110 ... 115	115 ... 127	9
220 ... 230	230 ... 240	0
230 ... 240	240 ... 260	8
380 ... 400	400 ... 415	5
400 ... 415	415 ... 440	6
415 ... 440	440	7

Ordering details, contactors accessories



Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1 SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1 SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mnted cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050

>> Reversing contactors in kit form page 3/6
>> Wiring diagrams page 3/3

>> Dimensions page 3/4

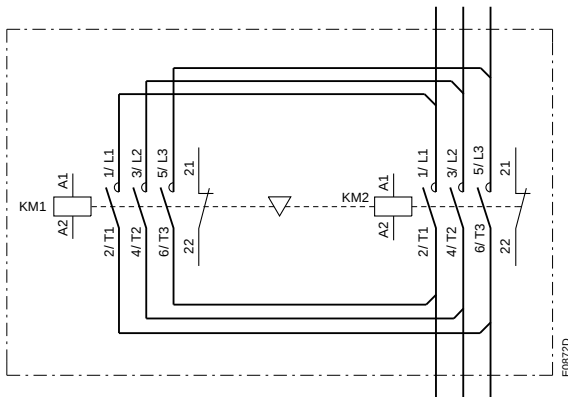
VOA ..-30M Reversing Contactors Open Type Version



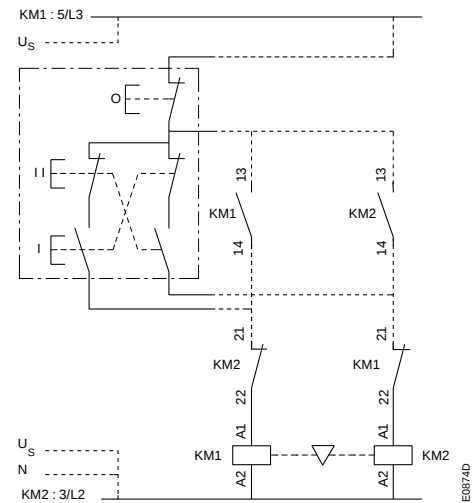
Wiring diagrams

VOA 9-30M ... VOA 40-30M reversing contactors, factory assembled

With VM 5-1 mechanical interlocking, electrical interlocking by built-in auxiliary contacts.



Power circuit



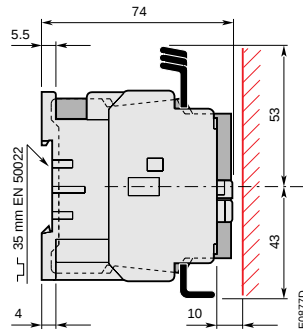
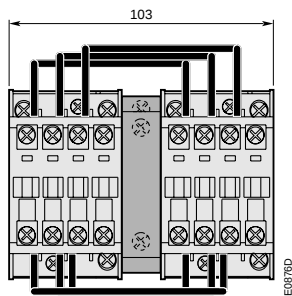
Remote control

For the hold-in contacts (13-14) of the KM1 and KM2 contactors, supply separately 2 x CA 5-10 type N.O. auxiliary contact (see page 3/2).

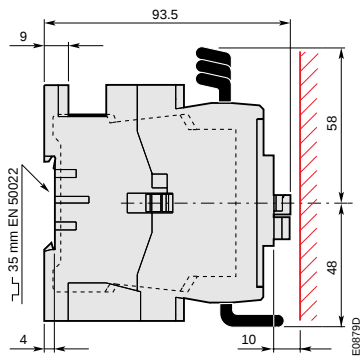
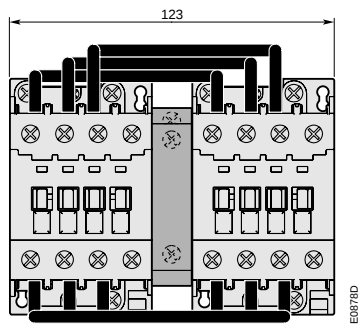
VOA ..-30M Reversing Contactors Open Type Version



Dimensions (in mm)



VOA 9-30M ... VOA 16-30M

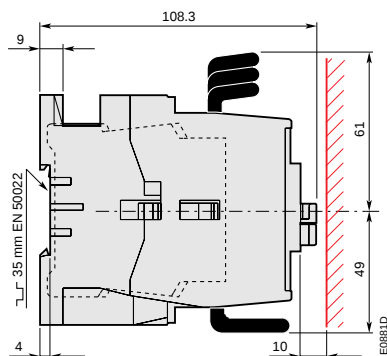
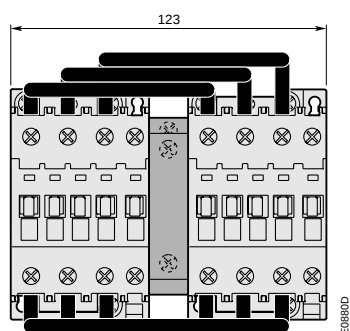


VOA 26-30M

VOA ..-30M Reversing Contactors Open Type Version



Dimensions (in mm)

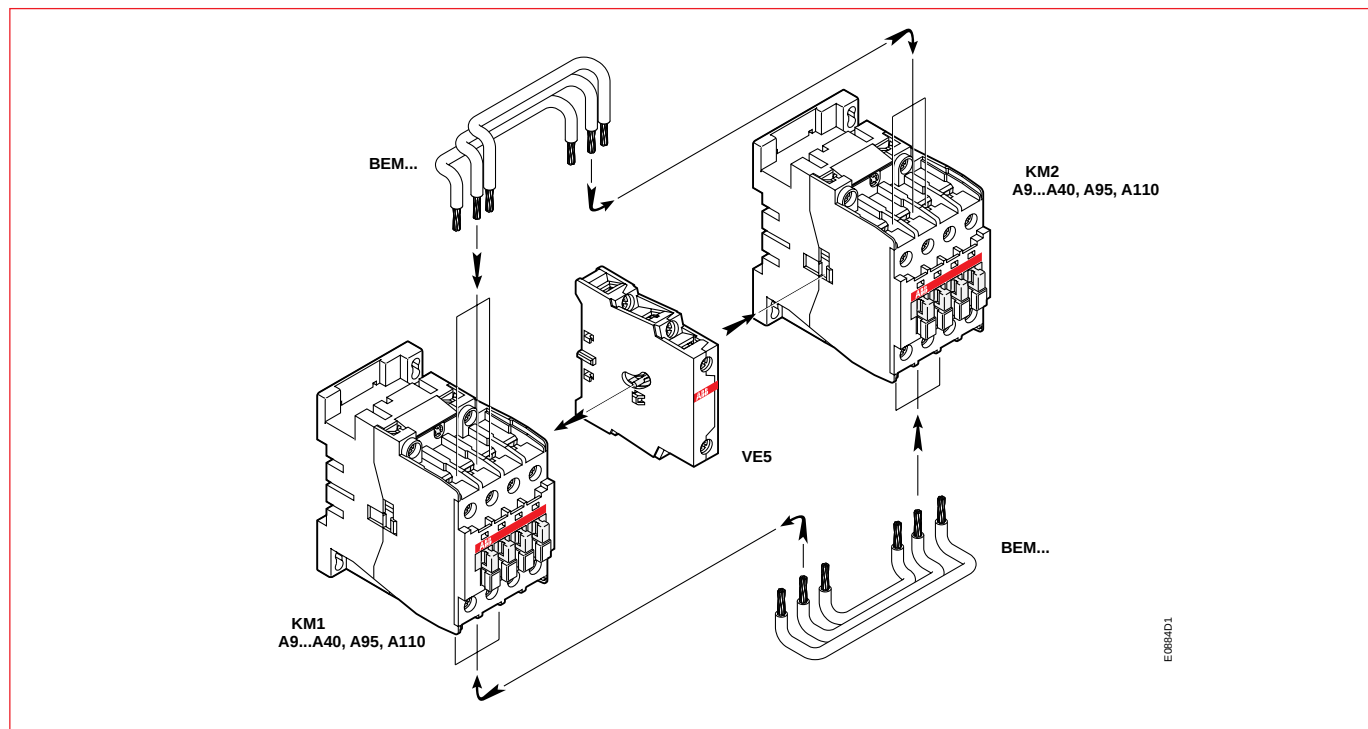


VOA 30-30M, VOA 40-30M

Reversing Contactors in Kit Form Open Type Version



Components for reversing contactors in kit form



Description

Each reversing contactor will include:

- 2 side-by-side mounted 3-pole contactors.

- 1 mechanical and electrical interlocking device.

This device mechanically prevents one of the contactors from closing as long as the other contactor is closed.

Moreover, it is fitted with 2 N.C. auxiliary contacts that should be wired in the control circuit in order to electrically interlock the contactors.

- 1 **BEM...-30** power connection set connecting the main poles of the contactors (technical data according to the table below).

Type	Insulated copper connections	Cross-section	Mounting on contactors
BEM 16-30	rigid solid	2.5 mm ²	A 9-30-10, A 12-30-10, A 16-30-10
BEM 26-30	rigid stranded	6 mm ²	A 26-30-10
BEM 40-30	rigid stranded	10 mm ²	A 30-30-10, A 40-30-10
BEM 110-30	bars	36 mm ²	A 95-30-00, A 110-30-00

The connecting terminals have an IP20 degree of protection.

Fixing by means of a mounting plate or rail 35 x 7.5 mm or 35 x 15 mm according to EN 50022.

Coil voltage codes

The coil voltage codes are to be used to complete the contactor order codes, page 3/7.

□ Coil voltage code		
V 50Hz	V 60Hz	Code 8□
24	24	1
42	42	2
48	48	3
110	110 - 120	4
110 - 115	115 - 127	9
220 - 230	230 - 240	0
230 - 240	240 - 260	8
380 - 400	400 - 415	5
400 - 415	415 - 440	6
415 - 440	440 - 460	7

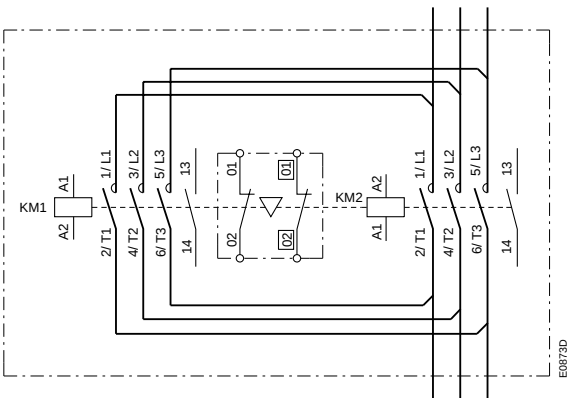
Reversing Contactors in Kit Form Open Type Version



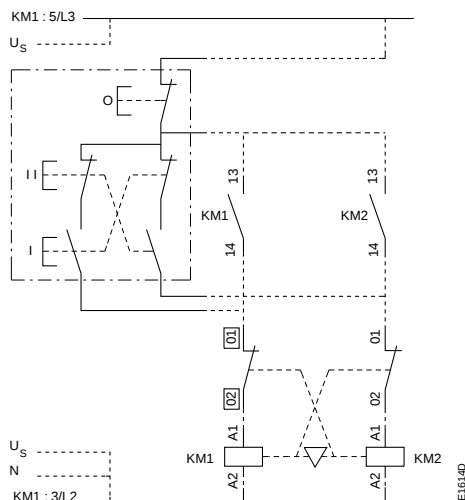
Ordering details

Rated operational current I_e AC-3			Power AC-3 3-phase motor 1500 rpm 50 Hz		Contactors KM1 + KM2 Type state coil voltage: ☐	Interlocking Type Order code	Connection set Type Order code
A			Rated voltage (V)	kW	Order code to be completed with coil voltage code: 8 ☐ (see page 3/6)		
9	380- 400	4			2 x A 9-30-10 ☐ 1SBL 14 1001 R8 ☐ 10	1 x VE 5-1 1SBN 03 0110 R1000	1 x BEM 16-30 1SBN 08 1401 R1000
9	415	4					
7	690	5.5					
12	380-400	5.5			2 x A 12-30-10 ☐ 1SBL 16 1001 R8 ☐ 10		
12	415	5.5					
9	690	7.5					
17	380-400	7.5			2 x A 16-30-10 ☐ 1SBL 18 1001 R8 ☐ 10		
17	415	9					
10	690	9					
26	380-400	11			2 x A 26-30-10 ☐ 1SBL 24 1001 R8 ☐ 10		1 x BEM 26-30 1SBN 08 2401 R1000
26	415	11				1 x VE 5-2 1SBN 03 0210 R1000	1 x BEM 40-30 1SBN 08 2801 R1000
17	690	15					
32	380-400	15			2 x A 30-30-10 ☐ 1SBL 28 1001 R8 ☐ 10		
32	415	15					
21	690	18.5					
37	380-400	18.5			2 x A 40-30-10 ☐ 1SBL 32 1001 R8 ☐ 10		
37	415	18.5					
25	690	22					
96	380-400	45			2 x A 95-30-00 ☐ 1SFL 43 1001 R8 ☐ 00		
96	415	55					
65	690	55					
110	380-400	55			2 x A 110-30-00 ☐ 1SFL 45 1001 R8 ☐ 00		
110	415	59					
82	690	75					

Wiring diagrams



Power circuit

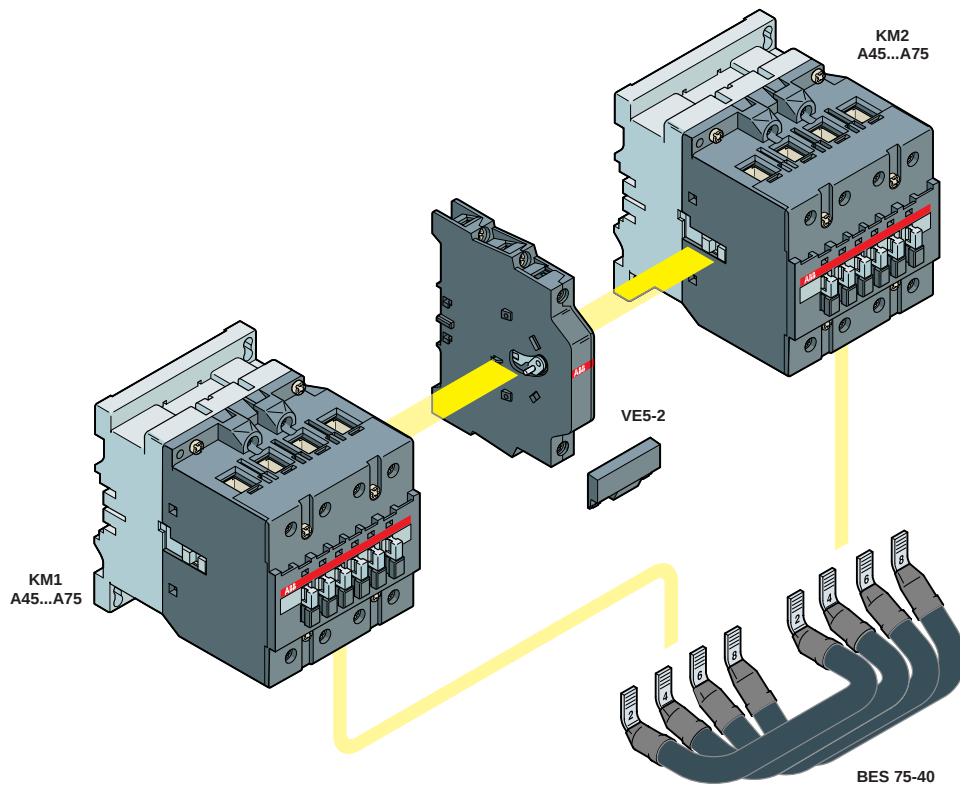


Remote control

A 9 ... A 40 contactors : N.O. auxiliary contacts (13-14) built into the KM1 and KM2 contactors are available for the hold-in function of the KM1, KM2 contactors.

A 95, A 110 contactors : For the hold-in contacts (13-14) of the KM1 and KM2 contactors, supply separately 2 x CA 5-10 type N.O. auxiliary contacts (see page 3/2).

Mains Changeover Contactors Open Type Version

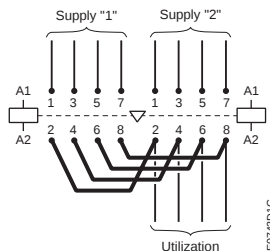


E1106D1

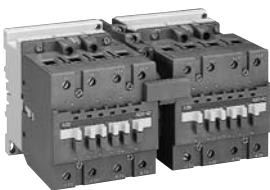
VOA ..-40Z

Mains Changeover Contactors

Open Type Version

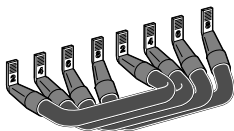


E074SD1G



VOA 50-40Z

SB76054



BES 75-40

E1103D

Application

4-pole mains changeover contactors for switching a two supply utilization circuit, supply "1" and supply "2" according to the block diagram opposite.
– for a maximum operating voltage of 1000 V, 50 or 60 Hz,
– for a switching frequency ≤ 600 cycles/h.

Description, factory-assembled mains changeover contactors

Each **VOA ..-40Z** mains changeover contactor is delivered open, without control and power cables and includes:
– 2 side-by-side mounted **A 45**, **A 50** or **A 75** 4-pole contactors with the same rating,
– 1 **VE 5-2** mechanical and electrical interlocking device between the two contactors.

The **VE 5-2** interlocking device mechanically prevents one of the contactors from closing as long as the other contactor is closed. The N.C. auxiliary contacts incorporated in this device will be wired in the contactor control circuit in order to electrically interlock the two contactors.

Protection IP10 for the main terminals, IP20 for the coil terminals and the interlocking device.

For fixing onto a mounting rail 35 x 15 mm according to EN 50022 or 75 x 25 mm according to EN 50023.

The insulated connection set, in 35 mm² rigid, stranded copper for connecting the downstream terminals is to be supplied separately (see table below).

Ordering details, factory-assembled changeover contactors

Rated operational current I _e AC-1			Short-circuit protection fuses	Type	Order code	Weight in kg
$\theta \leq 40^\circ\text{C}$	$\theta \leq 55^\circ\text{C}$	$\theta \leq 70^\circ\text{C}$				
A	A	A	gG (1)	State coil voltage: ☐	to be completed with coil voltage code 8 ☐	Pack ^{ing} 1 piece
70	60	50	80	VOA 45-40Z ☐	1SBK 33 1900 R8 ☐ 00	3.020
100	85	70	100	VOA 50-40Z ☐	1SBK 35 1900 R8 ☐ 00	3.020
125	105	85	160	VOA 75-40Z ☐	1SBK 41 1900 R8 ☐ 00	3.020

(1) U_e ≤ 500 V a.c.

Coil voltage code		
V 50Hz	V 60Hz (2)	Code 8 ☐
24	24	1
42	42	2
48	48	3
110	110 - 120	4
110 - 115	115 - 127	9
220 - 230	230 - 240	0
230 - 240	240 - 260	8
380 - 400	400 - 415	5
400 - 415	415 - 440	6

(2) **Note:** in 60 Hz, the utilization of auxiliary contacts or of a pneumatic timer brings the voltage tolerance to 0.9 - 1.1 U_c (instead of 0.85 - 1.1 U_c).

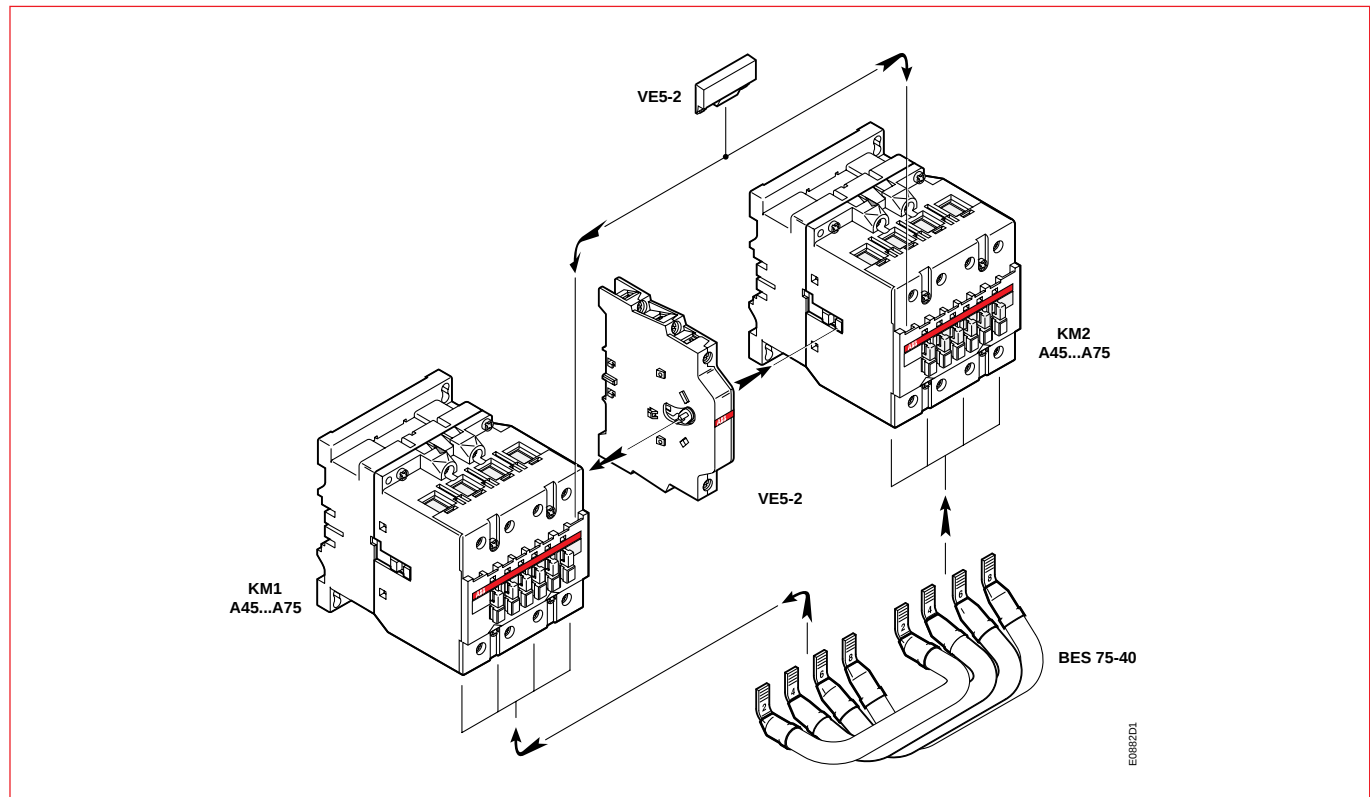
Ordering details, connection set

Utilization	Type	Order code	Weight in kg
			Pack ^{ing} 1 piece
Connecting the downstream terminals	BES 75-40	1SBC 08 3302 R1000	0.400

VOA ..-40Z Mains Changeover Contactors Open Type Version



Components for mains changeover contactors, in kit form



Ordering details, components for mains changeover contactors, in kit form

Rated operational current I _e AC-1 θ ≤ 40 °C θ ≤ 55 °C θ ≤ 70 °C			Contactors KM1 + KM2 Type state coil voltage: Order code to be completed with coil voltage code 8 (see page 4/1)	Interlocking Type Order code	Connection set Type Order code
A	A	A			
70	60	50	2 x A 45-40-00 1SBL 33 1201 R8 00	1 x VE 5-2 1SBN 03 0210 R1000	1 x BES 75-40 1SBN 08 3302 R1000
100	85	70	2 x A 50-40-00 1SBL 35 1201 R8 00		
125	105	85	2 x A 75-40-00 1SBL 41 1201 R8 00		

Ordering details, accessories for mains changeover contactors, factory-assembled or in kit form

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1 SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1 SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mntd cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1 SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1 SBN 07 3552 R1002	2	0.006

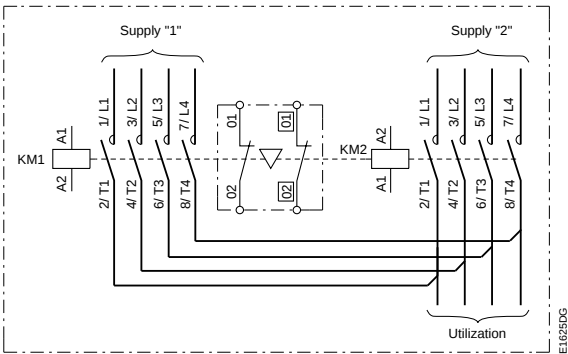
VOA ..-40Z

Mains Changeover Contactors

Open Type Version

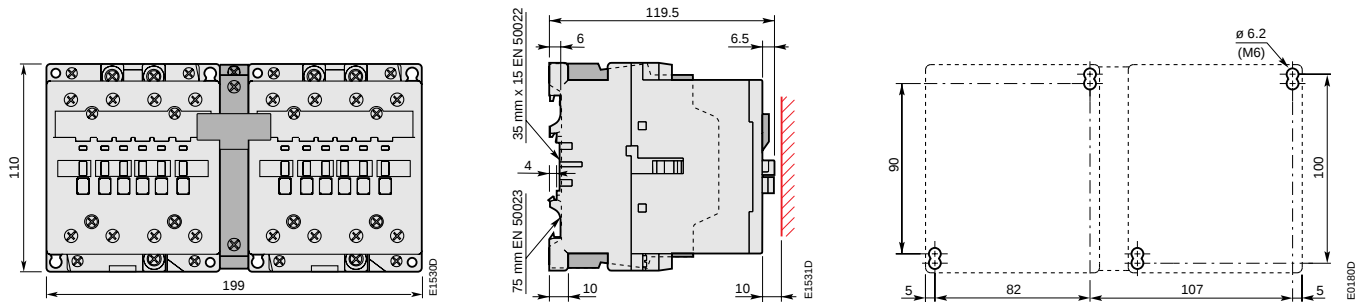


Wiring diagram, for mains changeover contactors factory-assembled or in kit form

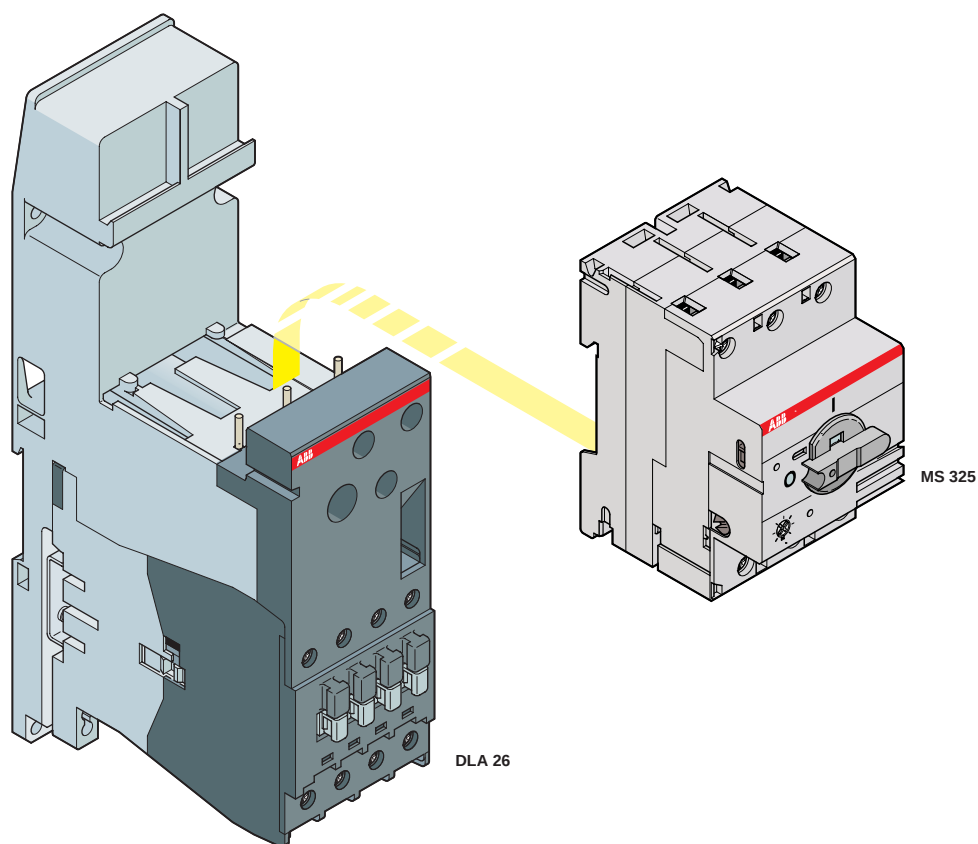


4

Dimensions (in mm), mains changeover contactors factory-assembled or in kit form



D.O.L. Starters Open Type Version with Base for Manual Motor Starter



E0717D1

DLA... version

DLA

D.O.L. Starters, Open Type Version

with Base for Manual Motor Starter



MS 325



DLA 26

General information

DLA direct-on- line starters are mounted on a base suitable for fitting of a manual motor starter type **MS 325**, for overload and short-circuit protection.

Please refer to table on page 5/2 for selection of the required type of coordination.

The advantages in utilization are as follow:

- starters clip onto 35 x 15 mm mounting rail (EN 50022),
- direct mounting of the **MS 325** manual motor starter and tightening of its terminal screws onto the connections that are built into the base,
- contactor coil terminals are accessible on the bottom part.

Application

Starters for controlling three-phase asynchronous motors:

- up to an operational voltage of 415 V - 50 or 60 Hz,
- for a starting time of 1.5 s max.
and a switching frequency ≤ 15 starts an hour with a load factor of 80 %
or ≤ 30 starts an hour with a load factor of 50 %,
- with an ambient temperature near the devices ≤ 50 °C,
- in compliance with standards EN 60947-4-1/IEC 947-4-1 and EN 60204-1/IEC 60204-1.

Coordination

In the event of a short-circuit, the combination starter, in addition to very high electrodynamic stresses, is subjected to thermal stresses proportional to short-circuit time.

The capacity to withstand these high stresses depends on the perfect coordination of the devices which make up the combination starter.

Standard EN 60947-4-1/IEC 947-4-1 defines two types of coordination according to the anticipated level of service continuity. The damage limits for the control gear are defined.

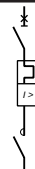
Type 1 : In the event of a short-circuit, the starter causes no danger to persons or facilities, and may not be able to function thereafter without repairs being made or parts being replaced.

Type 2 : In the event of a short-circuit, the starter causes no danger to persons or facilities, and should be able to function thereafter. The risk of contact welding does exist.

DLA

D.O.L. Starters, Open Type Version

with Base for Manual Motor Starter



DLA 9



DLA 26

Description

Each **DLA** starter contains:

- A three-pole contactor **A9... A26** with hold-in contact 13-14. The coil terminals A1 and A2 are located on the bottom part of the contactor.
- a base, supporting the contactor, equipped with power interconnections and allowing mounting of an **MS 325** manual motor starter.

An aperture centrally positioned in the front plate, allows to exert pressure on the lock in order to unfasten the starter from its supporting rail.

Coordination tables

The tables below show, for each of the 2 coordination types, the types of **MS 325** manual motor starters to be combined with the **DLA** starters, according to AC-3 currents and motor powers.

Motor power AC-3 and nominal current Three-phase cage motor 1500 rpm 380 V - 400 V		Manual motor starter Setting range	Manual motor starter Type	DLA starter Type	Copper cable	Max. current authorized for combin.
kW	A	A ... A		Coil voltage in clear text : See table below	Minimum cross-section mm ²	A
Coordination type 1, 400 V - 50 Hz, 50 kA, normal starting						
0.37	1.2	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5	1.6
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5	1.6
0.75	2	1.6 ... 2.5	MS 325 - 2.5	DLA 9-30	1.5	2.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	DLA 9-30	1.5	4
1.5	3.5	2.5 ... 4.0	MS 325 - 4	DLA 9-30	1.5	4
2.2	5	4.0 ... 6.3	MS 325 - 6.3	DLA 9-30	1.5	6.3
3	6.6	6.3 ... 9.0	MS 325 - 9	DLA 9-30	1.5	9
4	8.5	6.3 ... 9.0	MS 325 - 9	DLA 9-30	1.5	9
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	DLA 12-30	1.5	12
7.5	15.2	12.5 ... 16.0	MS 325 - 16	DLA 16-30	2.5	16
11	22	16.0 ... 25.0	MS 325 - 25	DLA 26-30	4	25
Coordination type 2, 400 V - 50 Hz, 25 kA, normal starting						
0.37	1.2	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5	1.6
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5	1.6
0.75	2	1.6 ... 2.5	MS 325 - 2.5	DLA 9-30	1.5	2.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	DLA 12-30	1.5	4
1.5	3.5	2.5 ... 4.0	MS 325 - 4	DLA 12-30	1.5	4
2.2	5	4.0 ... 6.3	MS 325 - 6.3	DLA 26-30	1.5	6.3
3	6.6	6.3 ... 9.0	MS 325 - 9	DLA 26-30	1.5	9
4	8.5	6.3 ... 9.0	MS 325 - 9	DLA 26-30	1.5	9
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	DLA 26-30	1.5	12.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	DLA 26-30	2.5	16
11	22	16.0 ... 25.0	MS 325 - 25	DLA 26-30	4	25

Coil voltage codes :

Voltage V 50 Hz	V 60 Hz	Code 8 ☐
24	24	1
48	48	3
110	110...120	4
220...230	230...240	0
230...240	240...260	8
380...400	400...415	5
400...415	415...440	6

Ordering details

Motor power	Rated operat. current	Built-in auxiliary contacts	Type	Order code to be completed with the coil voltage code : 8 ☐	Unit weight kg
AC-3 380 V - 400 V kW	AC-3 400 V A		Coil voltage in clear text : See table opposite	See table opposite	Pack ^{ing} 1 unit
4	9	1 -	DLA 9-30	1SBK 140 403 R8 ☐ 00	0.650
5.5	12	1 -	DLA 12-30	1SBK 160 403 R8 ☐ 00	0.650
7.5	17	1 -	DLA 16-30	1SBK 180 403 R8 ☐ 00	0.650
11	25	1 -	DLA 26-30	1SBK 240 403 R8 ☐ 00	0.930

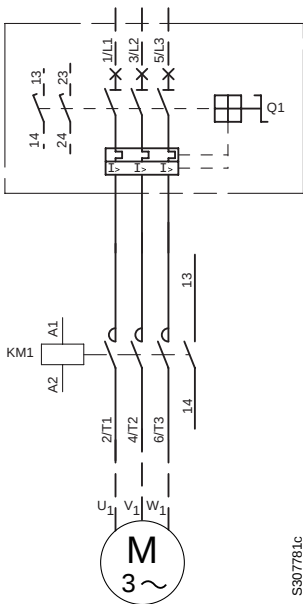
DLA

D.O.L. Starters, Open Type Version

with Base for Manual Motor Starter



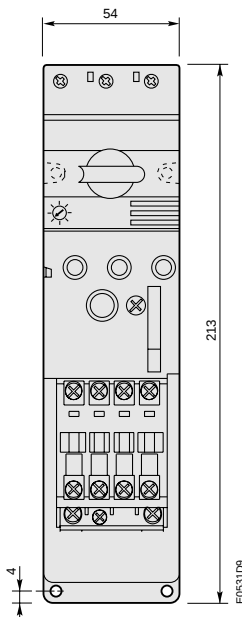
Wiring diagrams



Power circuit

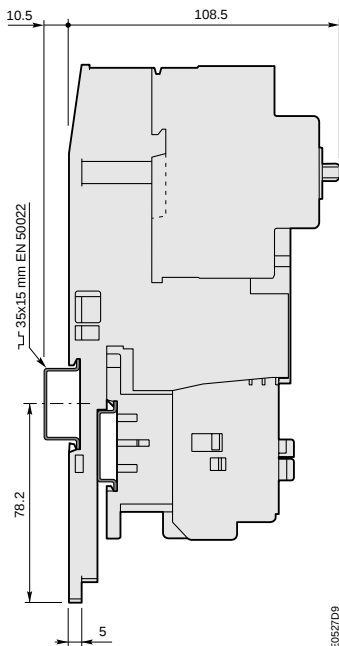
S307781c

Dimensions (in mm)



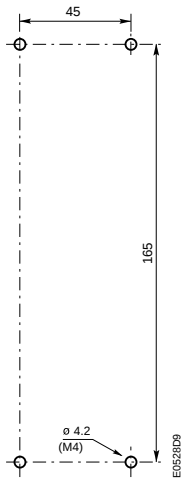
DLA 9 ... DLA 16

E0831D9



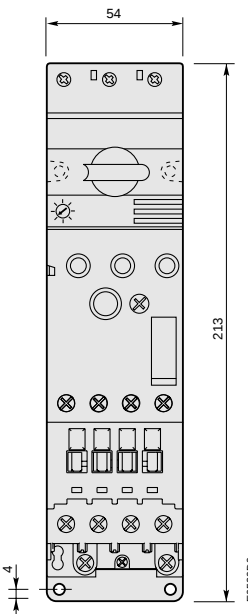
E0527D9

Drilling diagram



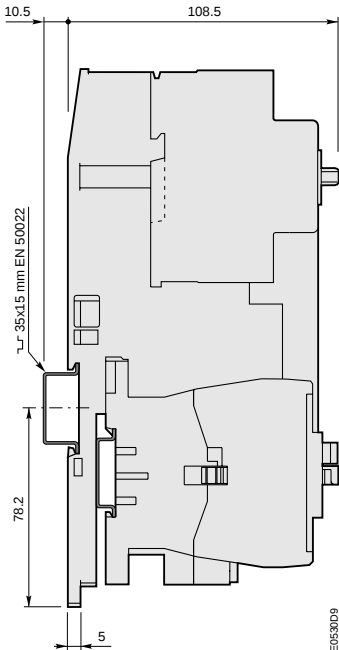
DLA 9 ... DLA 26

E0528D9



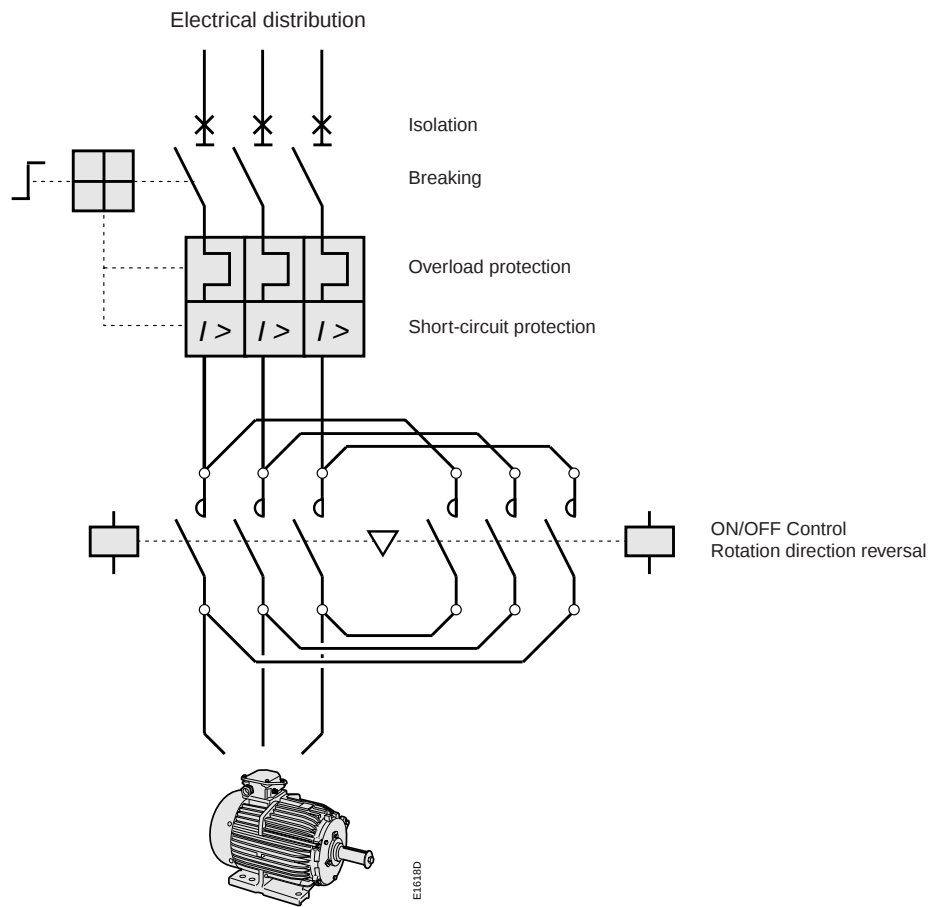
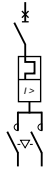
DLA 26

E0529D9



E0530D9

Reversing Starters Open Type Version with Base for Manual Motor Starter



Block diagram

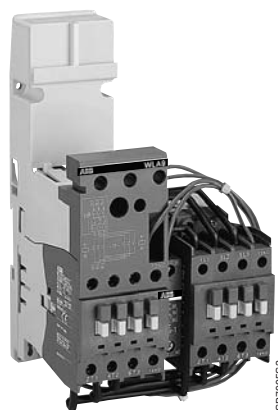
WLA Reversing Starters

Open Type Version

with Base for Manual Motor Starter



MS 325



WLA 26

General information

WLA reversing starters are mounted on a base suitable for fitting of a manual motor starter type **MS 325**, for overload and short-circuit protection.

Please refer to table on page 6/2 for selection of the required type of coordination.

The advantages in utilization are as follow:

- starters clip onto 35 x 15 mm mounting rail (EN 50022),
- direct mounting of the **MS 325** manual motor starter and tightening of its terminal screws onto the connections that are built into the base,
- contactor coil terminals are accessible on the bottom part.

Application

Starters for controlling three-phase asynchronous motors:

- up to an operational voltage of 415 V - 50 or 60 Hz,
- for a starting time of 1.5 s max.
and a switching frequency ≤ 15 starts an hour with a load factor of 80 %
or ≤ 30 starts an hour with a load factor of 50 %,
- with an ambient temperature near the devices ≤ 50 °C,
- in compliance with standards EN 60947-4-1/IEC 947-4-1 and EN 60204-1/IEC 60204-1.

Coordination

In the event of a short-circuit, the combination starter, in addition to very high electrodynamic stresses, is subjected to thermal stresses proportional to short-circuit time.

The capacity to withstand these high stresses depends on the perfect coordination of the devices which make up the combination starter.

Standard EN 60947-4-1/IEC 947-4-1 defines two types of coordination according to the anticipated level of service continuity. The damage limits for the control gear are defined.

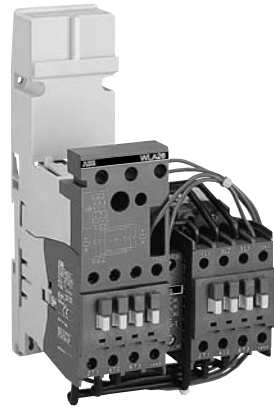
Type 1 : In the event of a short-circuit, the starter causes no danger to persons or facilities, and may not be able to function thereafter without repairs being made or parts being replaced.

Type 2 : In the event of a short-circuit, the starter causes no danger to persons or facilities, and should be able to function thereafter. The risk of contact welding does exist.

WLA Reversing Starters Open Type Version with Base for Manual Motor Starter



WLA 9



WLA 26

Description

Each **WLA** starter contains:

- two three-pole contactors of identical rating **A9... A26** juxtaposed.

The hold-in function is performed on each contactor by the built-in auxiliary contact 13-14. The coil terminals A1 and A2 are located on the bottom part of the contactors.

- a mechanical and electrical interlocking device VE5-1.

This device mechanically prevents closing of one of the contactors as long as the other is closed. Moreover, it is equipped with 2 normally closed auxiliary contacts inserted in the control circuit in order to electrically interlock the contactors.

- power connections.

- a base supporting the contactors and allowing mounting of an **MS 325** manual motor starter.

An aperture centrally positioned in the front plate, allows to exert pressure on the lock in order to unfasten the starter from its supporting rail.

Coordination tables

The tables below show, for each of the 2 coordination types, the types of **MS 325** manual motor starters to be combined with the **WLA** starters, according to AC-3 currents and motor powers.

Motor power AC-3 and nominal current Three-phase cage motor 1500 rpm 380 V - 400 V		Manual motor starter Setting range	Manual motor starter Type	WLA starter Type	Copper cable	Max. current authorized for combin.
kW	A	A ... A		Coil voltage in clear text : See table below	Minimum cross-section mm ²	A
Coordination type 1, 400 V - 50 Hz, 50 kA, normal starting						
0.37	1.2	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5	1.6
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5	1.6
0.75	2	1.6 ... 2.5	MS 325 - 2.5	WLA 9-30	1.5	2.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	WLA 9-30	1.5	4
1.5	3.5	2.5 ... 4.0	MS 325 - 4	WLA 9-30	1.5	4
2.2	5	4.0 ... 6.3	MS 325 - 6.3	WLA 9-30	1.5	6.3
3	6.6	6.3 ... 9.0	MS 325 - 9	WLA 9-30	1.5	9
4	8.5	6.3 ... 9.0	MS 325 - 9	WLA 9-30	1.5	9
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	WLA 12-30	1.5	12
7.5	15.2	12.5 ... 16.0	MS 325 - 16	WLA 16-30	2.5	16
11	22	16.0 ... 25.0	MS 325 - 25	WLA 26-30	4	25
Coordination type 2, 400 V - 50 Hz, 25 kA, normal starting						
0.37	1.2	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5	1.6
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5	1.6
0.75	2	1.6 ... 2.5	MS 325 - 2.5	WLA 9-30	1.5	2.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	WLA 12-30	1.5	4
1.5	3.5	2.5 ... 4.0	MS 325 - 4	WLA 12-30	1.5	4
2.2	5	4.0 ... 6.3	MS 325 - 6.3	WLA 26-30	1.5	6.3
3	6.6	6.3 ... 9.0	MS 325 - 9	WLA 26-30	1.5	9
4	8.5	6.3 ... 9.0	MS 325 - 9	WLA 26-30	1.5	9
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	WLA 26-30	1.5	12.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	WLA 26-30	2.5	16
11	22	16.0 ... 25.0	MS 325 - 25	WLA 26-30	4	25

Coil voltage codes :

Voltage V 50 Hz	V 60 Hz	Code 8 ☐
24	24	1
48	48	3
110	110...120	4
220...230	230...240	0
230...240	240...260	8
380...400	400...415	5
400...415	415...440	6

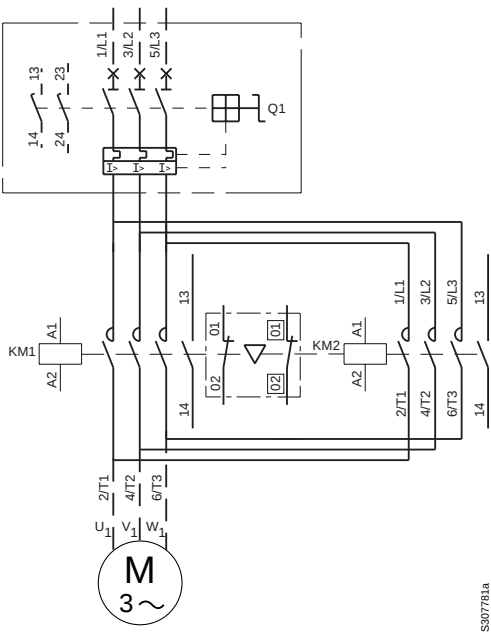
Ordering details

Motor power	Rated operat. current	Built-in auxiliary contacts	Type	Order code to be completed with the coil voltage code : 8 ☐	Unit weight kg
AC-3 380 V - 400 V kW	AC-3 400 V A		Coil voltage in clear text : See table opposite	See table opposite	Pack ^{ing} 1 unit
4	9	1 -	WLA 9-30	1SBK 141 401 R8 ☐ 00	1.090
5.5	12	1 -	WLA 12-30	1SBK 161 401 R8 ☐ 00	1.090
7.5	17	1 -	WLA 16-30	1SBK 181 401 R8 ☐ 00	1.090
11	25	1 -	WLA 26-30	1SBK 241 401 R8 ☐ 00	1.680

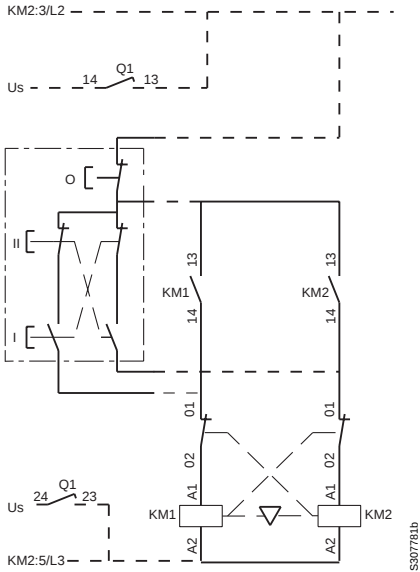
WLA Reversing Starters Open Type Version with Base for Manual Motor Starter



Wiring diagrams

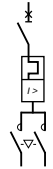


Power circuit

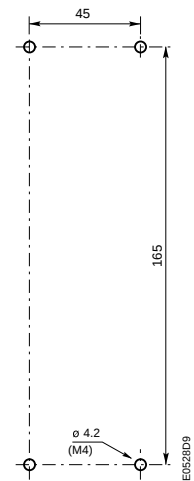
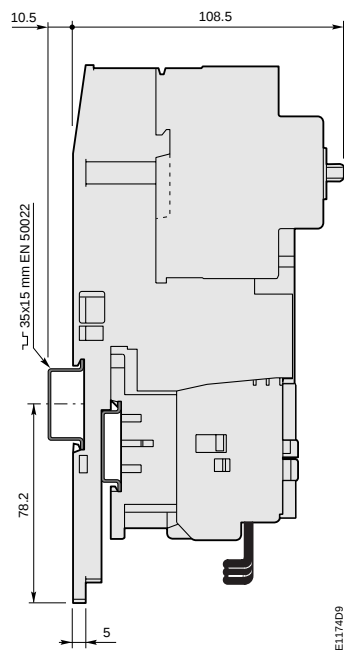
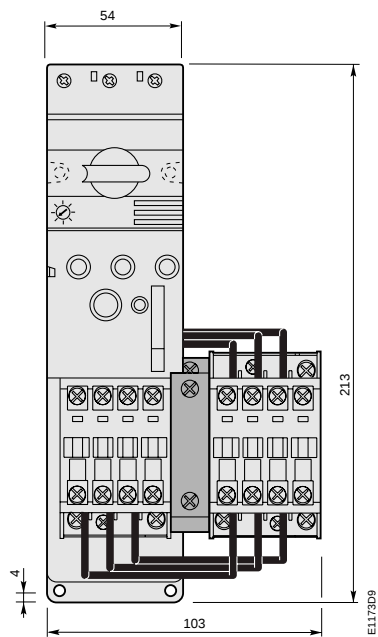


Remote control

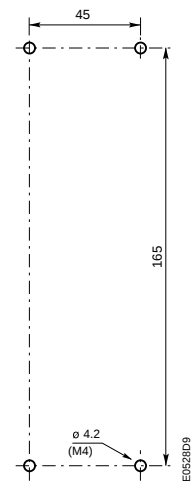
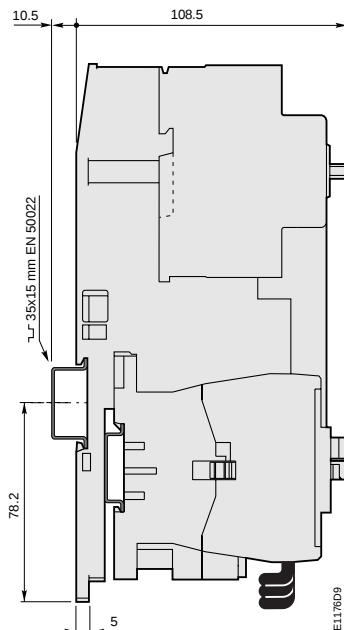
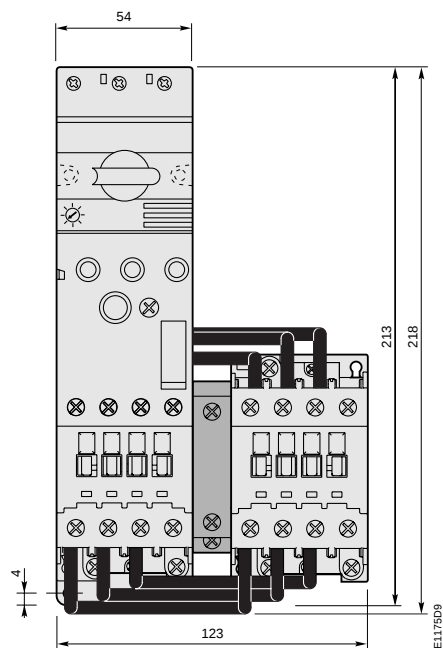
WLA Reversing Starters Open Type Version with Base for Manual Motor Starter



Dimensions (in mm)



WLA 9 ... WLA 16



WLA 26

Notes

6



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Star-Delta Starters with Associated Manual Motor Starter

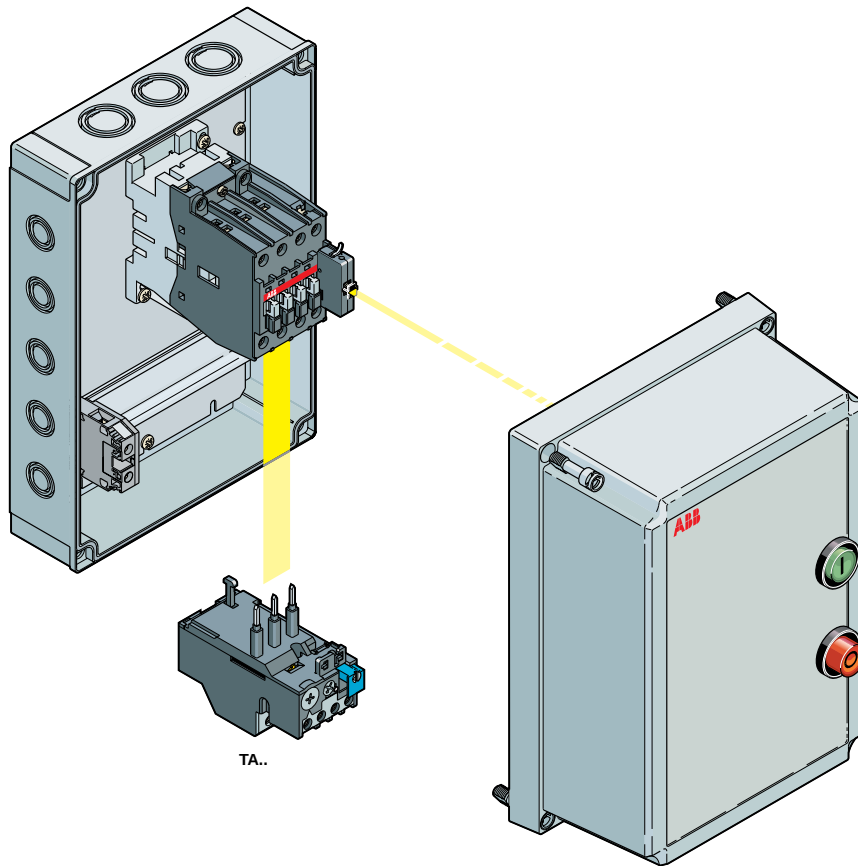
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Enclosed D.O.L. Starters

Protection by Thermal O/L Relay



E1365D1

DRA.. version

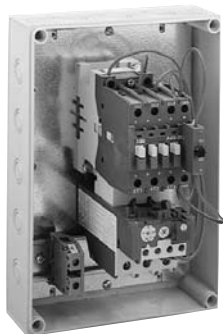
DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay



DYA 9-30



DRA 40-30 + TA 42 DU



DEA 50-30

Application

- Starters for the control of three-phase asynchronous motors
- up to an operational voltage of 690 V, 50 or 60 Hz,
 - for a starting time of 1.5 s maximum,
and a switching frequency ≤ 15 starts/hour with a load factor of 80 %
or ≤ 30 starts/hour with a load factor of 50 %,
 - at an ambient temperature ≤ 40 °C around the enclosure,
 - in conformity with EN 60947-4-1/IEC 947-4-1 standards.

Description

Each starter is delivered assembled, cabled by us and contains:

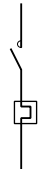
- 1 three-pole contactor. Rating from 9 to 110 A AC-3, 400 V.
- 1 hold-in contact.
- The space for the thermal O/L relay.
The thermal O/L relay will be chosen according to motor nominal current and supplied separately in kit form.
The plunger index will be positioned on R/O.
- Two control circuit connection versions:
 - phase-to-phase control supply,
 - control supply for you to connect: separate supply, or phase-to-neutral.
- 1 PE terminal for connection of the external protective conductor (on DWA, DYA and DRA enclosures).
- 1 earth bonding terminal (on DEA enclosure).
- 1 enclosure equipped with:
 - 1 green flush "I" ON pushbutton,
 - 1 red protruding "O" OFF/RESET pushbutton.

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DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay



Ordering details (Order the thermal O/L relay separately, see page 7/3)

Rated operat. current	Power AC-3 4-pole motor - 50/60 Hz 380 V 400 V 415 V 690 V			Short-circuit protection * Type 2 co-ordination as per EN 60947-4-1/IEC 947-4-1 380-400 V aM fuses gG fuses		Type State control voltage ☐	Order code to be completed with the following codes - control voltage ☐ - control supply ☐	Weight in kg Packing 1 piece
AC-3 400 V A	kW	kW	kW					
Starters in IP 43 plastic enclosure - Fire resistance as per UL 94 V0								
9	4	4	5.5	10	25	DWA 9-30 ☐	1SBK 140 ☐ 18R8 ☐ 00	0.810
12	5.5	5.5	7.5	16	32	DWA 12-30 ☐	1SBK 160 ☐ 18R8 ☐ 00	0.810
17	7.5	9	9	20	32	DWA 16-30 ☐	1SBK 180 ☐ 18R8 ☐ 00	0.810
Starters in IP 65 plastic enclosure - Fire resistance as per UL 94 V0								
9	4	4	5.5	10	25	DYA 9-30 ☐	1SBK 140 ☐ 28R8 ☐ 00	0.810
12	5.5	5.5	7.5	16	32	DYA 12-30 ☐	1SBK 160 ☐ 28R8 ☐ 00	0.810
17	7.5	9	9	20	32	DYA 16-30 ☐	1SBK 180 ☐ 28R8 ☐ 00	0.810
Starters in IP 65 plastic enclosure - Fire resistance as per UL 94 V2								
26	11	11	15	25	50	DRA 26-30 ☐	1SBK 240 ☐ 22R8 ☐ 00	2.450
32	15	15	18.5	32	63	DRA 30-30 ☐	1SBK 280 ☐ 22R8 ☐ 00	2.560
37	18.5	18.5	22	40	80	DRA 40-30 ☐	1SBK 320 ☐ 22R8 ☐ 00	2.560
Starters in IP 55 sheet metal enclosure								
50	22	25	30	50	100	DEA 50-30 ☐	1SBK 350 ☐ 42R8 ☐ 00	3.330
65	30	37	37	63	125	DEA 63-30 ☐	1SBK 370 ☐ 42R8 ☐ 00	4.460
75	37	40	40	100	160	DEA 75-30 ☐	1SBK 410 ☐ 42R8 ☐ 00	4.460

* For other short-circuit protection devices, please consult our co-ordination tables.

Control supply code ☐

The control circuit is to be connected by you: code 0

D.A. Cod 0G

Control voltage code 8 ☐

The control circuit is supplied phase-to-phase: code 1

D.A. Cod 1

Available for voltages in the shaded area opposite

Voltage V 50 Hz	V 60 Hz	Code 8 ☐
24	24	1
42	42	2
48	48	3
110	110 ... 120	4
110 ... 115	115 ... 127	9
220 ... 230	230 ... 240	0
230 ... 240	240 ... 260	8
380 ... 400	400 ... 415	5
400 ... 415	415 ... 440	6

DWA, DYA, DRA, DEA Enclosed D.O.L. Starters Protection by Thermal O/L Relay



DWA 9-30 SB

DYA SB



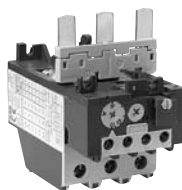
TA 25 DU

SB738S2



TA 42 DU

SB7361S3



TA 75 DU

SB738FS2

Version without pushbutton

Enclosure	Type	Order code to be completed with the following codes - control voltage ☐ - control supply ☐ (see page 7/2)	Weight in kg Packing 1 piece
IP65 plastic ☐ fire resistance as per UL 94 V0	DYA 9-30 SB ☐ DYA 12-30 SB ☐ DYA 16-30 SB ☐	1SBK 140 ☐ 26R8 ☐ 00 1SBK 160 ☐ 26R8 ☐ 00 1SBK 180 ☐ 26R8 ☐ 00	0.780 0.780 0.780
IP65 plastic ☐ fire resistance as per UL 94 V2	DRA 26-30 SB ☐ DRA 30-30 SB ☐ DRA 40-30 SB ☐	1SBK 240 ☐ 20R8 ☐ 00 1SBK 280 ☐ 20R8 ☐ 00 1SBK 320 ☐ 20R8 ☐ 00	2.410 2.520 2.520
IP55 sheet metal	DEA 50-30 SB ☐ DEA 63-30 SB ☐ DEA 75-30 SB ☐	1SBK 350 ☐ 40R8 ☐ 00 1SBK 370 ☐ 40R8 ☐ 00 1SBK 410 ☐ 40R8 ☐ 00	3.280 4.410 4.410

Consult us for other versions

Ordering details, thermal O/L relays

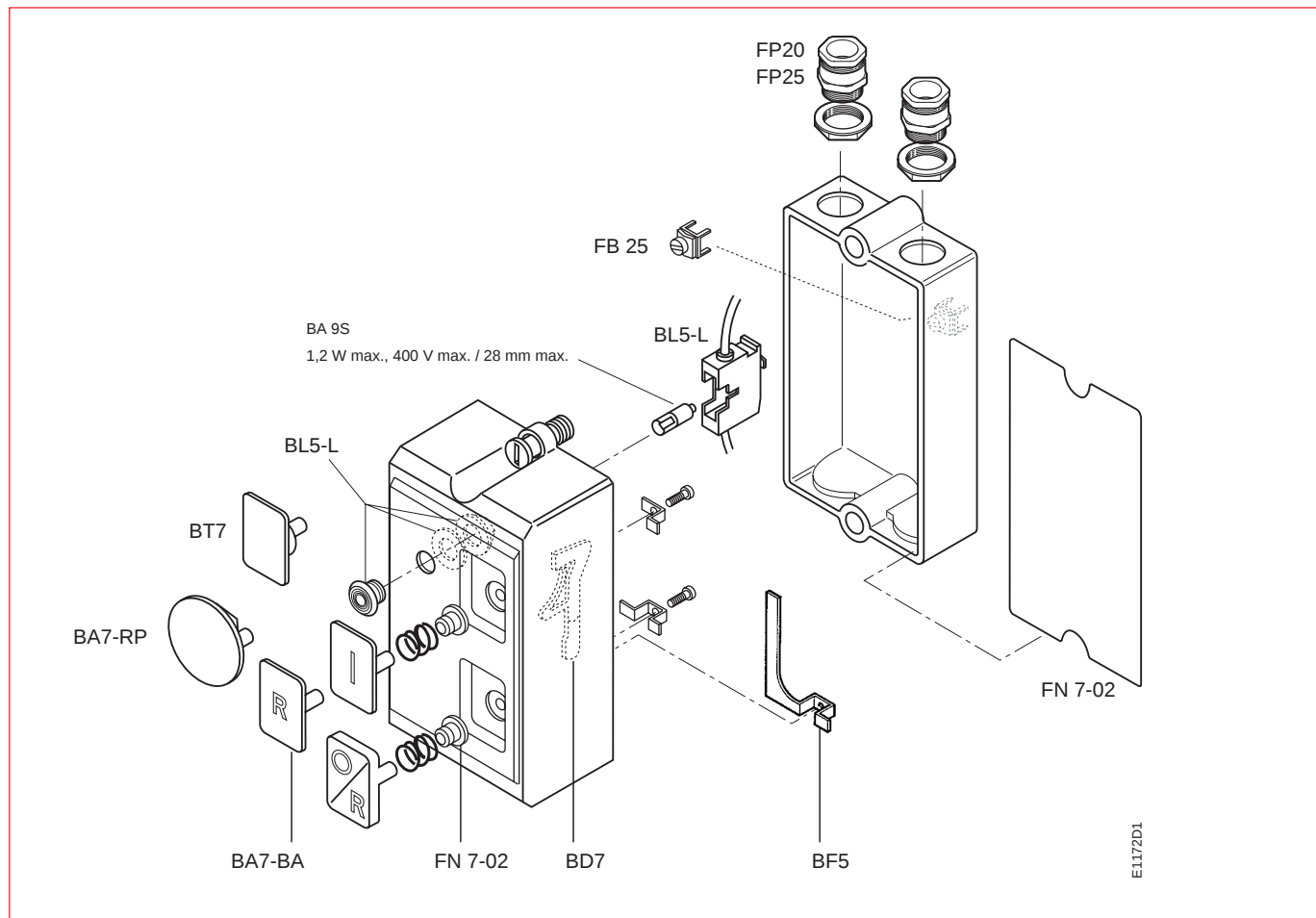
Starter	Setting range	Type	Order code	Weight in kg Packing 1 piece
	A ... A			
D.A 9-30	0.1 ... 0.16	TA 25 DU 0.16	1SAZ 21 1201 R1005	0.150
to	0.16 ... 0.25	TA 25 DU 0.25	1SAZ 21 1201 R1009	0.150
D.A 30-30	0.25 ... 0.4	TA 25 DU 0.4	1SAZ 21 1201 R1013	0.150
	0.4 ... 0.63	TA 25 DU 0.63	1SAZ 21 1201 R1017	0.150
	0.63 ... 1.0	TA 25 DU 1.0	1SAZ 21 1201 R1021	0.150
	1.0 ... 1.4	TA 25 DU 1.4	1SAZ 21 1201 R1023	0.150
	1.3 ... 1.8	TA 25 DU 1.8	1SAZ 21 1201 R1025	0.150
	1.7 ... 2.4	TA 25 DU 2.4	1SAZ 21 1201 R1028	0.150
	2.2 ... 3.1	TA 25 DU 3.1	1SAZ 21 1201 R1031	0.150
	2.8 ... 4.0	TA 25 DU 4.0	1SAZ 21 1201 R1033	0.150
	3.5 ... 5.0	TA 25 DU 5.0	1SAZ 21 1201 R1035	0.150
	4.5 ... 6.5	TA 25 DU 6.5	1SAZ 21 1201 R1038	0.150
	6.0 ... 8.5	TA 25 DU 8.5	1SAZ 21 1201 R1040	0.150
	7.5 ... 11	TA 25 DU 11	1SAZ 21 1201 R1043	0.150
	10 ... 14	TA 25 DU 14	1SAZ 21 1201 R1045	0.150
	13 ... 19	TA 25 DU 19	1SAZ 21 1201 R1047	0.150
	18 ... 25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24 ... 32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
DRA 40-30	18 ... 25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22 ... 32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
	29 ... 42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
DEA 50-30	18 ... 25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
to	22 ... 32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
DEA 75-30	29 ... 42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
	36 ... 52	TA 75 DU 52	1SAZ 32 1201 R1004	0.330
	45 ... 63	TA 75 DU 63	1SAZ 32 1201 R1005	0.330
	60 ... 80	TA 75 DU 80	1SAZ 32 1201 R1006	0.330

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DWA, DYA, DRA, DEA Enclosed D.O.L. Starters Protection by Thermal O/L Relay



Ordering details, DWA and DYA starter enclosure accessories



Description	Type	Order code	Pack- ing	Weight in kg
Blue flush RESET pushbutton	BA7-BA	FPTN 472615 R0004	1	0.015
Red "OFF" mushroom headed button	BA7-RP	FPTN 472615 R0003	1	0.021
"ON" pushbutton interlocking lever	BD7	FPMP 307404 P0001	10	0.003
Blanking plate	BT 7	FPTN 472637 R0001	1	0.015
Lamp holder (lamp not supplied), delivered with 3 lenses (colourless, red, green)	BL5-L	1SBN 070054 R1000	1	0.022
Neutral terminal	FB 25	FPTN 472627 R0001	1	0.005
Sealing gasket set	FN 7-02	FPTN 472619 R0001	1	0.005
Actuator lever for "Stop" function on contactor itself equipped with front mounted CB5-01 (place 5L3 - 6T3)	BF5	1SBN 111402 R1000	1	0.012
Impulse contact "Stop" with built-in terminal leads	CB5-01	1SBN 010013 R1001	1	0.012

Ordering details, enclosure cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 25 cable gland	FP25	1SBN 11 0313 R1000	2	0.016
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 11 0315 R1000	2	0.048

DWA, DYA, DRA, DEA Enclosed D.O.L. Starters Protection by Thermal O/L Relay



DYA 9-30 SB



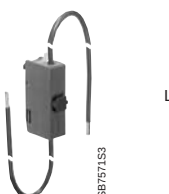
FE 50-12 VARS



BA5-50



CA5-10



CB5-10

Coil voltage code for DS 25-A/DR 25-A

Voltage (V) 50 / 60 Hz	Coil voltage code	
24	1	
48	2	
110	3	
220 / 230	5	
500	6	

Ordering details, empty enclosures without pushbutton

For starters	Type	Order code	Pack- ing	Weight in kg
DYA 9 ... DYA 16	FY 16.12 SB	FPTN 372630 R0055	1	0.400
DRA 26 ... DRA 40	FR 40.12 SB	1SBN 103220 R1000	1	1.810
DEA 50	FE 45.12 SB	FPTN 372206 R0004	1	2.200
DEA 63 ... DEA 75	FE 85.12 SB	FPTN 372208 R0004	1	3.300

Ordering details, empty enclosures with pushbuttons

1 green flush "ON" pushbutton and 1 red protruding "OFF" pushbutton

For starters	Type	Order code	Pack- ing	Weight in kg
DWA 9 ... DWA 16	FW 16.12 VARS	FPTN 372630 R0050	1	0.500
DYA 9 ... DYA 16	FY 16.12 VARS	FPTN 372630 R0051	1	0.500
DRA 26	FR 26.12 VARS	1SBN 102422 R1000	1	1.850
DRA 30	FR 30.12 VARS	1SBN 102822 R1000	1	1.850
DRA 40	FR 40.12 VARS	1SBN 103222 R1000	1	1.850
DEA 50	FE 50.12 VARS	FPTN 372206 R0025	1	2.280
DEA 63, DEA 75	FE 75.12 VARS	FPTN 372208 R0019	1	3.410

Ordering details, contactor accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1 SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1 SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mtd cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050
1 x "N.O." impulse contact block	CB5-10	1 SBN 01 0013 R1010	1	0.012
1 x "N.C." impulse contact block	CB5-01	1 SBN 01 0013 R1001	1	0.012
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1 SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1 SBN 07 3552 R1002	2	0.006
Lamp holder (1)	BL-5L	1 SBN 07 0054 R1000	1	0.022
Fuse holder (1)	BL-5F	1 SBN 07 0055 R1000	1	0.020
Connecting strip (A 9 ...16)	LP 16	FPEP 407 000 R0001	10	0.002
Connecting strip (A 26)	LP 25	FPEP 407 001 R0001	10	0.004

(1) for DWA ... and DYA only

Ordering details, thermal O/L relay accessories

Description	Type	Order code	Pack- ing	Weight in kg
	State coil voltage ☐	to be completed with the coil voltage code ☐		
Function markers (50 pieces)	BA5-50	1SBN 11 0000 R1000	box	0.017
Remote tripping coil for TA 25 DU	DS 25-A ☐	1SAZ 201501 R000 ☐	1	0.100
Remote resetting coil for TA 25 DU	DR 25-A ☐	1SAZ 201504 R000 ☐	1	0.100

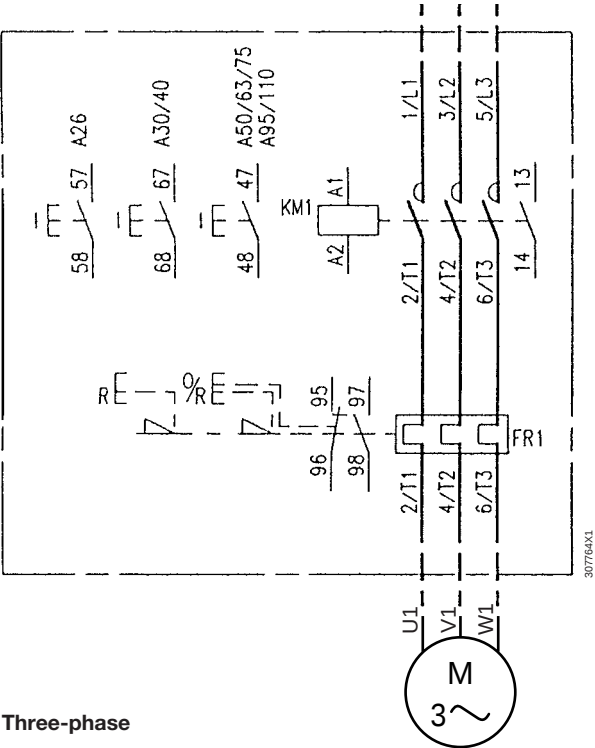
[illegible]

Local control

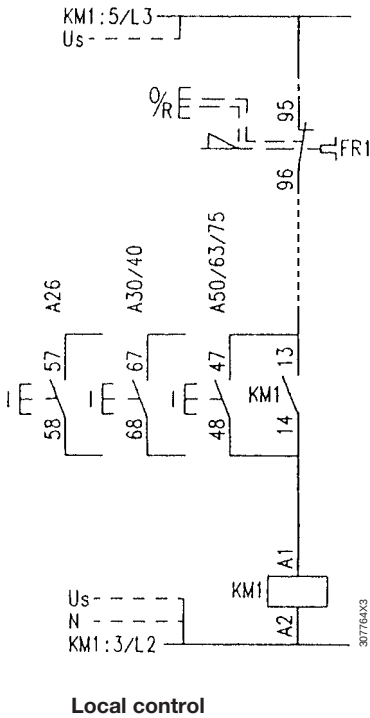
DWA, DYA, DRA, DEA
Enclosed D.O.L. Starters
Protection by Thermal O/L Relay



D.A 26 ... D.A 75 wiring diagrams



Three-phase



Local control

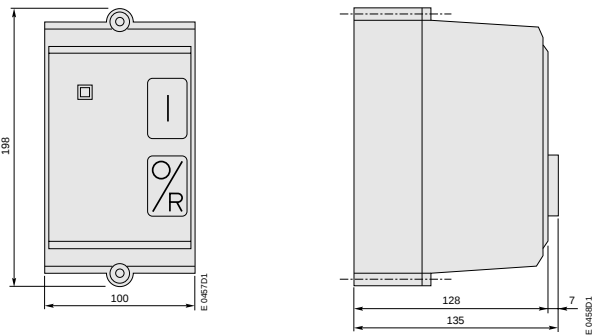
DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay

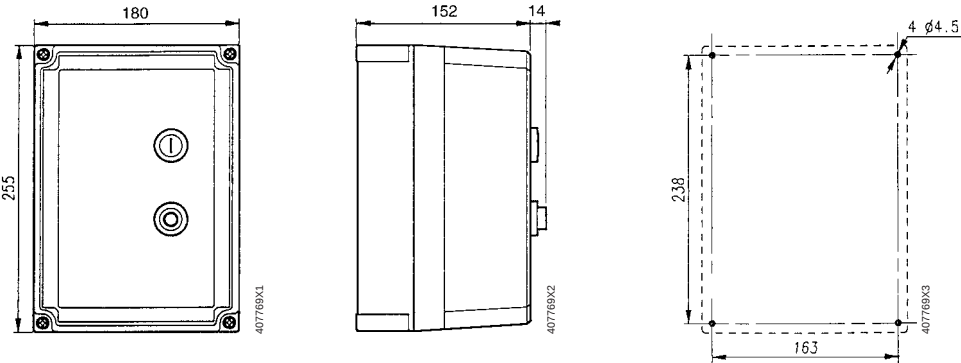


Dimensions (in mm)



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
2 x $\varnothing$ 20.5/25.5	2 x $\varnothing$ 20.5/25.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 25.5 for ISO 25	

D.A 9 ... D.A 16



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

DRA 26 ... DRA 40

The diagram shows a series circuit. On the left is a battery symbol. Moving clockwise, there is a switch (an open circle with a diagonal line), a light bulb (a circle with a cross inside), and a resistor (a rectangle). The circuit is closed on the right side.

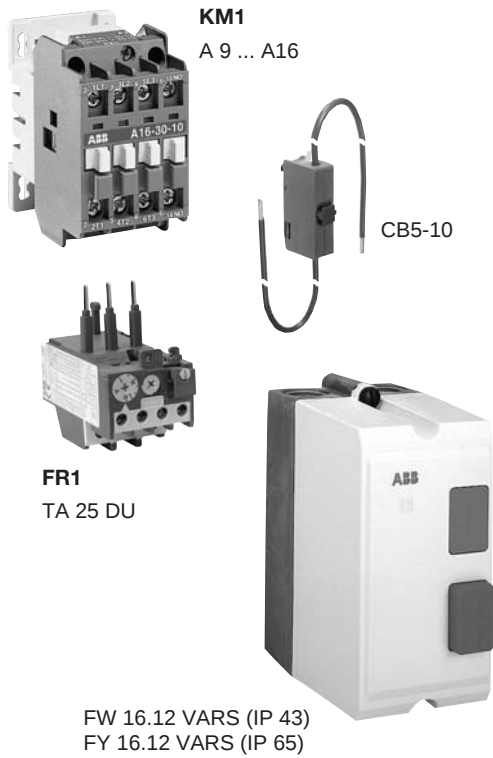
Enclosed D.O.L. Starters in Kit Form

Protection by Thermal O/L Relay

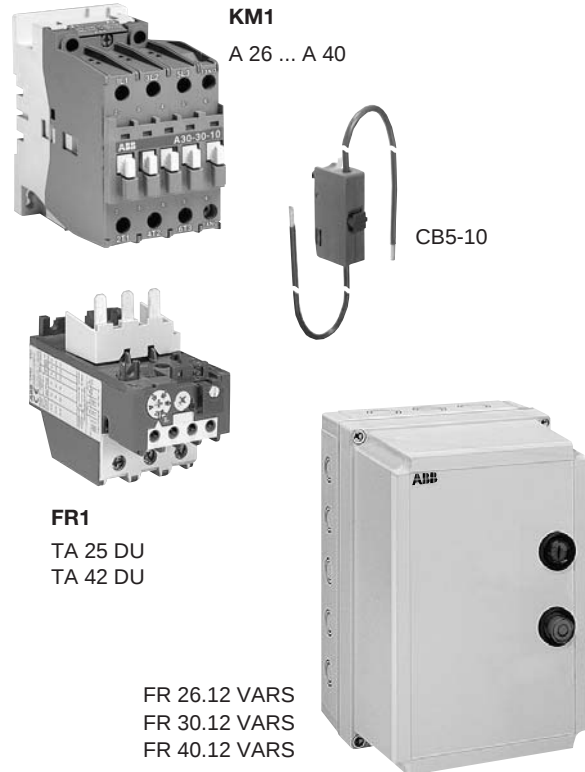


Starters in kit form

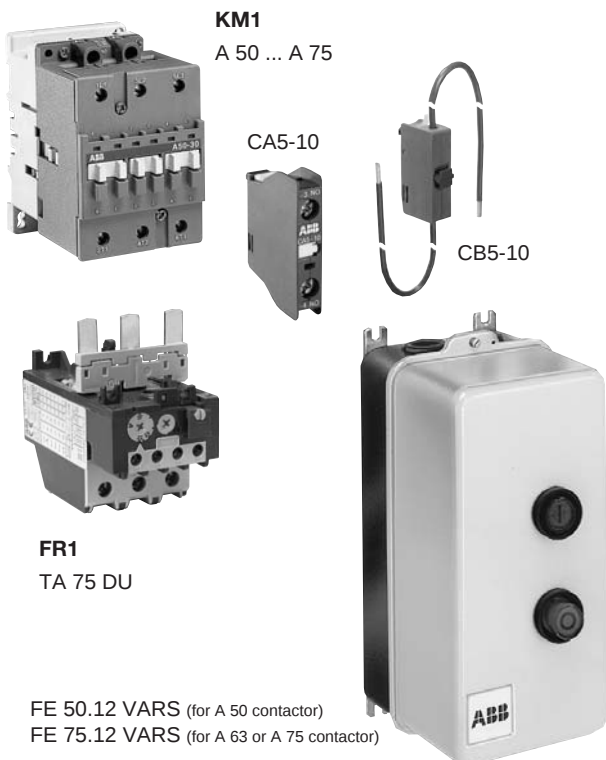
Ratings A 9 ... A 16



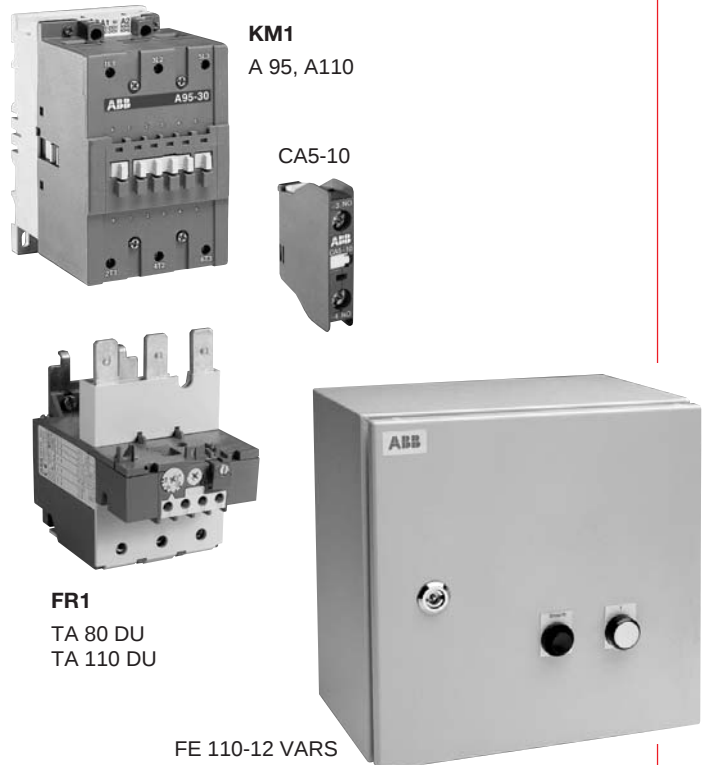
Ratings A 26 ... A 40



Ratings A 50 ... A 75



Ratings A 95 ... A 110



Enclosed D.O.L. Starters in Kit Form

Protection by Thermal O/L Relay



Starters in kit form*

Rated operat. current			Power AC-3 4-pole motor 50/60 Hz		KM1 contactor		ON contact		FR1 thermal O/L relay		Enclosure	
I _e , AC-3 A			Nominal voltage (V)		kW		Type		Type		Type	
							to be completed with: state control voltage ☐		to be completed according to the setting range (see chart on page 7/3)		+ green flush "ON" pushbutton + red protruding "OFF" pushbutton	
							Order code				Order code	
							to be completed with: control voltage code ☐ (see page 7/2)					
9	380-400	4					1 x A 9-30-10 ☐				1 x FW16.12VARS	
9	415	4					1SBL 14 1001 R8 ☐ 10				FPTN372630R0050	
7	690	5.5					("13" - "14" hold-in)				(IP 43 plastic)	
12	380-400	5.5					1 x A 12-30-10 ☐				1 x FY16.12VARS	
12	415	5.5					1SBL 16 1001 R8 ☐ 10				FPTN372630R0051	
9	690	7.5					("13" - "14" hold-in)				(IP 65 plastic)	
17	380-400	7.5					1 x A 16-30-10 ☐		1 x CB5-10		1 x TA 25 DU ☐	
17	415	9					1SBL 18 1001 R8 ☐ 10		1SBN 01 0013 R1010		1SAZ 21 1201 R10 ☐ ☐	
10	690	9					("13" - "14" hold-in)					
26	380-400	11					1 x A 26-30-10 ☐				1 x FR 26.12VARS	
26	415	11					1SBL 24 1001 R8 ☐ 10				1SBN102422R1000	
17	690	15					("13" - "14" hold-in)				(IP 65 plastic)	
32	380-400	15					1 x A 30-30-10 ☐				1 x FR 30.12VARS	
32	415	15					1SBL 28 1001 R8 ☐ 10				1SBN102822R1000	
21	690	18.5					("13" - "14" hold-in)				(IP 65 plastic)	
37	380-400	18.5					1 x A 40-30-10 ☐		1 x CB5-10		1 x TA 42 DU ☐	
37	415	18.5					1SBL 32 1001 R8 ☐ 10		1SBN 01 0013 R1010		1SAZ 31 1201 R10 ☐ ☐	
25	690	22					("13" - "14" hold-in)				1 x FR 40.12VARS	
50	380-400	22					1 x A 50-30-00 ☐				1SBN103222R1000	
50	415	25					1SBL 35 1001 R8 ☐ 00				(IP 65 plastic)	
35	690	30					plus hold-in contact: 1 x CA5-10				1 x FE50.12VARS	
							1SBN 01 0010 R1010				FPTN372206R0025	
											(IP 55 sheet metal)	
65	380-400	30					1 x A 63-30-00 ☐		1 x CB5-10		1 x TA 75 DU ☐	
65	415	37					1SBL 37 1001 R8 ☐ 00		1SBN 01 0013 R1010		1SAZ 32 1201 R10 ☐ ☐	
43	690	37					plus hold-in contact: 1 x CA5-10				1 x FE75.12VARS	
							1SBN 01 0010 R1010				FPTN372208R0019	
											(IP 55 sheet metal)	
75	380-400	37					1 x A 75-30-00 ☐					
72	415	40					1SBL 41 1001 R8 ☐ 00					
46	690	40					plus hold-in contact: 1 x CA5-10					
							1SBN 01 0010 R1010					
96	380-400	45					1 x A 95-30-00 ☐				1 x TA 80 DU ☐	
96	415	55					1SFL 43 1001 R8 ☐ 00				1SAZ 33 1201 R10 ☐ ☐	
65	690	55					plus hold-in contact: 1 x CA5-10				or	
							1SBN 01 0010 R1010				1 x TA 110 DU ☐	
110	380-400	55					1 x A 110-30-00 ☐		-		1SAZ 41 1201 R10 ☐ ☐	
110	415	59					1SFL 45 1001 R8 ☐ 00					
82	690	75					plus hold-in contact: 1 x CA5-10				1 x FE110-12VARS	
							1SBN 01 0010 R1010				1SFN104333R1000	
											(IP 66 sheet metal)	

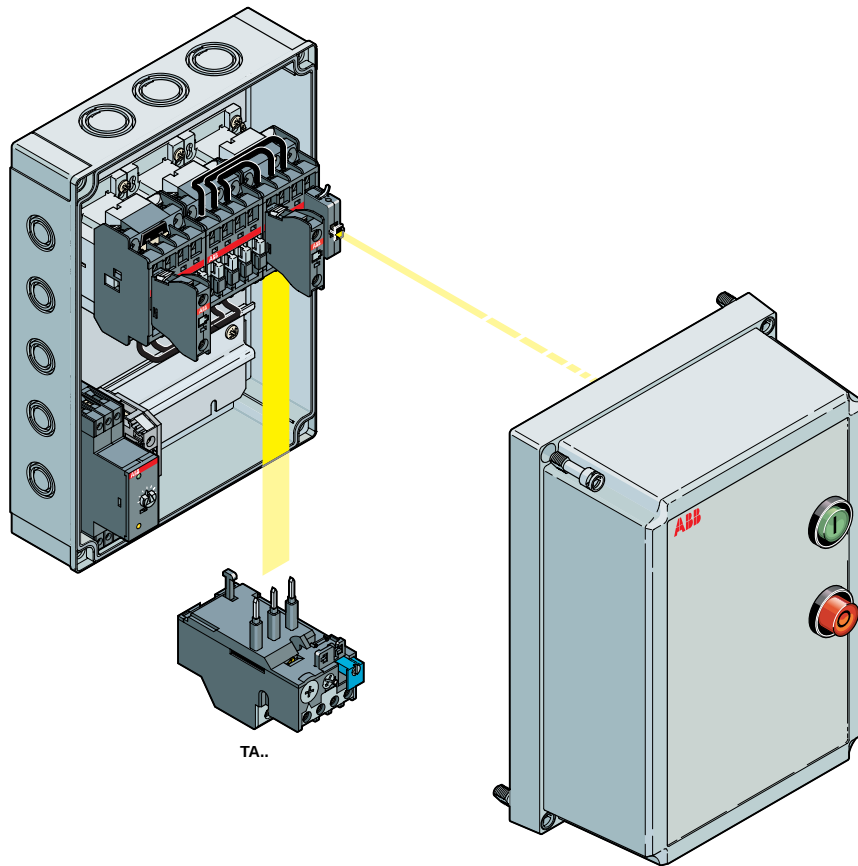
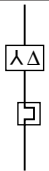
* Ambient temperature around the starter enclosure ≤ 40°C

Cabling accessories (see page 7/5 for ordering details)

>> Accessories	page 7/4	>> Wiring diagrams	page 7/6
>> Factory-assembled starters	page 7/1	>> Dimensions of assembled starters	page 7/8

Enclosed Star-Delta Starters

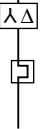
Protection by Thermal O/L Relay



E1379D1

YRA...-30 version

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



YRA 9-30

SB8002S3



YRA 26-30

SB8004S3



YEA 75-30

YEAT5X

Application

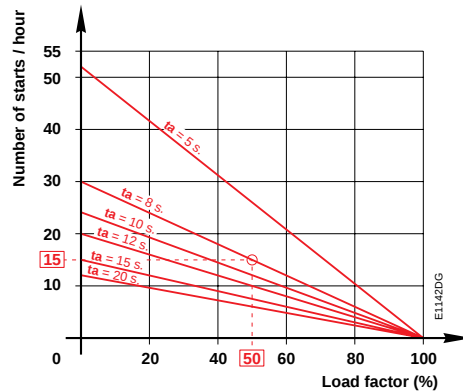
Starters for the control of three-phase asynchronous motors

- up to an operational voltage of 690 V, 50 or 60 Hz,
- at an ambient temperature $\leq 40^\circ\text{C}$ around the enclosure.

Maximum duty as per the chart below.

(Switching frequency/hour, according to acceleration time and load factor).

Respect of the following conditions enables utilization of the starter without excessive overheating of the connections or nuisance tripping of the thermal O/L relay.



Example:

- Switching frequency = **15 starts/hr**
- Acceleration time "ta" = **7 s** (use the 8 s curve)
- Maximum load factor = **50 %**

This corresponds to a 4-minute operating cycle (15 starts/hr) with 7 seconds acceleration, 2 minutes operation and 2 minutes rest.

Description

Each starter is delivered assembled, cabled by us and contains:

- 1 KM1 "line" contactor.
- 1 KM2 "star" contactor.
- 1 KM3 "delta" contactor.
- The hold-in contacts.
- The electrical interlocking contacts for both the "star" and "delta" contactors.
- The space for the thermal O/L relay.

The thermal O/L relay must be supplied separately for you to mount and connect in the "delta" circuit. The **setting current** value of the thermal O/L relay must be equal to **motor nominal current $I_n \times 0.58$** ; choose the thermal O/L relay with the right setting range for the setting current in question. The plunger index will be positioned on R/O.

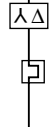
- 1 TE5S electronic timer with time lapse.
- The power circuit connections.
- The control circuit cabling ready to be connected to the chosen control supply:
 - either a separate supply
 - or phase-to-phase
 - or phase-to-neutral
- 1 PE terminal for connection of the external protective conductor (on YRA enclosure).
- 1 earth bonding terminal (on YEA enclosure).
- 1 enclosure equipped with:
 - 1 green flush "I" ON pushbutton
 - 1 red protruding "O" OFF/RESET pushbutton.

Conformity with EN 60947-4-1/IEC 947-4-1 standards.

>> Ordering details page 8/2
>> Wiring diagrams page 8/6

>> Accessories page 8/4
>> Dimensions page 8/7

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Ordering details - (Order the thermal O/L relay separately, see page 8/3)

Rated operat. current AC-3 400 V A	Motor power AC-3			Short-circuit protection*		Type	Order code	Weight in kg
	380 V 400 V	415 V	690 V	Type 1 co-ordination as per EN 60947-4-1/IEC 947-4-1 380-400 V				
	kW	kW	kW	aM fuses	gG fuses	State control voltage ☐	to be completed with control voltage code ☐	Packing 1 piece
15.5	7.5	7.5	5.5	16	25	YRA 9-30 ☐	1SBK 142 322R8 ☐ 00	3.020
22	11	11	7.5	25	35	YRA 12-30 ☐	1SBK 162 322R8 ☐ 00	3.020
30	15	15	11	32	50	YRA 16-30 ☐	1SBK 182 322R8 ☐ 00	3.020
44	22	22	15	50	63	YRA 26-30 ☐	1SBK 242 322R8 ☐ 00	4.498
50	25	25	18.5	63	100	YRA 30-30 ☐	1SBK 282 322R8 ☐ 00	5.144
72	37	37	37	80	100	YRA 40-30 ☐	1SBK 322 322R8 ☐ 00	5.144
85	45	45	45	100	125	YEA 50-30 ☐	1SBK 352 342R8 ☐ 00	9.030
105	55	55	59	125	160	YEA 63-30 ☐	1SBK 372 342R8 ☐ 00	9.040
119	63	70	63	160	200	YEA 75-30 ☐	1SBK 412 342R8 ☐ 00	9.380

* For other short-circuit protection devices, please consult our co-ordination tables.

Control voltage code

Voltage		Code	Control circuit
V 50 Hz	V 60 Hz		
24	24	1	must be connected
110	110 ... 120	4	– to a separate
110 ... 115	115 ... 127	9	supply
220 ... 230	230 ... 240	0	– or phase-to-phase
230 ... 240	240 ... 260	8	– or phase-to-neutral
380 ... 400	400 ... 415	5	
400 ... 415	415 ... 440	6	

>> Thermal O/L relay ordering details page 8/3
>> Wiring diagrams page 8/6

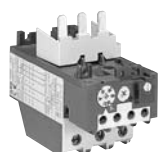
>> Technical data page 8/5
>> Dimensions page 8/7

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



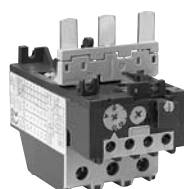
TA 25 DU

SB7386S2



TA 42 DU

SB7381S3



TA 75 DU

SB7387S2

Ordering details, thermal O/L relay

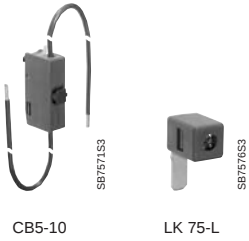
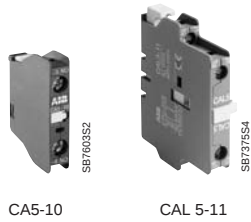
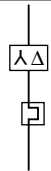
Starter	Setting range (1)			Type	Order code	Weight in kg Packing 1 piece
	A	...	A			
YRA 9-30	0.1	...	0.16	TA 25 DU 0.16	1SAZ 21 1201 R1005	0.150
to	0.16	...	0.25	TA 25 DU 0.25	1SAZ 21 1201 R1009	0.150
YRA 30-30	0.25	...	0.4	TA 25 DU 0.4	1SAZ 21 1201 R1013	0.150
	0.4	...	0.63	TA 25 DU 0.63	1SAZ 21 1201 R1017	0.150
	0.63	...	1.0	TA 25 DU 1.0	1SAZ 21 1201 R1021	0.150
	1.0	...	1.4	TA 25 DU 1.4	1SAZ 21 1201 R1023	0.150
	1.3	...	1.8	TA 25 DU 1.8	1SAZ 21 1201 R1025	0.150
	1.7	...	2.4	TA 25 DU 2.4	1SAZ 21 1201 R1028	0.150
	2.2	...	3.1	TA 25 DU 3.1	1SAZ 21 1201 R1031	0.150
	2.8	...	4.0	TA 25 DU 4.0	1SAZ 21 1201 R1033	0.150
	3.5	...	5.0	TA 25 DU 5.0	1SAZ 21 1201 R1035	0.150
	4.5	...	6.5	TA 25 DU 6.5	1SAZ 21 1201 R1038	0.150
	6.0	...	8.5	TA 25 DU 8.5	1SAZ 21 1201 R1040	0.150
	7.5	...	11	TA 25 DU 11	1SAZ 21 1201 R1043	0.150
	10	...	14	TA 25 DU 14	1SAZ 21 1201 R1045	0.150
	13	...	19	TA 25 DU 19	1SAZ 21 1201 R1047	0.150
	18	...	25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24	...	32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
YRA 40-30	18	...	25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22	...	32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
	29	...	42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
YEA 50-30	18	...	25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
to	22	...	32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
YEA 75-30	29	...	42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
	36	...	52	TA 75 DU 52	1SAZ 32 1201 R1004	0.330
	45	...	63	TA 75 DU 63	1SAZ 32 1201 R1005	0.330
	60	...	80	TA 75 DU 80	1SAZ 32 1201 R1006	0.330

(1) The **setting current** value is the motor rated current I_n x 0.58

Example: For a motor rated current of 30 A, the **setting current** will be $30 \text{ A} \times 0.58 = 17.4 \text{ A}$.

Choose the thermal O/L relay TA 25 DU 19 - setting range 13 ... 19 A.

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Ordering details, accessories for contactors

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mtd cont. blk	CAL5-11	1SBN 01 0020 R1011	2	0.050
1 x "N.O." impulse contact block	CB5-10	1SBN 01 0013 R1010	1	0.012
1 x "N.C." impulse contact block	CB5-01	1SBN 01 0013 R1001	1	0.012
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1SBN 07 3552 R1002	2	0.006
Connecting strip (A 9 ...16)	LP 16	FPEP 407 000 R0001	10	0.002
Connecting strip (A 26)	LP 25	FPEP 407 001 R0001	10	0.004

Ordering details, cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 11 0315 R1000	2	0.048

• Other accessories see main catalogue "Contactors", section 4

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Technical data

General technical data

Maximum rated operational voltage	V	690
Isolation function		customer's responsibility
Short-circuit protection		customer's responsibility
Overload protection		TA... thermal O/L relay
Temperature compensation	°C	-25 ... +55 (TA... thermal O/L relay)
Protection against motor single-phase operation		TA... thermal O/L relay

Available capacity of terminals to be connected

Main upstream conductors on KM1 (as per contactor rating)		A9 to A16	A26	A30, A40	A50 to A75
Rigid solid/Rigid stranded	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50
Flexible without cable end	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16
Main downstream conductors on KM3 (as per contactor rating)		A9 to A16	A26	A30, A40	A50 to A75
Rigid solid/Rigid stranded	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50
Flexible without cable end	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16
Main downstream conductors on FR1 (as per thermal O/L relay)			TA 25 DU	TA 42/75 DU	
Rigid solid/Rigid stranded	mm ²		2 x 1.5 ... 6	1 x 2.5 ... 35	
Flexible without cable end	mm ²		2 x 1.5 ... 4	1 x 2.5 ... 25	

Auxiliary conductors - Flexible	1 or 2 x mm ²	0.75 ... 2.5
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Contactors	A 9 to A 75	see main catalogue "Contactors", section 2
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Thermal O/L relay	TA ...	see main catalogue "Contactors", section 5
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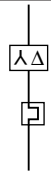
Timer	TE 5S	see main catalogue "Contactors", section 4
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Enclosure

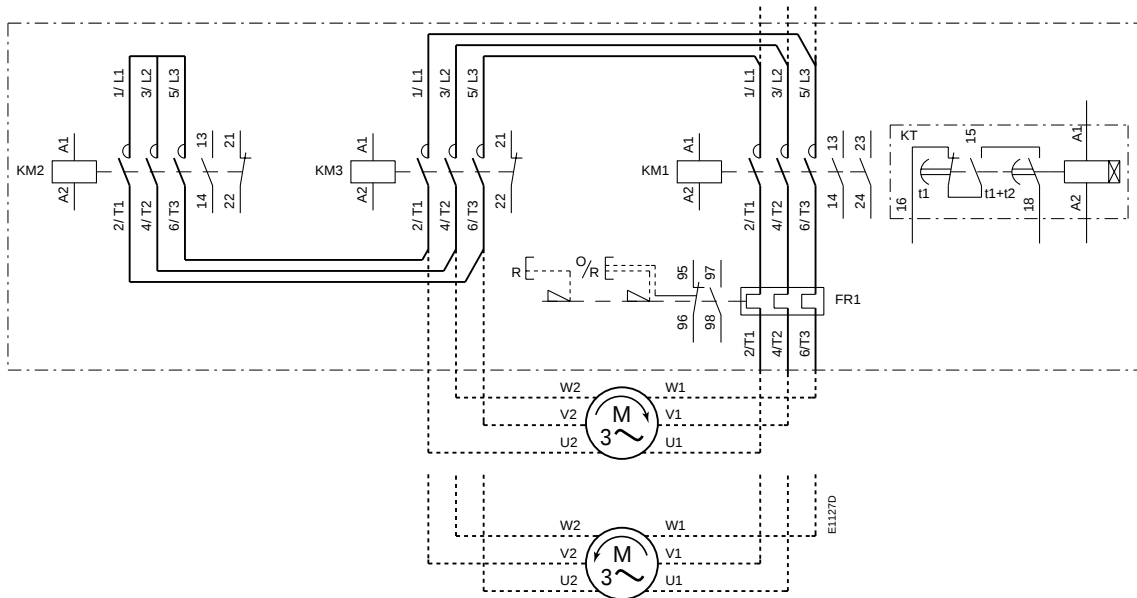
YRA 9-30 ... YRA 40-30 starters	Plastic - UL 94 V2 - Double insulation IP 64Protection
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YEA 50-30 ... YEA 75-30 starters	Sheet Metal - IP 55 Protection
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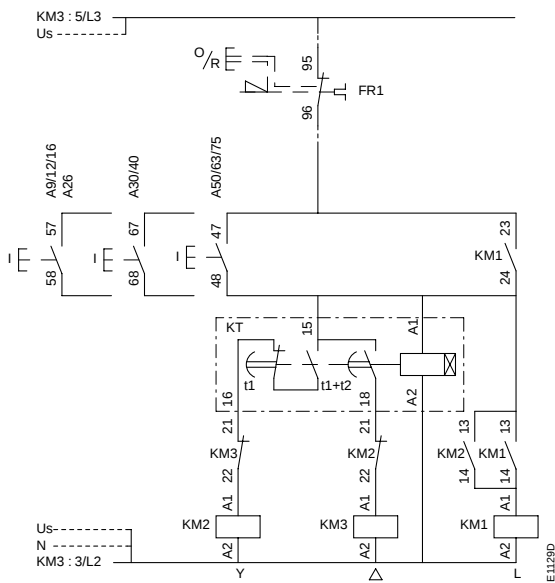
YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Wiring diagrams



Power circuit

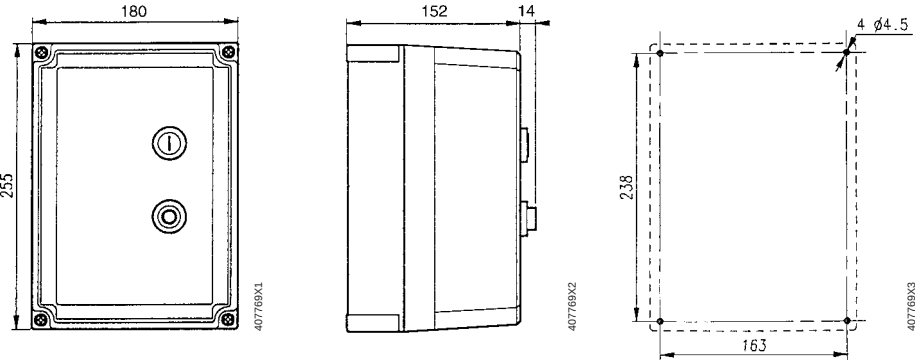


YRA 9-30 ... YRA 40-30 and YEA 50-30 ... YEA 75-30 local control

YRA ... and YEA ...
Enclosed Star-Delta Starters
Protection by Thermal O/L Relay

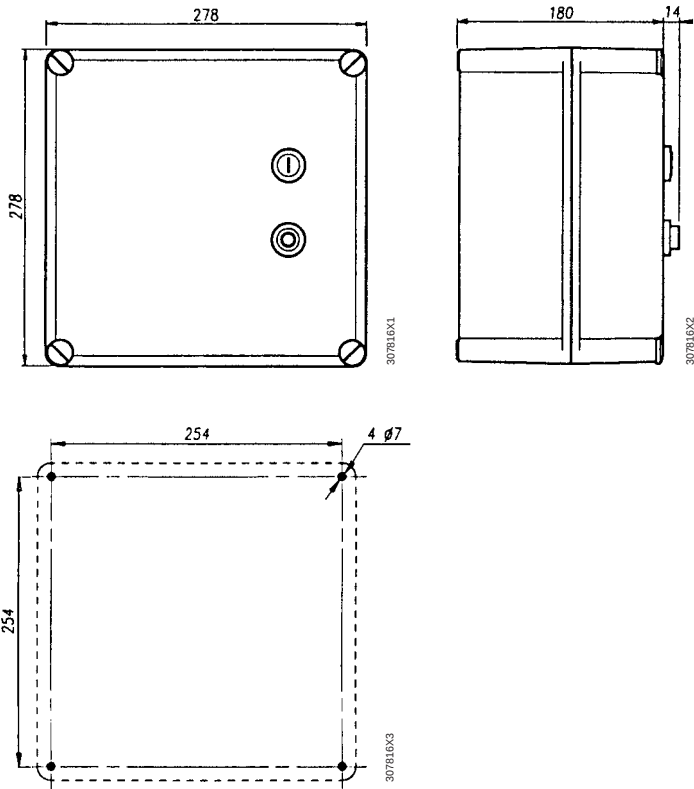


Dimensions (in mm)



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x Ø 20.5/32.5	3 x Ø 20.5/32.5
Ø 20.5 for ISO 20 Ø 32.5 for ISO 32	

YRA 9-30 ... YRA 16-30



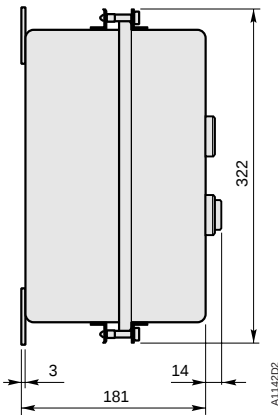
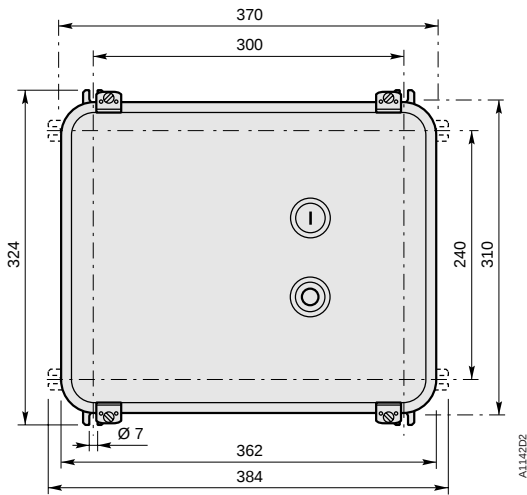
Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
1 x Ø 40.5	1 x Ø 40.5 2 x Ø 32.5 1 x Ø 20.5
Ø 20.5 for ISO 20 Ø 32.5 for ISO 32 Ø 40.5 for ISO 40	

YRA 26-30 ... YRA 40-30

YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Dimensions (in mm)



Cable inlets Enclosure top	Cable outlets Enclosure bottom
1 x $\varnothing$ 40.5	1 x $\varnothing$ 20.5 3 x $\varnothing$ 40.5

$\varnothing$ 20.5 for ISO 20
 $\varnothing$ 40.5 for ISO 40

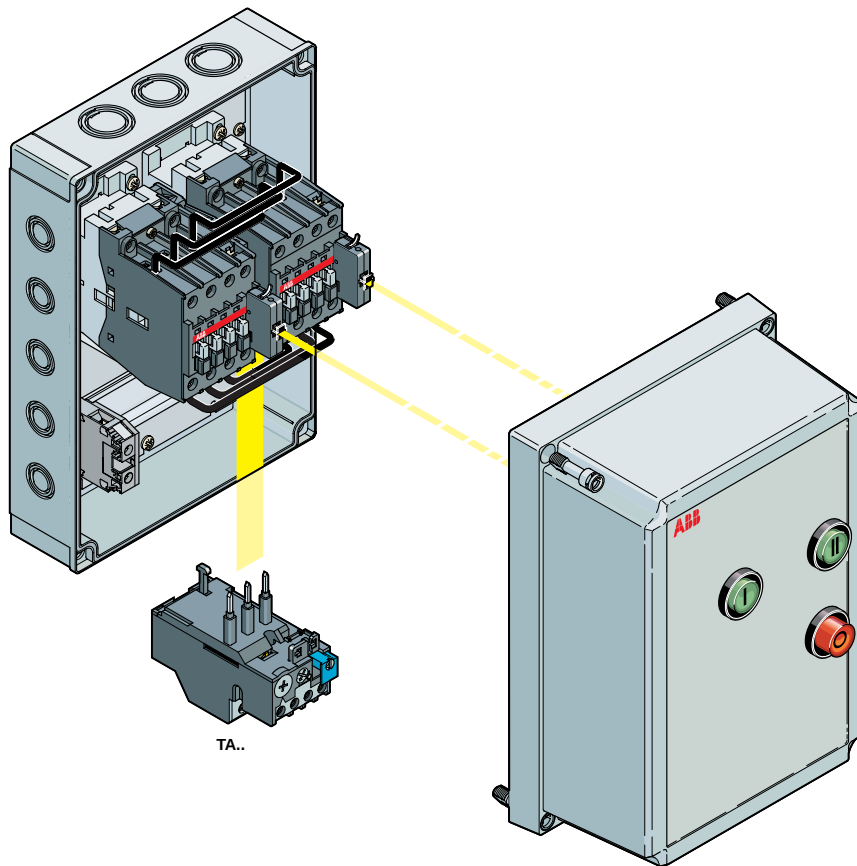
YEA 50-30 ... YEA 75-30

Notes

This image shows a full page of blank graph paper. The background is a very light gray, and it is covered by a precise grid of thin red lines. These lines intersect at regular intervals to form a series of small, identical squares across the entire surface of the page. There are no margins, text, or other markings present.

Enclosed Reversing Starters

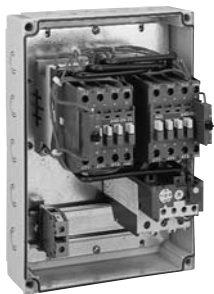
Protection by Thermal O/L Relay



E1371D1

WRA...-30 version

WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



SB7909X2

WRA 40-30



SB8004S3

WRA 9-30



WEA75X

WEA 75-30

Application

- Reversing starters for the control of three-phase asynchronous motors
- up to an operational voltage of 690 V, 50 or 60 Hz,
 - for a starting time of 1.5 s maximum,
and a switching frequency ≤ 15 starts/hour with a load factor of 80 %, or ≤ 30 starts/hour with a load factor of 50 %.
 - at an ambient temperature ≤ 40 °C around the enclosure,
 - in conformity with EN 60947-4-1/IEC 947-4-1 standards.

Description

Each reversing starter is delivered assembled, cabled by us and contains:

- 2 three-pole contactors of the same rating, A 9 ... A 75, horizontally mounted.
The hold-in function is performed on each contactor by means of N.O. auxiliary contacts.
- 1 VE 5 mechanical and electrical interlocking device.
This device mechanically prevents one of the contactors from closing while the other contactor is closed. It is also equipped with 2 N.C. auxiliary contacts inserted in the control circuit for electrical interlocking of the contactors.
- 1 BEM...-30 power connection set.
- The space for the thermal O/L relay.
The thermal O/L relay will be chosen according to motor nominal current and supplied separately in kit form. The plunger index will be positioned on R/O.
- Two control circuit connection versions:
 - phase-to-phase control supply,
 - control supply for you to connect: separate supply, or phase-to-neutral.
- 1 PE terminal for connection of the external protective conductor (on WRA enclosure).
- 1 earth bonding terminal (on WEA enclosure).
- 1 enclosure equipped with:
 - 1 green flush "I" ON pushbutton,
 - 1 green flush "II" ON pushbutton,
 - 1 red protruding "O" OFF/RESET pushbutton.

WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



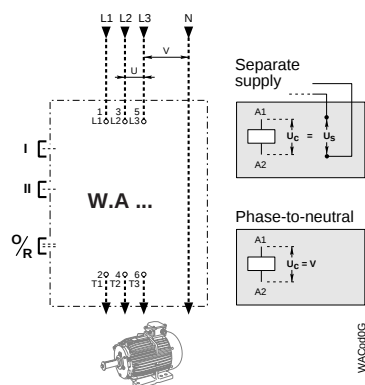
Ordering details (order the thermal O/L relay separately, see page 9/3)

Rated operat. current AC-3 400 V A	Motor power AC-3				Short-circuit protection *		Type	Order code to be completed with the following codes - control voltage ☐ - control supply ☐	Weight in kg Packing 1 piece
	380 V	400 V	415 V	690 V	aM fuses	gG fuses			
	kW	kW	kW	kW			State control voltage ☐		
9	4	4	5.5		10	25	WRA 9-30 ☐	1SBK 141 ☐ 22R8 ☐ 00	2.620
12	5.5	5.5	7.5		16	32	WRA 12-30 ☐	1SBK 161 ☐ 22R8 ☐ 00	2.620
17	7.5	9	9		20	32	WRA 16-30 ☐	1SBK 181 ☐ 22R8 ☐ 00	2.620
26	11	11	15		25	50	WRA 26-30 ☐	1SBK 241 ☐ 22R8 ☐ 00	3.170
32	15	15	18.5		32	63	WRA 30-30 ☐	1SBK 281 ☐ 22R8 ☐ 00	3.520
37	18.5	18.5	22		40	80	WRA 40-30 ☐	1SBK 321 ☐ 22R8 ☐ 00	3.520
50	22	25	30		50	100	WEA 50-30 ☐	1SBK 351 ☐ 42R8 ☐ 00	5.960
63	30	37	37		63	125	WEA 63-30 ☐	1SBK 371 ☐ 42R8 ☐ 00	7.750
75	37	40	40		100	160	WEA 75-30 ☐	1SBK 411 ☐ 42R8 ☐ 00	7.750

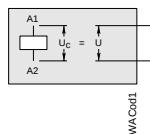
* For other short-circuit protection devices, please consult our co-ordination tables.

Control supply code

The control circuit
is to be connected by you: code 1



The control circuit
is supplied phase-to-phase: code 2



Available for the voltages
in the shaded area opposite

Control voltage code

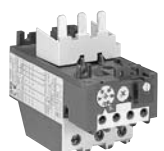
8 ☐

Voltage V 50 Hz	V 60 Hz	Code 8 ☐
24	24	1
42	42	2
48	48	3
110	110 ... 120	4
110 ... 115	115 ... 127	9
220 ... 230	230 ... 240	0
230 ... 240	240 ... 260	8
380 ... 400	400 ... 415	5
400 ... 415	415 ... 440	6

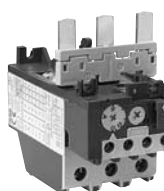
WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



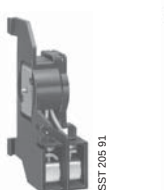
TA 25 DU



TA 42 DU



TA 75 DU



DS 25 A



DR 25 A

Coil voltage code for DS 25-A/DR 25-A

Voltage (V) 50/60 Hz	Coil voltage code	
24	1	
48	2	
110	3	
220/380	5	
500	6	

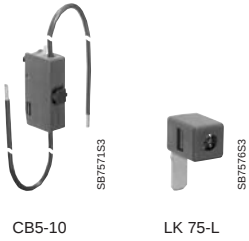
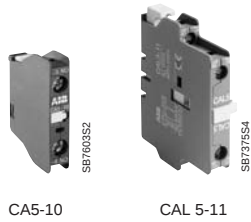
Ordering details, thermal O/L relay

Starter	Setting range			Type	Order code	Weight in kg Packing 1 piece
	A	...	A			
WRA 9-30	0.1	...	0.16	TA 25 DU 0.16	1SAZ 21 1201 R1005	0.150
to	0.16	...	0.25	TA 25 DU 0.25	1SAZ 21 1201 R1009	0.150
WRA 30-30	0.25	...	0.4	TA 25 DU 0.4	1SAZ 21 1201 R1013	0.150
	0.4	...	0.63	TA 25 DU 0.63	1SAZ 21 1201 R1017	0.150
	0.63	...	1.0	TA 25 DU 1.0	1SAZ 21 1201 R1021	0.150
	1.0	...	1.4	TA 25 DU 1.4	1SAZ 21 1201 R1023	0.150
	1.3	...	1.8	TA 25 DU 1.8	1SAZ 21 1201 R1025	0.150
	1.7	...	2.4	TA 25 DU 2.4	1SAZ 21 1201 R1028	0.150
	2.2	...	3.1	TA 25 DU 3.1	1SAZ 21 1201 R1031	0.150
	2.8	...	4.0	TA 25 DU 4.0	1SAZ 21 1201 R1033	0.150
	3.5	...	5.0	TA 25 DU 5.0	1SAZ 21 1201 R1035	0.150
	4.5	...	6.5	TA 25 DU 6.5	1SAZ 21 1201 R1038	0.150
	6.0	...	8.5	TA 25 DU 8.5	1SAZ 21 1201 R1040	0.150
	7.5	...	11	TA 25 DU 11	1SAZ 21 1201 R1043	0.150
	10	...	14	TA 25 DU 14	1SAZ 21 1201 R1045	0.150
	13	...	19	TA 25 DU 19	1SAZ 21 1201 R1047	0.150
	18	...	25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24	...	32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
WRA 40-30	18	...	25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22	...	32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
	29	...	42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
WEA 50-30	18	...	25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
to	22	...	32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
WEA 75-30	29	...	42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
	36	...	52	TA 75 DU 52	1SAZ 32 1201 R1004	0.330
	45	...	63	TA 75 DU 63	1SAZ 32 1201 R1005	0.330
	60	...	80	TA 75 DU 80	1SAZ 32 1201 R1006	0.330

Ordering details, thermal O/L relay accessories

Description	Type	Order code	Pack- ing	Weight in kg
	State coil voltage ☐	to be completed with coil voltage code ☐		
Function markers (50 pieces)	BA5-50	1SBN 110000 R1000	box	0.017
Remote tripping coil for TA 25 DU	DS 25-A ☐	1SAZ 201501 R000 ☐	1	0.100
Remote resetting coil for TA 25 DU	DR 25-A ☐	1SAZ 201504 R000 ☐	1	0.100

WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



Ordering details, accessories for contactors

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1SBN 11 0000 R1000	box	0.017
1 x "N.O." auxiliary contact block	CA5-10	1SBN 01 0010 R1010	10	0.014
1 x "N.C." auxiliary contact block	CA5-01	1SBN 01 0010 R1001	10	0.014
"N.O."+"N.C." side-mtd cont. blk	CAL5-11	1SBN 01 0020 R1011	2	0.050
1 x "N.O." impulse contact block	CB5-10	1SBN 01 0013 R1010	1	0.012
1 x "N.C." impulse contact block	CB5-01	1SBN 01 0013 R1001	1	0.012
Control lead terminals (A 50 ... A 75)				
Right/left connection	LK 75-L	1SBN 07 3552 R1003	2	0.006
Front connection	LK 75-F	1SBN 07 3552 R1002	2	0.006
Connecting strip (A 9 ...16)	LP 16	FPEP 407 000 R0001	10	0.002
Connecting strip (A 26)	LP 25	FPEP 407 001 R0001	10	0.004

Ordering details, cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 11 0315 R1000	2	0.048

>> Other accessories see main catalogue "Contactors", section 4

WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



Technical data

General technical data

Maximum rated operational voltage	V	690
Isolation function		customer's responsibility
Short-circuit protection		customer's responsibility
Overload protection		TA... thermal O/L relay
Temperature compensation	°C	-25 ... +55 (TA... thermal O/L relay)
Protection against motor single-phase operation		TA... thermal O/L relay

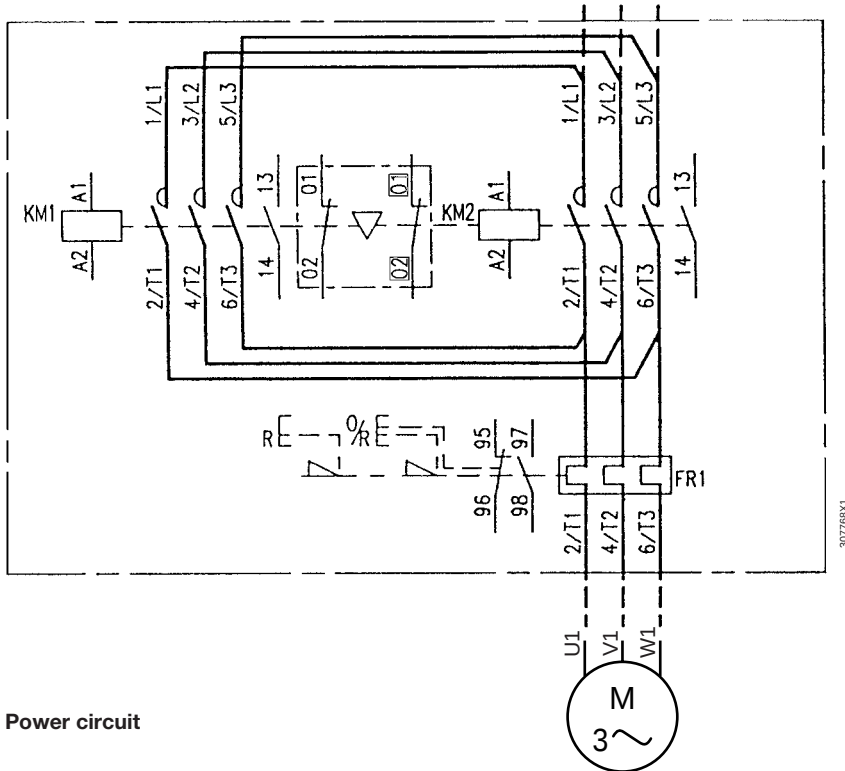
Available capacity of terminals to be connected

Main upstream conductors (as per contactor rating)		A9 to A16	A26	A30, A40	A50 to A75
Rigid solid/Rigid stranded	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50
Flexible without cable end	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16
Main downstream conductors (as per thermal O/L relay)			TA 25 DU	TA 42/75 DU	
Rigid solid/Rigid stranded	mm ²		2 x 1.5 ... 6	1 x 2.5 ... 35	
Flexible without cable end	mm ²		2 x 1.5 ... 4	1 x 2.5 ... 25	
Auxiliary conductors - Flexible	1 or 2 x mm ²			0.75 ... 2.5	
Contactors	A 9 to A 75		see main catalogue "Contactors", section 2		
Thermal O/L relay	TA ...		see main catalogue "Contactors", section 5		
Power connections					
For reversing starters			Insulated copper connect.	Cross-section	
WRA 9-30, WRA 12-30, WRA 16-30			BEM16-30 (rigid solid)	2.5 mm ²	
WRA 26-30			BEM26-30 (rigid stranded)	6 mm ²	
WRA 30-30, WRA 40-30			BEM40-30 (rigid stranded)	10 mm ²	
WEA 50-30, WEA 63-30, WEA 75-30			BEM75-30 (bar)	8 x 3 mm	
Enclosure					
WRA 9-30 ... WRA 40-30 starters			Plastic - UL 94 V2 - Double insulation IP 64Protection		
WEA 50-30 ... WEA 75-30 starters			Sheet Metal - IP 55 Protection		

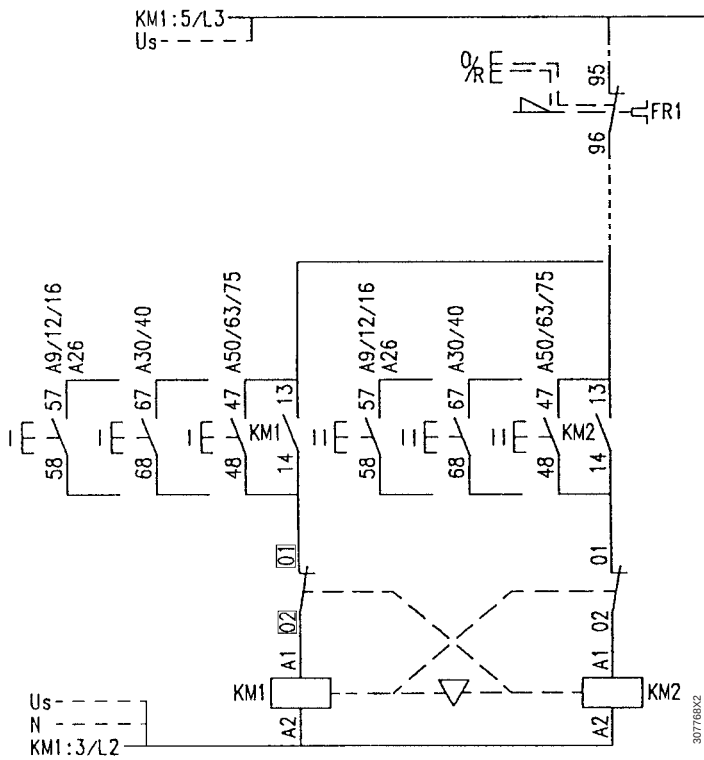
WRA ... and WEA ... **Enclosed Reversing Starters** **Protection by Thermal O/L Relay**



Wiring diagrams



Power circuit

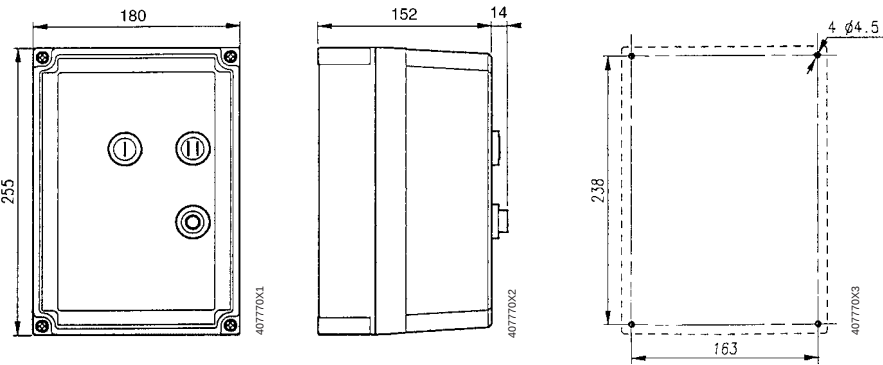


WRA 9-30 ... WRA 40-30 and WEA 50-30 ... WEA 75-30 local control

WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay

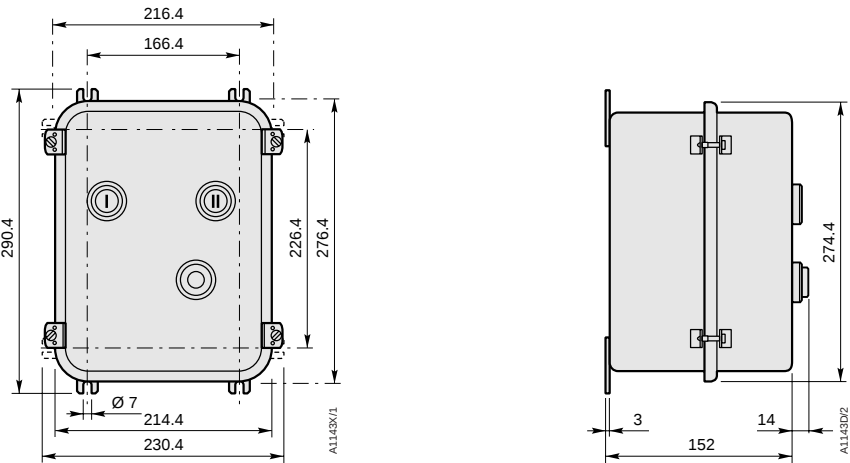


Dimensions (in mm)



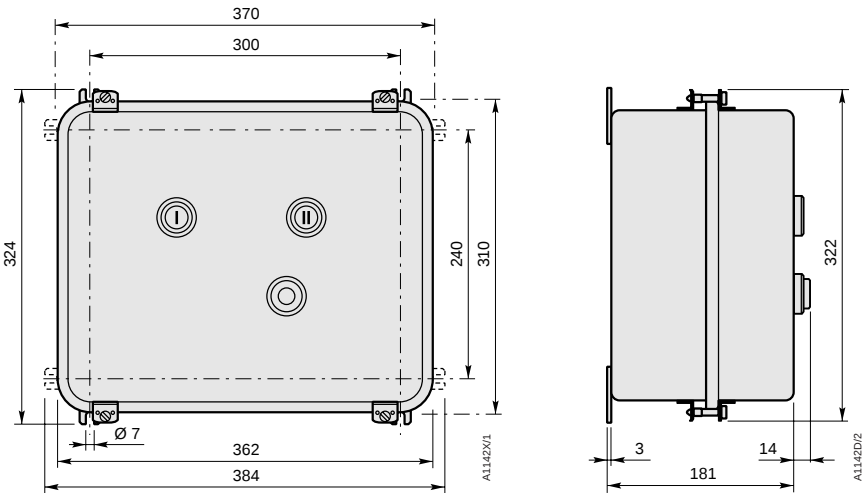
WRA 9-30 ... WRA 40-30

Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
1 x $\varnothing$ 32.5	1 x $\varnothing$ 20.5
	2 x $\varnothing$ 32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

WEA 50-30

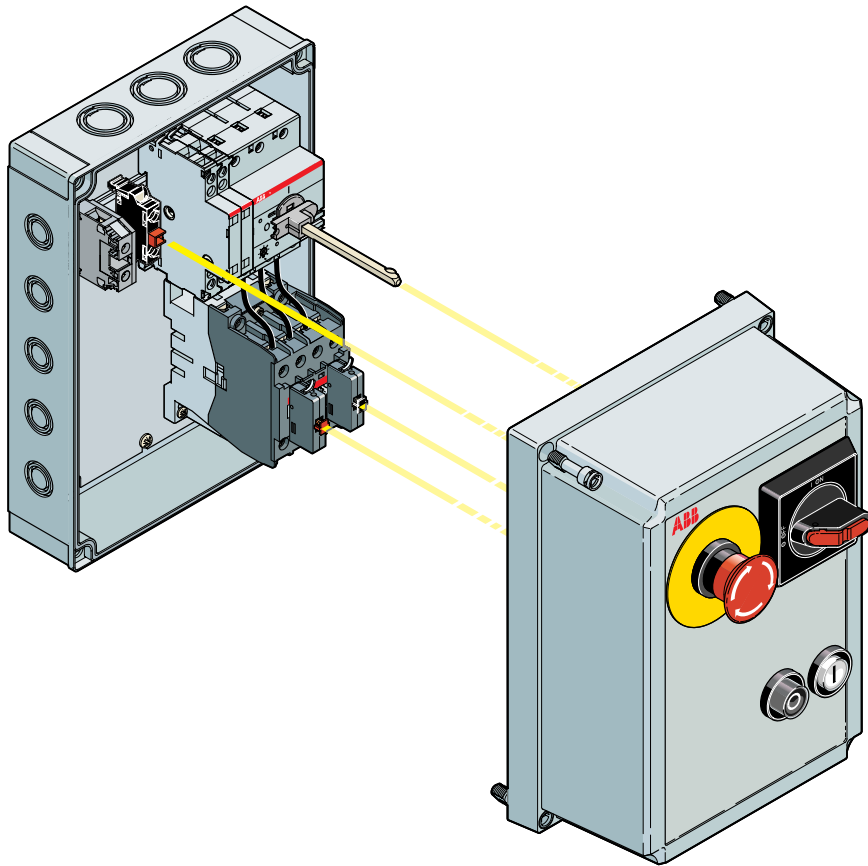
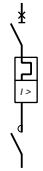


Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
1 x $\varnothing$ 40.5	1 x $\varnothing$ 20.5
	3 x $\varnothing$ 40.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 40.5 for ISO 40	

WEA 63-30, WEA 75-30

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



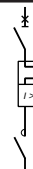
E1368D1

DRA ... DB+BU version

DRA ... D, DRA ... DB, DRA ... DB+BU

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



DRA 16-30 D



DRA 16-30 D



DRA 9-30 DB + BU

Application

- Starters for the control of three-phase asynchronous motors
- up to an operational voltage of 415 V, 50 or 60 Hz,
 - for a starting time of 1.5 s maximum, and a switching frequency ≤ 15 starts/hour with a load factor of 80% or ≤ 30 starts/hour with a load factor of 50%,
 - at an ambient temperature ≤ 40 °C around the enclosure,
 - in conformity with EN 60947-4-1/IEC 947-4-1 and EN 60204-1/IEC 60204-1 standards.

Description

Each starter is delivered assembled, cabled by us and contains:

- 1 MS 325 manual motor starter.
 - 1 three-pole contactor. Rating from 9 to 26 A AC-3.
 - 1 hold-in contact.
 - The control circuit.
 - 1 PE terminal for connection of the external protective conductor.
 - 1 enclosure equipped with:
 - 1 operating handle, padlockable in the rest position (3 padlocks), red on yellow front plate,
 - 1 white flush "I" ON pushbutton,
 - 1 black protruding "O" OFF pushbutton.
- The handle prevents the enclosure from opening when the manual motor starter is in the "working" position.

DRA ... D version

With the recommended wiring diagram, the control circuit is isolated by the manual motor starter. If operation is interrupted, press the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

DRA ... DB version

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil,
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

DRA ... DB + BU version

The enclosure is equipped with a 40mm ø emergency stop mushroom headed button, with release by rotation, red on yellow front plate. This emergency stop mechanism activates the manual motor starter by means of the undervoltage coil. In this case the manual motor starter handle is black.

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil,
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

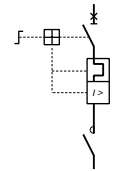
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

DRA ... D

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



DRA ... D ordering details

Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V		Co-ordination type $I_q = 50$ kA	Setting range		Type	Order code	Weight in kg Packing 1 piece
kW	... kW		A	... A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	... 2.5	1	4.0	... 6.3	DRA 9-30-D6.3 ☐	1SBK 140 522R8 ☐ 44	2.620
3.0	... 4.0	1	6.3	... 9.0	DRA 9-30-D9.0 ☐	1SBK 140 522R8 ☐ 45	2.620
5.0	... 5.5	1	9.0	... 12	DRA 12-30-D12.5 ☐	1SBK 160 522R8 ☐ 46	2.620
6.5	... 7.5	1	12.5	... 16	DRA 16-30-D16 ☐	1SBK 180 522R8 ☐ 47	2.620
0.37	... 0.55	2	1.0	... 1.6	DRA 9-30-D1.6 ☐	1SBK 140 522R8 ☐ 41	2.620
—	0.75	2	1.6	... 2.5	DRA 9-30-D2.5 ☐	1SBK 140 522R8 ☐ 42	2.620
1.1	... 1.5	2	2.5	... 4.0	DRA 9-30-D4.0 ☐	1SBK 140 522R8 ☐ 43	2.620
2.2	... 2.5	2	4.0	... 6.3	DRA 12-30-D6.3 ☐	1SBK 160 522R8 ☐ 44	2.620
3.0	... 4.0	2	6.3	... 9.0	DRA 26-30-D9.0 ☐	1SBK 240 522R8 ☐ 45	2.880
5.0	... 5.5	2	9.0	... 12.5	DRA 26-30-D12.5 ☐	1SBK 240 522R8 ☐ 46	2.880
6.5	... 7.5	2	12.5	... 16	DRA 26-30-D16 ☐	1SBK 240 522R8 ☐ 47	2.880
8.0	... 9.0	2	16.0	... 20.0	DRA 26-30-D20 ☐	1SBK 240 522R8 ☐ 48	2.880
—	11.0	2	20.0	... 25.0	DRA 26-30-D25 ☐	1SBK 240 522R8 ☐ 49	2.880

Control voltage code

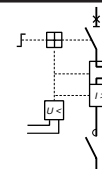
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240 ... 260	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(1) Supply 1 HK 20 auxiliary contact block for neutral breaking
(see page 10/5)

DRA ... DB

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



DRA ... DB ordering details (380 ... 415 V - 50/60 Hz power circuit)

Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V		Co-ordination type $I_q = 50$ kA	Setting range		Type	Order code	Weight in kg Packing 1 piece
kW	... kW		A	... A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	... 2.5	1	4.0	... 6.3	DRA 9-30-DB6.3 ☐	1SBK 140 622R8 ☐ 44	2.620
3.0	... 4.0	1	6.3	... 9.0	DRA 9-30-DB9.0 ☐	1SBK 140 622R8 ☐ 45	2.620
5.0	... 5.5	1	9.0	... 12	DRA 12-30-DB12.5 ☐	1SBK 160 622R8 ☐ 46	2.620
6.5	... 7.5	1	12.5	... 16	DRA 16-30-DB16 ☐	1SBK 180 622R8 ☐ 47	2.620
0.37	... 0.55	2	1.0	... 1.6	DRA 9-30-DB1.6 ☐	1SBK 140 622R8 ☐ 41	2.620
—	0.75	2	1.6	... 2.5	DRA 9-30-DB2.5 ☐	1SBK 140 622R8 ☐ 42	2.620
1.1	... 1.5	2	2.5	... 4.0	DRA 9-30-DB4.0 ☐	1SBK 140 622R8 ☐ 43	2.620
2.2	... 2.5	2	4.0	... 6.3	DRA 12-30-DB6.3 ☐	1SBK 160 622R8 ☐ 44	2.620
3.0	... 4.0	2	6.3	... 9.0	DRA 26-30-DB9.0 ☐	1SBK 240 622R8 ☐ 45	2.880
5.0	... 5.5	2	9.0	... 12.5	DRA 26-30-DB12.5 ☐	1SBK 240 622R8 ☐ 46	2.880
6.5	... 7.5	2	12.5	... 16	DRA 26-30-DB16 ☐	1SBK 240 622R8 ☐ 47	2.880
8.0	... 9.0	2	16.0	... 20.0	DRA 26-30-DB20 ☐	1SBK 240 622R8 ☐ 48	2.880
—	11.0	2	20.0	... 25.0	DRA 26-30-DB25 ☐	1SBK 240 622R8 ☐ 49	2.880

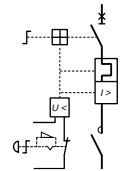
Control voltage code

Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
24	24	1	must be connected to a supply separate from the power circuit, or either phase-to-neutral
42	42	2	
48	48	3	
110	110 ... 120	4	
110 ... 115	115 ... 127	9	
220 ... 230	230 ... 240	0	phase-to-phase connected
230 ... 240	240 ... 260	8	
380 ... 400	400 ... 415	5	
400 ... 415	415 ... 440	6	

DRA ... DB+BU

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



DRA ... DB + BU ordering details (380 ... 415 V - 50/60 Hz power circuit)

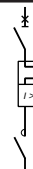
Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V		Co-ordination type $I_q = 50$ kA	Setting range		Type	Order code	Weight in kg Packing 1 piece
kW	... kW		A	... A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	... 2.5	1	4.0	... 6.3	DRA 9-30-DB6.3 + BU ☐	1SBK 140 624R8 ☐ 44	2.760
3.0	... 4.0	1	6.3	... 9.0	DRA 9-30-DB9.0 + BU ☐	1SBK 140 624R8 ☐ 45	2.760
5.0	... 5.5	1	9.0	... 12	DRA 12-30-DB12.5 + BU ☐	1SBK 160 624R8 ☐ 46	2.760
6.5	... 7.5	1	12.5	... 16	DRA 16-30-DB16 + BU ☐	1SBK 180 624R8 ☐ 47	2.760
0.37	... 0.55	2	1.0	... 1.6	DRA 9-30-DB1.6 + BU ☐	1SBK 140 624R8 ☐ 41	2.760
—	0.75	2	1.6	... 2.5	DRA 9-30-DB2.5 + BU ☐	1SBK 140 624R8 ☐ 42	2.760
1.1	... 1.5	2	2.5	... 4.0	DRA 9-30-DB4.0 + BU ☐	1SBK 140 624R8 ☐ 43	2.760
2.2	... 2.5	2	4.0	... 6.3	DRA 12-30-DB6.3 + BU ☐	1SBK 160 624R8 ☐ 44	2.760
3.0	... 4.0	2	6.3	... 9.0	DRA 26-30-DB9.0 + BU ☐	1SBK 240 624R8 ☐ 45	3.020
5.0	... 5.5	2	9.0	... 12.5	DRA 26-30-DB12.5 + BU ☐	1SBK 240 624R8 ☐ 46	3.020
6.5	... 7.5	2	12.5	... 16	DRA 26-30-DB16 + BU ☐	1SBK 240 624R8 ☐ 47	3.020
8.0	... 9.0	2	16.0	... 20.0	DRA 26-30-DB20 + BU ☐	1SBK 240 624R8 ☐ 48	3.020
8.0	... 11.0	2	20.0	... 25.0	DRA 26-30-DB25 + BU ☐	1SBK 240 624R8 ☐ 49	3.020

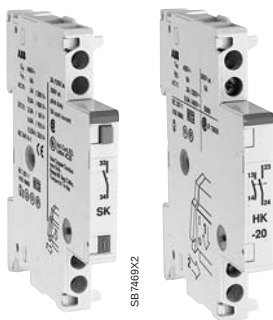
Control voltage code

Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
24	24	1	must be connected to a supply separate from the power circuit, or either phase-to-neutral
42	42	2	
48	48	3	
110	110 ... 120	4	
110 ... 115	115 ... 127	9	
220 ... 230	230 ... 240	0	
230 ... 240	240 ... 260	8	
380 ... 400	400 ... 415	5	phase-to-phase connected
400 ... 415	415 ... 440	6	

DRA ... D, DRA ... DB, DRA ... DB+BU Enclosed D.O.L. Starters Protection by Associated Manual Motor Starter



BA5-50



SK-11

HK-20

Ordering details, contactor accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017

Ordering details, manual motor starter accessories

Auxiliary contacts. Left-hand side mounting, 2 blocks at most. (the fault indicating contact must be placed right next to the manual motor starter without insertion of other accessories)

Description	Contacts	Type	Order code	Pack- ing	Weight in kg
Simultaneous contact	1 - 1	HK-11	1 SAM 101 901 R0001	10	0.031
	2 - -	HK-20	1 SAM 101 901 R0002	10	0.031
	- - 2	HK-02	1 SAM 101 901 R0003	10	0.031
Signal contact	- 1 1	SK-11	1 SAM 101 904 R0003	10	0.030

Note: Additional contacts can only be added on the DRA ... D version.

Identification labels

Description	Order code	Pack- ing	Weight in kg
Label holder	1 SAM 101 935 R0001	10	0.004
Labels (160 pieces)	1 SAM 101 935 R0002	box	0.008

Ordering details, enclosure cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027

Technical data

General data

Maximum rated operational voltage	V	415
Isolation function		yes
Short-circuit protection		yes
Overload protection		yes
Temperature compensation	°C	-25 ... +50
Protection against motor single-phase operation		yes

Available capacity of terminals to be connected

Main upstream conductors			
Rigid solid/rigid stranded	1 x mm ²	1 ... 10	
Flexible without cable end	1 x mm ²	1 ... 6	
Main downstream conductors (as per contactor rating)		A 9 to A 16	A 26
Rigid solid/rigid stranded	1 or 2 x mm ²	1 ... 4	1.5 ... 6
Flexible without cable end	1 or 2 x mm ²	0.75 ... 2.5	1 ... 4
Auxiliary conductors - Flexible	1 or 2 x mm ²	0.75 ... 2.5	

Contactor	A 9, A 12, A 16, A 26	see main catalogue "Contactors", section 2
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Enclosure

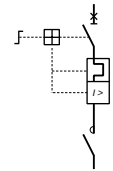
Plastic	Double insulation
Fire resistance	UL 94 V2
Protection	IP 64 (IP 54 for DRA ...+BU version)

>> Other accessories for contactors see main catalogue "Contactors", section 4
>> Other contactor data see main catalogue "Contactors", section 2

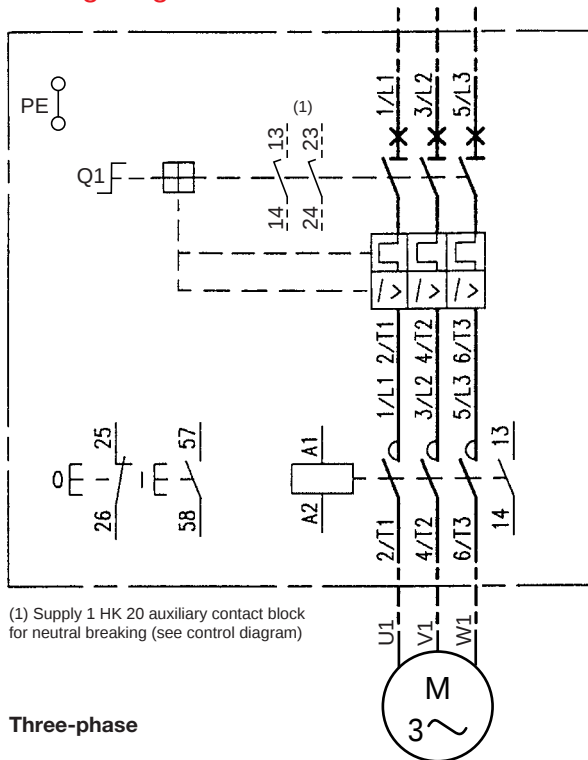
DRA ... D

Enclosed D.O.L. Starters

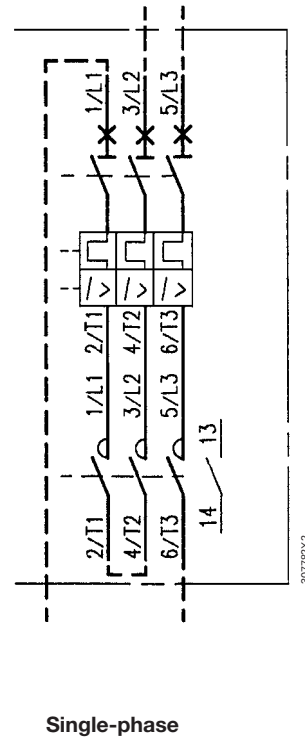
Protection by Associated Manual Motor Starter



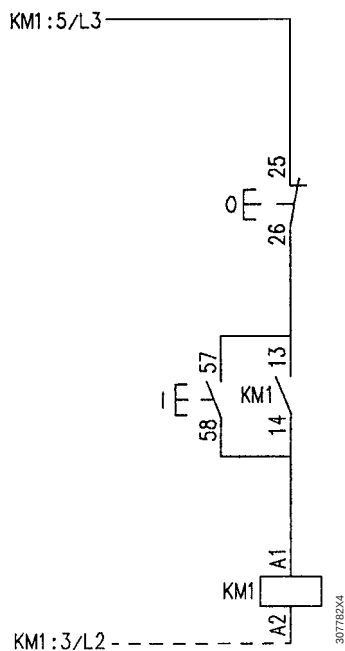
Wiring diagrams



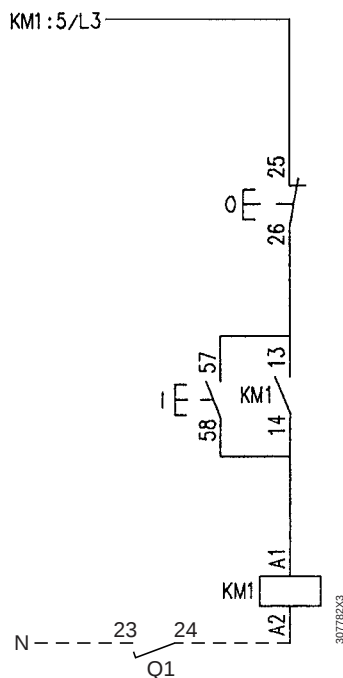
Three-phase



Single-phase



Local control
Phase-to-phase connection

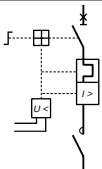


Local control
Phase-to-neutral connection

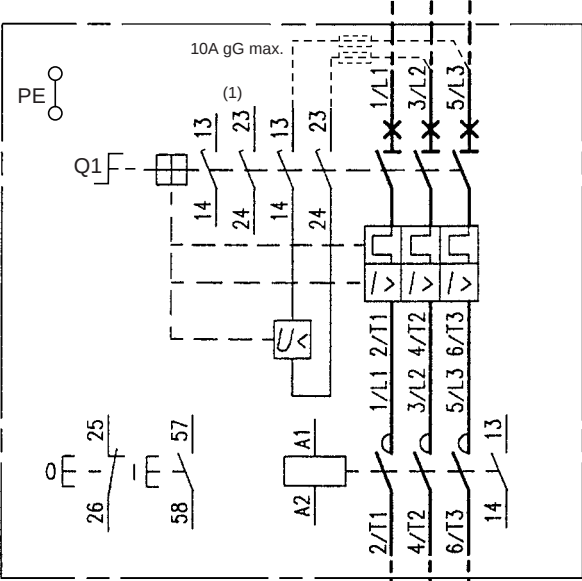
DRA ... DB

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter

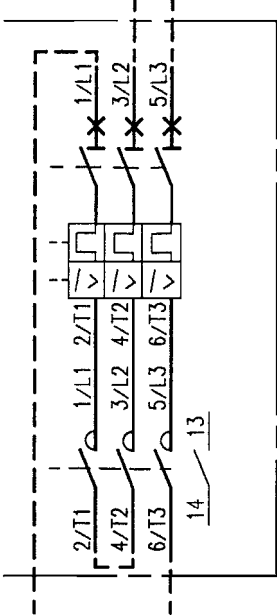


Wiring diagrams

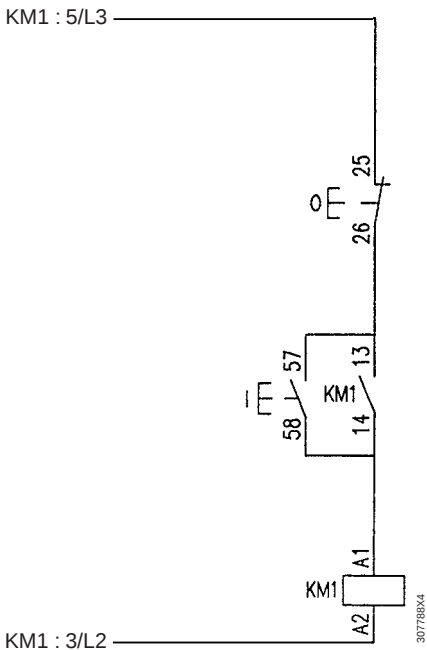


1) Contact HK 20, supplied for Us voltage ≤ 277 V. Must be connected to a separate supply or either phase-to-neutral.

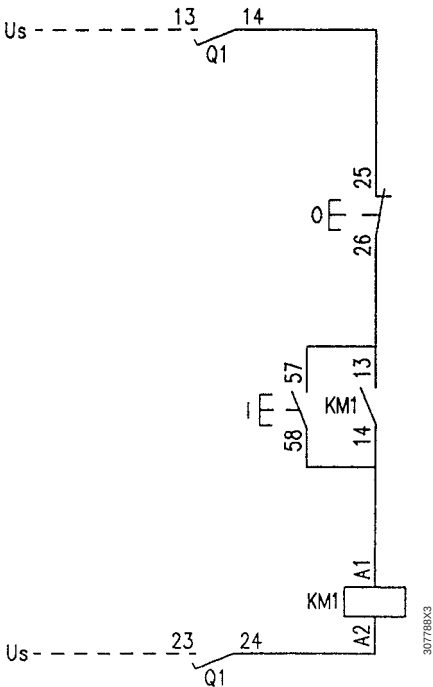
Three-phase



Single-phase



Local control
Phase-to-phase connection
 Coil voltage > 277 V

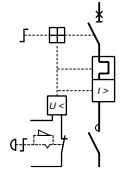


Local control
Phase to neutral connection or separate supply
 Coil voltage ≤ 277 V

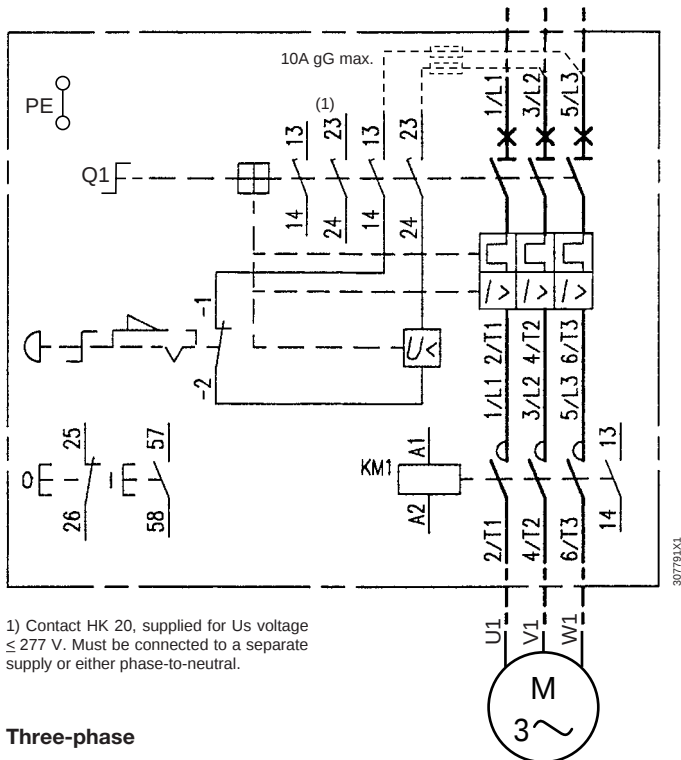
DRA ... DB+BU

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter

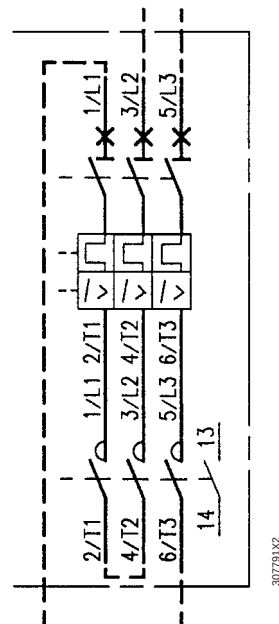


Wiring diagrams

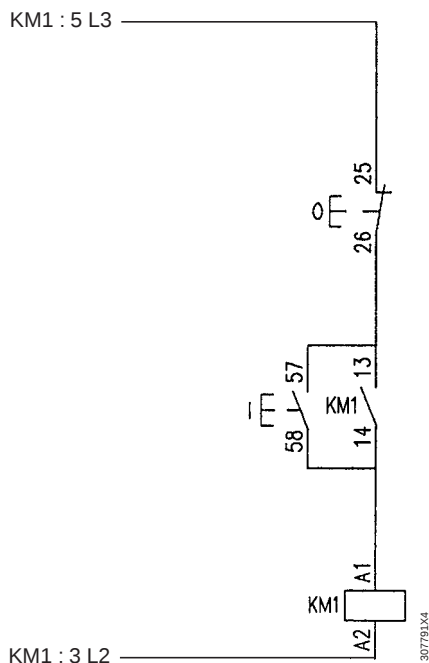


1) Contact HK 20, supplied for U_s voltage ≤ 277 V. Must be connected to a separate supply or either phase-to-neutral.

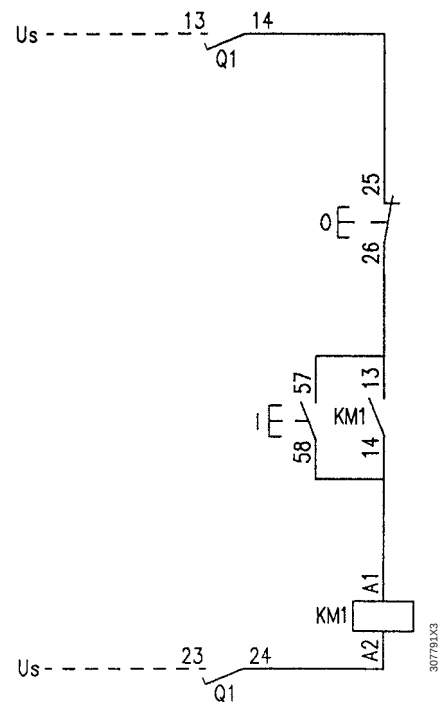
Three-phase



Single-phase



Local control
Phase-to-phase connection
 Coil voltage > 277 V

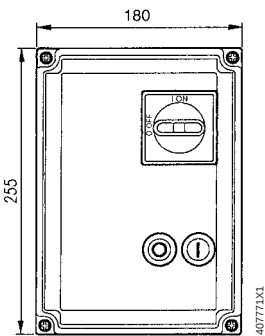


Local control
Phase to neutral connection or separate supply
 Coil voltage ≤ 277 V

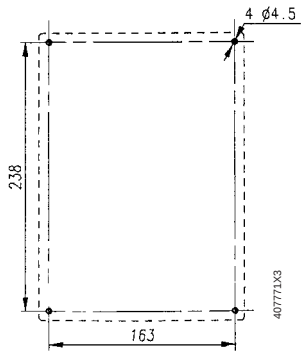
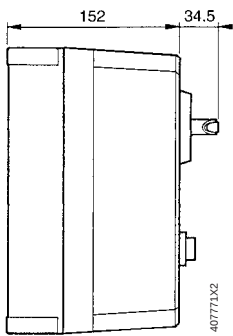
DRA ... D, DRA ... DB, DRA ... DB+BU
Enclosed D.O.L. Starters
Protection by Associated Manual Motor Starter



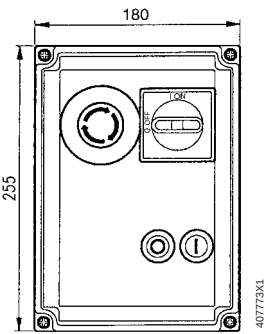
Dimensions (in mm)



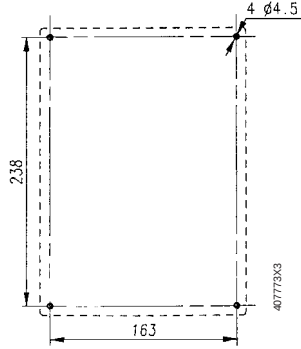
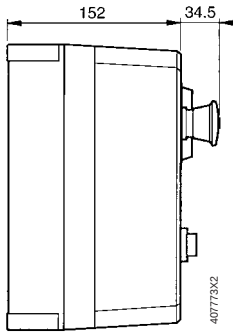
DRA ... D and DRA ... DB



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20 $\varnothing$ 32.5 for ISO 32	



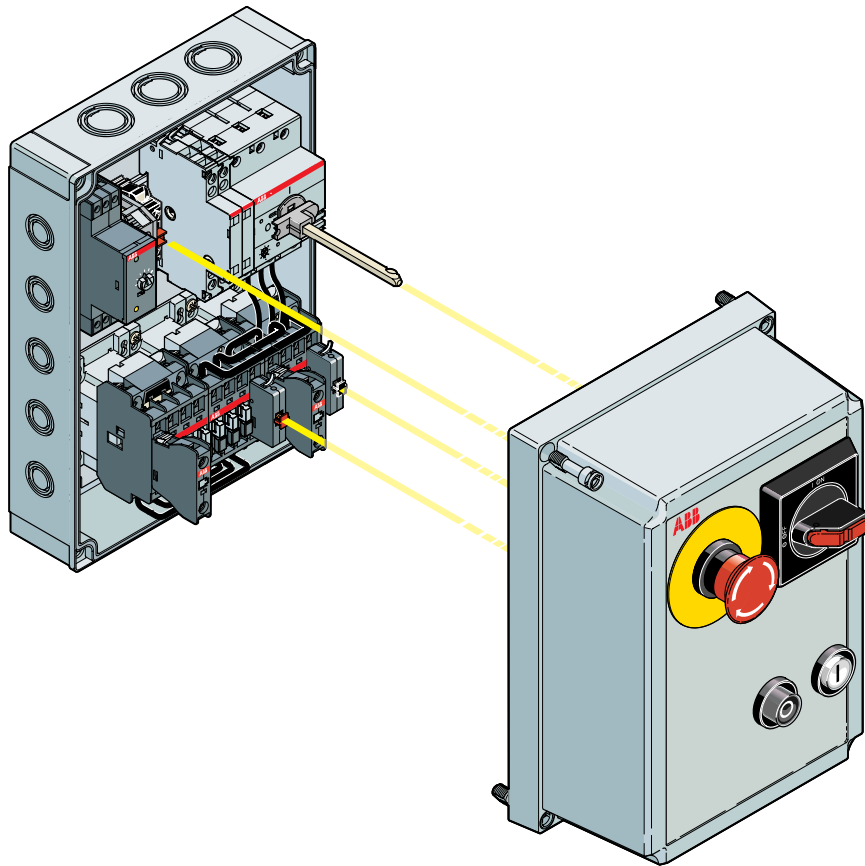
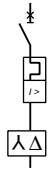
DRA ... DB + BU



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20 $\varnothing$ 32.5 for ISO 32	

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter



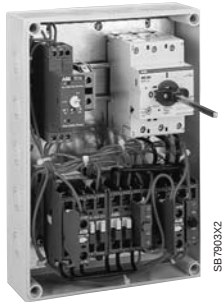
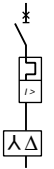
E1378D1

YRA ... DB+BU version

YRA ... D, YRA ... DB, YRA ... DB+BU

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter



YRA 9-30 D



YRA 12-30 D



YRA 9-30 DB + BU

Application

Starters for the control of three-phase asynchronous motors

- up to an operational voltage of 415 V, 50 or 60 Hz,
- at an ambient temperature ≤ 40 °C around the enclosure,
- in conformity with standards EN 60947-4-1/IEC 947-4-1 and EN 60204-1/IEC 60204-1.

Description

Each starter is delivered assembled, cabled by us and contains:

- 1 Q1 manual motor starter.
 - 1 KM1 "line" contactor, 1 KM2 "star" contactor and 1 KM3 "delta" contactor.
 - The hold-in contacts.
 - The electrical interlocking contacts for both the "star" and "delta" contactors.
 - 1 TE5S electronic timer with time lapse.
 - The power circuit connections.
 - The control circuit.
 - 1 PE terminal for connection of the external protective conductor.
 - 1 enclosure equipped with:
 - 1 operating handle, padlockable in the rest position (3 padlocks), red on yellow front plate,
 - 1 white flush "I" ON pushbutton,
 - 1 black protruding "O" OFF pushbutton.
- The handle prevents the enclosure from opening when the manual motor starter is in the "working" position.

YRA ... D version

With the recommended wiring diagram, the control circuit is isolated by the manual motor starter. If operation is interrupted, press the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

YRA ... DB version

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

YRA ... DB + BU version

The enclosure is equipped with a 40mm $\varnothing$ emergency stop mushroom headed button, with release by rotation, red on yellow front plate. This emergency stop mechanism activates the manual motor starter by means of the undervoltage coil. In this case the manual motor starter handle is black.

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil,
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

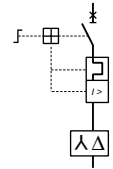
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

YRA ... D

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter



Ordering details, YRA ... D

Co-ordination $I_q = 50 \text{ kA}$ and operational voltage $\leq 415 \text{ V}$

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V			Co-ordination type Iq = 50 kA	Setting range			Type	Order code	Weight in kg Packing 1 piece
kW	...	kW		A	...	A	State control voltage	to be completed with control voltage code ☐	
3.0	...	4.0	1	6.3	...	9.0	YRA 9-30-D9.0	1SBK 142 822R8 ☐ 45	3.450
5.0	...	5.5	1	9.0	...	12.5	YRA 9-30-D12.5	1SBK 142 822R8 ☐ 46	3.450
6.5	...	7.5	1	12.5	...	16.0	YRA 9-30-D16	1SBK 142 822R8 ☐ 47	3.450
—	...	11.0	1	20.0	...	25.0	YRA 12-30-D25	1SBK 162 822R8 ☐ 49	3.450

Control voltage code

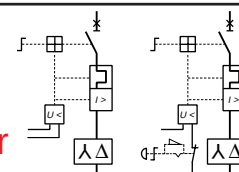
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(1) Supply 1 HK 20 auxiliary contact block for neutral breaking
(see page 11/4)

YRA ... DB, YRA ... DB+BU

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter



Ordering details, YRA ... DB (380 ... 415 V - 50/60 Hz power circuit)

Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V	Co-ordination type $I_q = 50$ kA	Setting range	Type	Order code	Weight in kg Packing 1 piece
kW ... kW		A ... A	State control voltage ☐	to be completed with control voltage code ☐	
3.0 ... 4.0	1	6.3 ... 9.0	YRA 9-30-DB9.0 ☐	1SBK 142 922R8 ☐ 45	3.450
5.0 ... 5.5	1	9.0 ... 12.5	YRA 9-30-DB12.5 ☐	1SBK 142 922R8 ☐ 46	3.450
6.5 ... 7.5	1	12.5 ... 16.0	YRA 9-30-DB16 ☐	1SBK 142 922R8 ☐ 47	3.450
– ... 11.0	1	20.0 ... 25.0	YRA 12-30-DB25 ☐	1SBK 162 922R8 ☐ 49	3.450

Ordering details, YRA ... DB + BU (380 ... 415 V - 50/60 Hz power circuit)

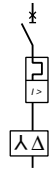
Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V	Co-ordination type $I_q = 50$ kA	Setting range	Type	Order code	Weight in kg Packing 1 piece
kW ... kW		A ... A	State control voltage ☐	to be completed with control voltage code ☐	
3.0 ... 4.0	1	6.3 ... 9.0	YRA 9-30-DB9.0 + BU ☐	1SBK 142 924R8 ☐ 45	3.580
5.0 ... 5.5	1	9.0 ... 12.5	YRA 9-30-DB12.5 + BU ☐	1SBK 142 924R8 ☐ 46	3.580
6.5 ... 7.5	1	12.5 ... 16.0	YRA 9-30-DB16 + BU ☐	1SBK 142 924R8 ☐ 47	3.580
– ... 11.0	1	20.0 ... 25.0	YRA 12-30-DB25 + BU ☐	1SBK 162 924R8 ☐ 49	3.580

Control voltage code

Voltage	Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐
24	24	1
110	110 ... 120	4
110 ... 115	115 ... 120	9
220 ... 230	230 ... 240	0
230 ... 240	240	8
380 ... 400	400 ... 415	5
400 ... 415	415 ... 440	6

YRA ... D, YRA ... DB, YRA ... DB+BU Enclosed Star-Delta Starters Protection by Associated Manual Motor Starter



BA5-50



SK-11



HK-20

Ordering details, contactor accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017

Ordering details, manual motor starter accessories

Auxiliary contacts. Left-hand side mounting, 2 blocks at most. (the fault indicating contact must be placed right next to the manual motor starter without insertion of other accessories)

Description	Contacts	Type	Order code	Pack- ing	Weight in kg
Simultaneous contact	1 - 1	HK-11	1 SAM 101 901 R0001	10	0.031
	2 - -	HK-20	1 SAM 101 901 R0002	10	0.031
	- - 2	HK-02	1 SAM 101 901 R0003	10	0.031
	- 1 1	SK-11	1 SAM 101 904 R0003	10	0.030

Note: Contacts can only be added on the YRA ... D version.

Identification labels

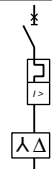
Description	Order code	Pack- ing	Weight in kg
Label holder	1 SAM 101 935 R0001	10	0.004
Labels (160 pieces)	1 SAM 101 935 R0002	box	0.008

Ordering details, enclosure cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027

>> Other accessories for contactors: see main catalogue "Contactors", section 4

YRA ... D, YRA ... DB, YRA ... DB+BU
Enclosed Star-Delta Starters
Protection by Associated Manual Motor Starter



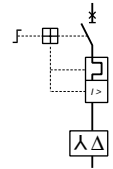
Technical data

General technical data		
Maximum rated operational voltage	V	415
Isolation function		yes
Short-circuit protection		yes
Overload protection		yes
Temperature compensation	°C	-25 ... +50
Protection against motor single-phase operation		yes
Available capacity of terminals to be connected		
Main upstream conductors		Q1
Rigid solid/Rigid stranded	1 x mm ²	1 ... 10
Flexible without cable end	1 x mm ²	1 ... 6
Main downstream conductors		KM1 KM3
Rigid solid/Rigid stranded	mm ²	2 x 1 ... 4 1 x 1 ... 4
Flexible without cable end	mm ²	2 x 0.75 ... 2.5 1 x 0.75 ... 2.5
Auxiliary conductors - Flexible	1 or 2 x mm ²	0.75 ... 2.5
Contactors	A 9, A 12	see main catalogue "Contactors" section 2
Timer	TE 5S	see main catalogue "Contactors" section 4
Enclosure		
Plastic		Double insulation
Fire resistance		UL 94 V2
Protection		IP 64 (IP 54 for YRA ... D + BU version)

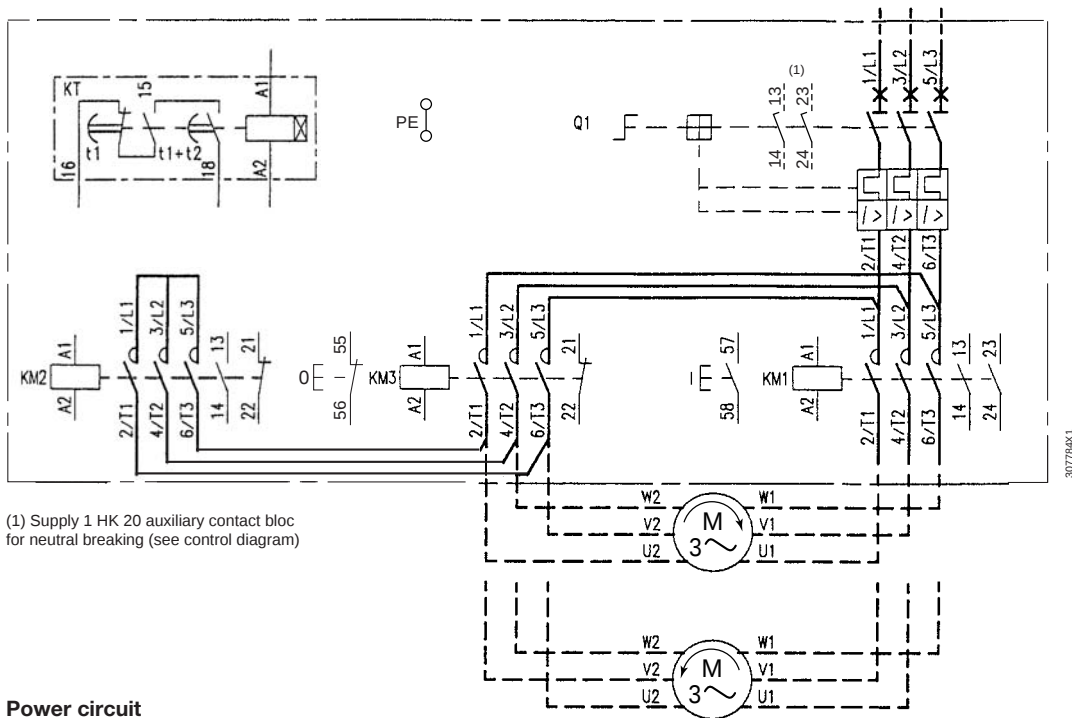
YRA ... D

Enclosed Star-Delta Starters

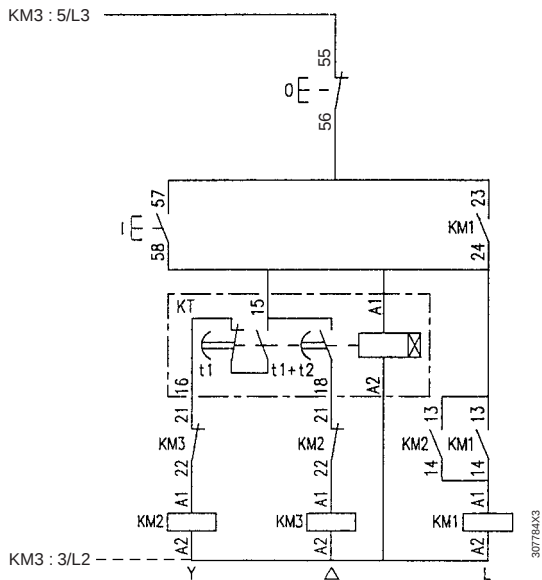
Protection by Associated Manual Motor Starter



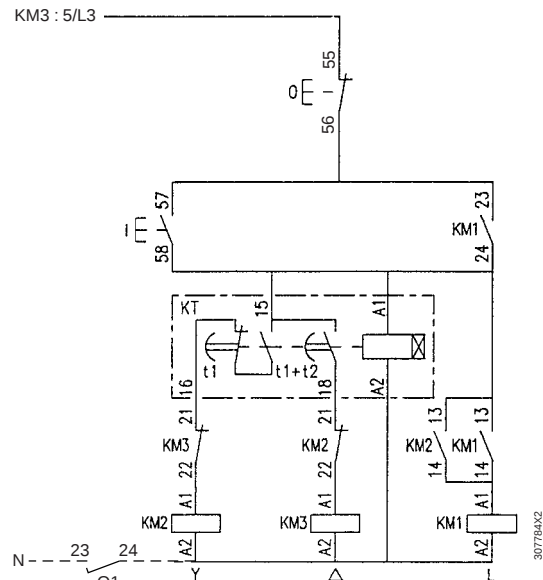
Wiring diagrams



Power circuit



Local control Phase-to-phase connection

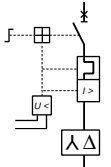


Local control Phase-to-neutral connection

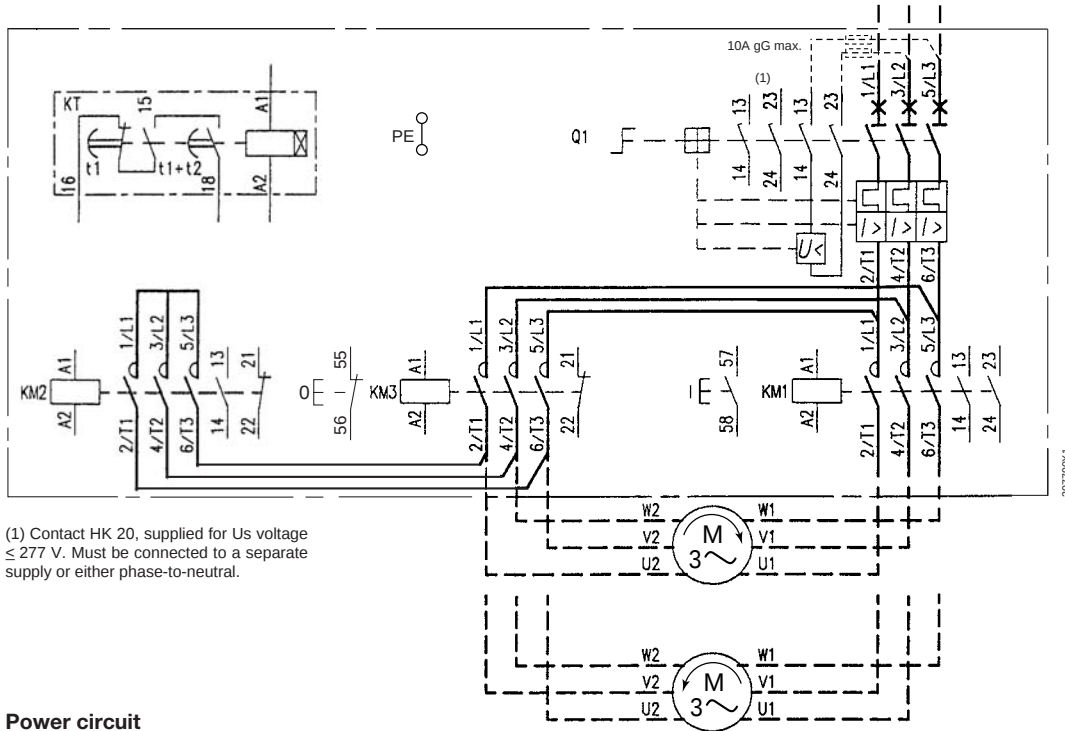
YRA ... DB

Enclosed Star-Delta Starters

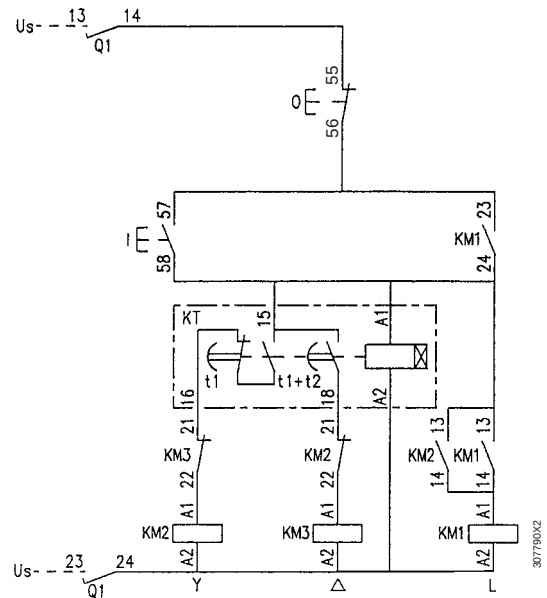
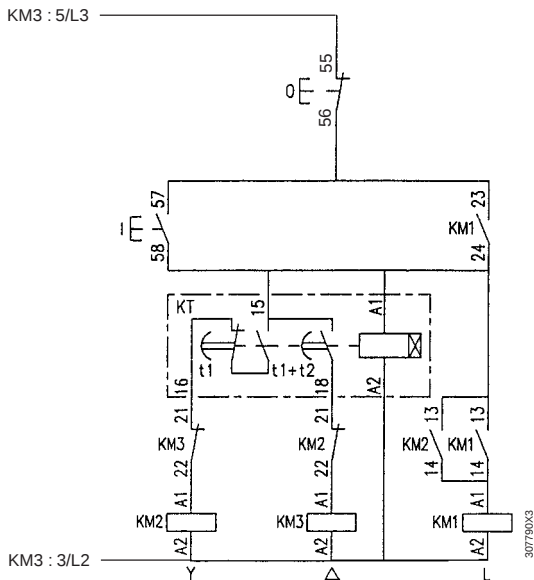
Protection by Associated Manual Motor Starter



Wiring diagrams



Power circuit



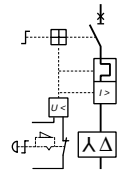
Local control
Phase-to-phase connection
Coil voltage > 277 V

Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

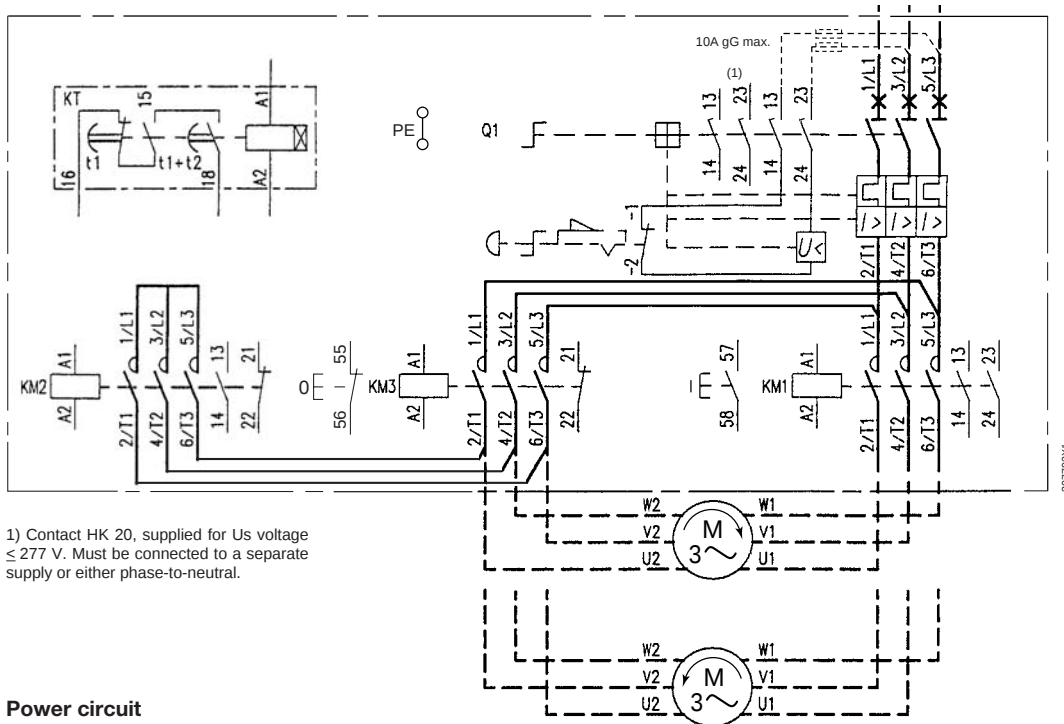
YRA ... DB+BU

Enclosed Star-Delta Starters

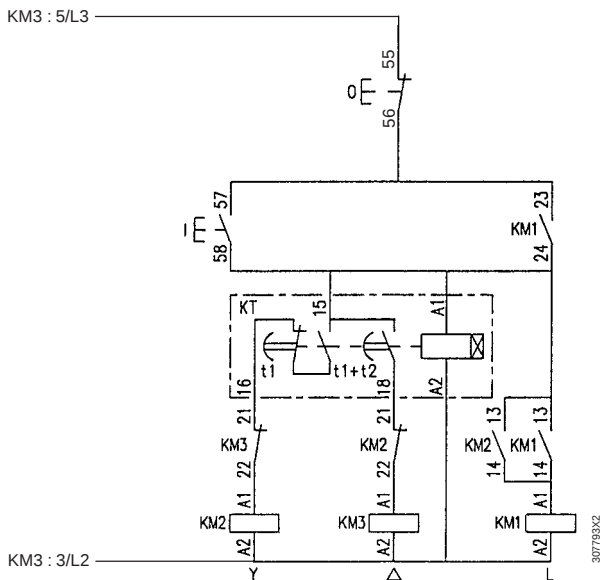
Protection by Associated Manual Motor Starter



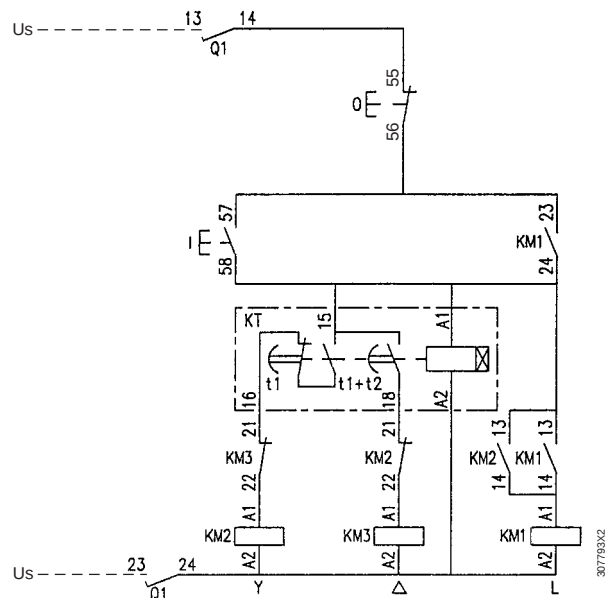
Wiring diagrams



Power circuit



Local control
Phase-to-phase connection
Coil voltage > 277 V



Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

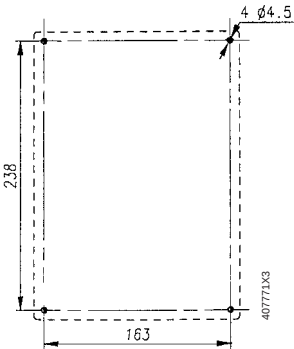
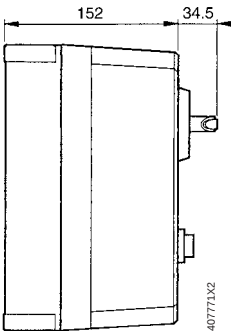
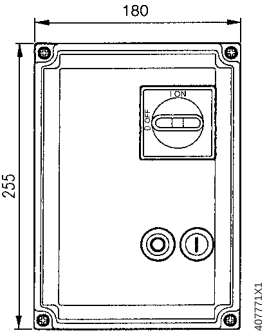
YRA ... D, YRA ... DB, YRA ... DB+BU

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter

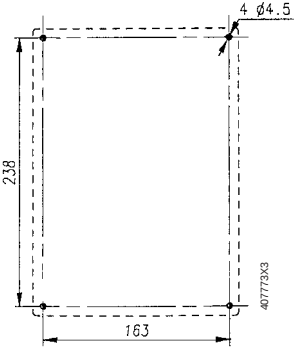
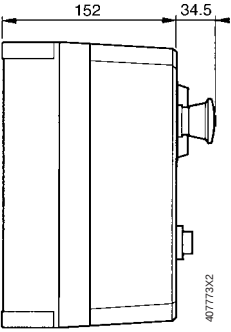
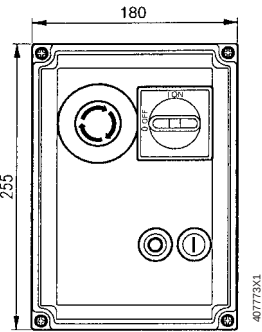


Dimensions (in mm)



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

YRA ... D and YRA ... DB

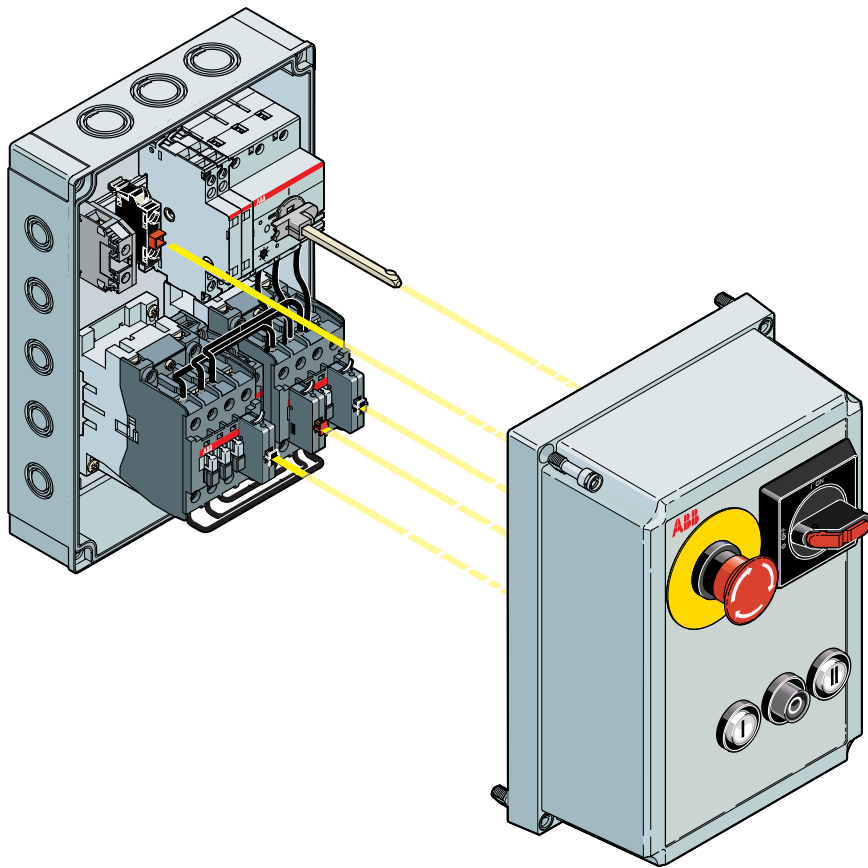


Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

YRA ... DB + BU

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



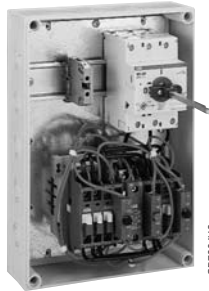
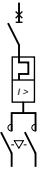
E1374D1

WRA ... DB+BU version

WRA ... D, WRA ... DB, WRA ... DB+BU

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



SB7904X2

WRA 9-30 D



SB800053

WRA 26-30 D



SB800353

WRA 9-30 DB + BU

Application

Reversing starters for the control of three-phase asynchronous motors

- up to an operational voltage of 415 V, 50 or 60 Hz,
- for a starting time of 1.5 s maximum,
and a switching frequency ≤ 15 starts/hour with a load factor of 80%
or ≤ 30 starts/hour with a load factor of 50%,
- at an ambient temperature ≤ 40 °C around the enclosure,
- in conformity with EN 60947-4-1/IEC 947-4-1 and EN 60204-1/IEC 60204-1 standards.

Description

Each reversing starter is delivered assembled, cabled by us and contains:

- 1 MS 325 manual motor starter.
- 2 three-pole contactors of the same rating, A 9 ... A 26, horizontally mounted.
The hold-in function is performed on each contactor by means of N.O. auxiliary contacts.
- 1 VE 5 mechanical and electrical interlocking device.
This device mechanically prevents one of the contactors from closing while the other contactor is closed. It is also equipped with 2 N.C. auxiliary contacts inserted in the control circuit for electrical interlocking of the contactors.
- 1 BEM...-30 power connection set.
- The control circuit.
- 1 PE terminal for connection of the external protective conductor.
- 1 enclosure equipped with:
 - 1 operating handle, padlockable in the rest position (3 padlocks), red on yellow front plate,
 - 1 white flush "I" ON pushbutton,
 - 1 white flush "II" ON pushbutton,
 - 1 black protruding "O" OFF pushbutton.The handle prevents the enclosure from opening when the manual motor starter is in the "working" position.

WRA ... D version

With the recommended wiring diagram, the control circuit is isolated by the manual motor starter. If operation is interrupted, press the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

WRA ... DB version

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil,
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

Emergency stop actuated by manual motor starter handle. It operates a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

WRA ... DB + BU version

The enclosure is equipped with a 40mm Ø emergency stop mushroom headed button, with release by rotation, red on yellow front plate. This emergency stop mechanism activates the manual motor starter by means of the undervoltage coil. In this case the manual motor starter handle is black.

380 ... 415 V - 50/60 Hz power circuit

The manual motor starter is equipped with:

- an undervoltage coil,
- auxiliary contacts to isolate the entire control circuit.

If supply is cut, the manual motor starter must be reset before pressing the "ON" pushbutton to restart.

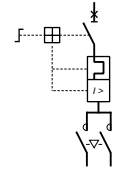
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

Reminder: The choice of the emergency stop category shall be determined according to the risk assessment of the machine (EN 60 204-1, § 9.2.5.4.2).

WRA ... D

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



WRA ... D ordering details

Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V			Co-ordination type Iq = 50 kA	Setting range			Type	Order code	Weight in kg Packing 1 piece
kW	...	kW		A	...	A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	...	2.5	1	4.0	...	6.3	WRA 9-30-D6.3 ☐	1SBK 141 522R8 ☐ 44	3.060
3.0	...	4.0	1	6.3	...	9.0	WRA 9-30-D9.0 ☐	1SBK 141 522R8 ☐ 45	3.060
5.0	...	5.5	1	9.0	...	12	WRA 12-30-D12.5 ☐	1SBK 161 522R8 ☐ 46	3.060
6.5	...	7.5	1	12.5	...	16	WRA 16-30-D16 ☐	1SBK 181 522R8 ☐ 47	3.060
0.37	...	0.55	2	1.0	...	1.6	WRA 9-30-D1.6 ☐	1SBK 141 522R8 ☐ 41	3.060
–		0.75	2	1.6	...	2.5	WRA 9-30-D2.5 ☐	1SBK 141 522R8 ☐ 42	3.060
1.1	...	1.5	2	2.5	...	4.0	WRA 9-30-D4.0 ☐	1SBK 141 522R8 ☐ 43	3.060
2.2	...	2.5	2	4.0	...	6.3	WRA 12-30-D6.3 ☐	1SBK 161 522R8 ☐ 44	3.060
3.0	...	4.0	2	6.3	...	9.0	WRA 26-30-D9.0 ☐	1SBK 241 522R8 ☐ 45	3.600
5.0	...	5.5	2	9.0	...	12.5	WRA 26-30-D12.5 ☐	1SBK 241 522R8 ☐ 46	3.600
6.5	...	7.5	2	12.5	...	16	WRA 26-30-D16 ☐	1SBK 241 522R8 ☐ 47	3.600
8.0	...	9.0	2	16.0	...	20.0	WRA 26-30-D20 ☐	1SBK 241 522R8 ☐ 48	3.600
–		11.0	2	20.0	...	25.0	WRA 26-30-D25 ☐	1SBK 241 522R8 ☐ 49	3.600

Control voltage code

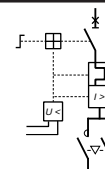
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240 ... 260	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(1) Supply 1 HK 20 auxiliary contact block for neutral breaking
(see page 12/5)

WRA ... DB

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



WRA ... DB ordering details (380 ... 415 V - 50/60 Hz power circuit)

Co-ordination $I_q = 50 \text{ kA}$ and operational voltage $\leq 415 \text{ V}$

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V			Co-ordination type Iq = 50 kA	Setting range			Type	Order code	Weight in kg Packing 1 piece
kW	...	kW		A	...	A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	...	2.5	1	4.0	...	6.3	WRA 9-30-DB6.3 ☐	1SBK 140 922R8 ☐ 44	3.060
3.0	...	4.0	1	6.3	...	9.0	WRA 9-30-DB9.0 ☐	1SBK 140 922R8 ☐ 45	3.060
5.0	...	5.5	1	9.0	...	12	WRA 12-30-DB12.5 ☐	1SBK 160 922R8 ☐ 46	3.060
6.5	...	7.5	1	12.5	...	16	WRA 16-30-DB16 ☐	1SBK 180 922R8 ☐ 47	3.060
0.37	...	0.55	2	1.0	...	1.6	WRA 9-30-DB1.6 ☐	1SBK 140 922R8 ☐ 41	3.060
–		0.75	2	1.6	...	2.5	WRA 9-30-DB2.5 ☐	1SBK 140 922R8 ☐ 42	3.060
1.1	...	1.5	2	2.5	...	4.0	WRA 9-30-DB4.0 ☐	1SBK 140 922R8 ☐ 43	3.060
2.2	...	2.5	2	4.0	...	6.3	WRA 12-30-DB6.3 ☐	1SBK 160 922R8 ☐ 44	3.060
3.0	...	4.0	2	6.3	...	9.0	WRA 26-30-DB9.0 ☐	1SBK 240 922R8 ☐ 45	3.600
5.0	...	5.5	2	9.0	...	12.5	WRA 26-30-DB12.5 ☐	1SBK 240 922R8 ☐ 46	3.600
6.5	...	7.5	2	12.5	...	16	WRA 26-30-DB16 ☐	1SBK 240 922R8 ☐ 47	3.600
8.0	...	9.0	2	16.0	...	20.0	WRA 26-30-DB20 ☐	1SBK 240 922R8 ☐ 48	3.600
–		11.0	2	20.0	...	25.0	WRA 26-30-DB25 ☐	1SBK 240 922R8 ☐ 49	3.600

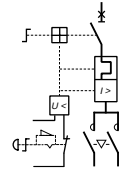
Control voltage code

Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
24	24	1	must be connected to a supply separate from the power circuit, or either phase-to-neutral
42	42	2	
48	48	3	
110	110 ... 120	4	
110 ... 115	115 ... 127	9	
220 ... 230	230 ... 240	0	phase-to-phase connected
230 ... 240	240 ... 260	8	
380 ... 400	400 ... 415	5	phase-to-phase connected
400 ... 415	415 ... 440	6	

WRA ... DB+BU

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



WRA ... DB + BU ordering details (380 ... 415 V - 50/60 Hz power circuit)

Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V			Co-ordination type Iq = 50 kA	Setting range			Type	Order code	Weight in kg Packing 1 piece
kW	...	kW		A	...	A	State control voltage ☐	to be completed with control voltage code ☐	
2.2	...	2.5	1	4.0	...	6.3	WRA 9-30-DB6.3 + BU ☐	1SBK 140 924R8 ☐ 44	3.200
3.0	...	4.0	1	6.3	...	9.0	WRA 9-30-DB9.0 + BU ☐	1SBK 140 924R8 ☐ 45	3.200
5.0	...	5.5	1	9.0	...	12	WRA 12-30-DB12.5 + BU ☐	1SBK 160 924R8 ☐ 46	3.200
6.5	...	7.5	1	12.5	...	16	WRA 16-30-DB16 + BU ☐	1SBK 180 924R8 ☐ 47	3.200
0.37	...	0.55	2	1.0	...	1.6	WRA 9-30-DB1.6 + BU ☐	1SBK 140 924R8 ☐ 41	3.200
–		0.75	2	1.6	...	2.5	WRA 9-30-DB2.5 + BU ☐	1SBK 140 924R8 ☐ 42	3.200
1.1	...	1.5	2	2.5	...	4.0	WRA 9-30-DB4.0 + BU ☐	1SBK 140 924R8 ☐ 43	3.200
2.2	...	2.5	2	4.0	...	6.3	WRA 12-30-DB6.3 + BU ☐	1SBK 160 924R8 ☐ 44	3.200
3.0	...	4.0	2	6.3	...	9.0	WRA 26-30-DB9.0 + BU ☐	1SBK 240 924R8 ☐ 45	3.740
5.0	...	5.5	2	9.0	...	12.5	WRA 26-30-DB12.5 + BU ☐	1SBK 240 924R8 ☐ 46	3.740
6.5	...	7.5	2	12.5	...	16	WRA 26-30-DB16 + BU ☐	1SBK 240 924R8 ☐ 47	3.740
8.0	...	9.0	2	16.0	...	20.0	WRA 26-30-DB20 + BU ☐	1SBK 240 924R8 ☐ 48	3.740
–		11.0	2	20.0	...	25.0	WRA 26-30-DB25 + BU ☐	1SBK 240 924R8 ☐ 49	3.740

Control voltage code

Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
24	24	1	must be connected to a supply separate from the power circuit, or either phase-to-neutral
42	42	2	
48	48	3	
110	110 ... 120	4	
110 ... 115	115 ... 127	9	
220 ... 230	230 ... 240	0	
230 ... 240	240 ... 260	8	
380 ... 400	400 ... 415	5	phase-to-phase connected
400 ... 415	415 ... 440	6	

WRA ... D, WRA ... DB, WRA ... DB+BU

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



BA5-50



SK-11

HK-20

Ordering details, contactor accessories

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	1 SBN 11 0000 R1000	box	0.017

Ordering details, manual motor starter accessories

Auxiliary contacts. Left-hand side mounting, 2 blocks at most. (the fault indicating contact must be placed right next to the manual motor starter without insertion of other accessories)

Description	Contacts	Type	Order code	Pack- ing	Weight in kg
Simultaneous contact	1 - 1	HK-11	1 SAM 101 901 R0001	10	0.031
	2 - -	HK-20	1 SAM 101 901 R0002	10	0.031
	- - 2	HK-02	1 SAM 101 901 R0003	10	0.031
Signal contact	- 1 1	SK-11	1 SAM 101 904 R0003	10	0.030

Note: Additional contacts can only be added on the WRA ... D version.

Identification labels

Description	Order code	Pack- ing	Weight in kg
Label holder	1 SAM 101 935 R0001	10	0.004
Labels (160 pieces)	1 SAM 101 935 R0002	box	0.008

Ordering details, enclosure cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 11 0312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 11 0314 R1000	2	0.027

Technical data

General data

Maximum rated operational voltage	V	415
Isolation function		yes
Short-circuit protection		yes
Overload protection		yes
Temperature compensation	°C	-25 ... +50
Protection against motor single-phase operation		yes

Available capacity of terminals to be connected

Main upstream conductors			
Rigid solid/Rigid stranded	1 x mm ²	1 ... 10	
Flexible without cable end	1 x mm ²	1 ... 6	
Main downstream conductors (as per contactor rating)		A 9 to A 16	A 26
Rigid solid/Rigid stranded	1 x mm ²	1 ... 4	1.5 ... 6
Flexible without cable end	1 x mm ²	0.75 ... 2.5	1 ... 4
Auxiliary conductors - Flexible	1 or 2 x mm ²	0.75 ... 2.5	

Contactors	A 9, A 12, A 16, A 26	see main catalogue "Contactors", section 2
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Power connections

For reversing starter	Insulated copper connect.	Cross-section
WRA 9-30 D, WRA 12-30 D, WRA 16-30 D	BEM16-30 rigid solid	2.5 mm ²
WRA 26-30 D	BEM26-30 rigid stranded	6 mm ²

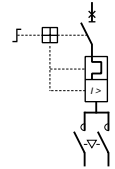
Enclosure

Plastic	Double insulation
Fire resistance	UL 94 V2
Protection	IP 64 (IP 54 for WRA ... + BU version)

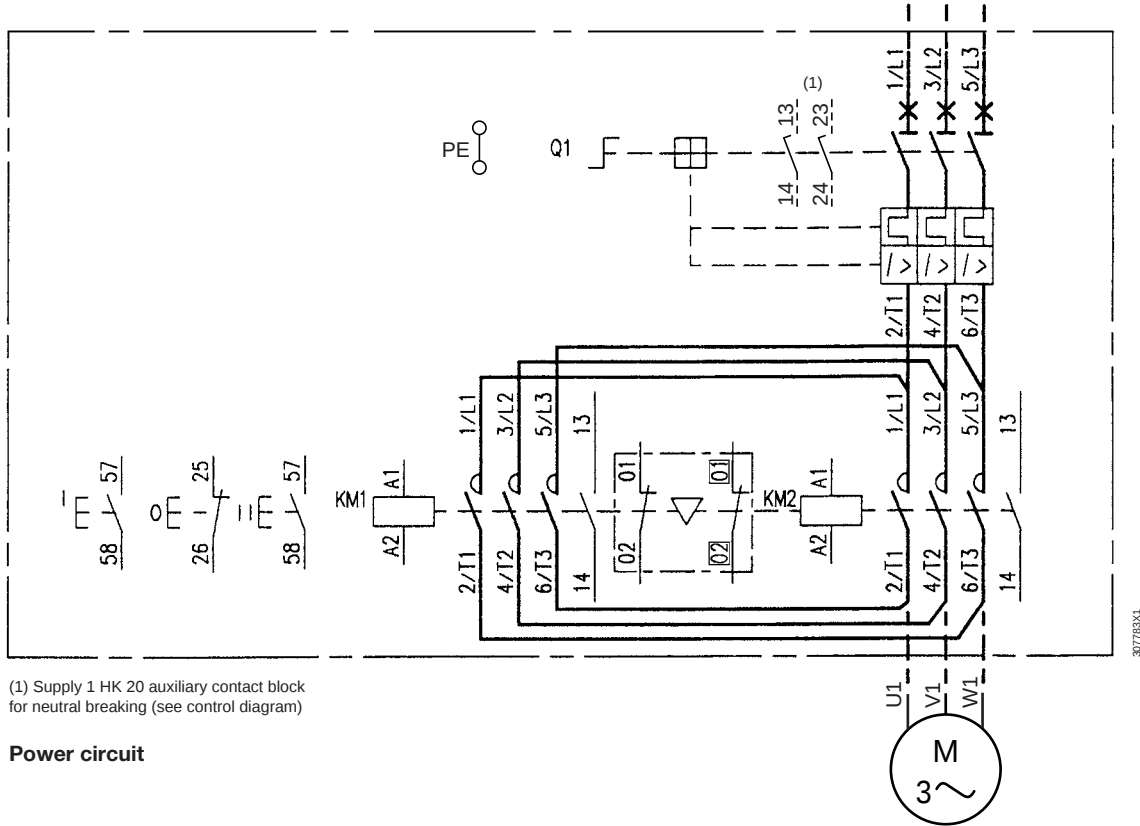
WRA ... D

Enclosed Reversing Starters

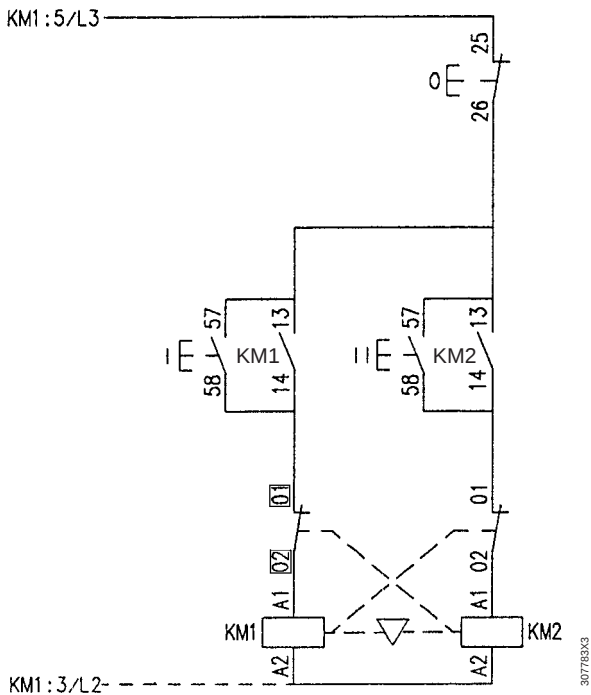
Protection by Associated Manual Motor Starter



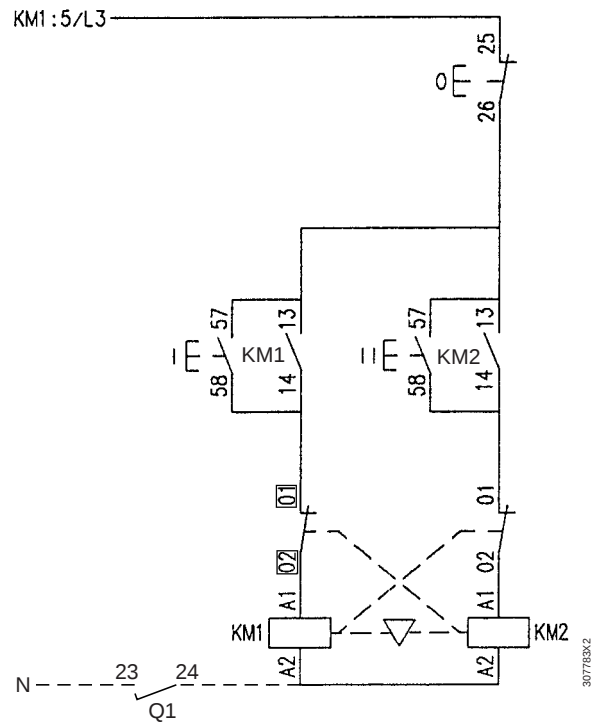
Wiring diagrams



Power circuit



Local control Phase-to-phase connection

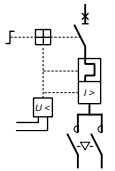


Local control Phase-to-neutral connection

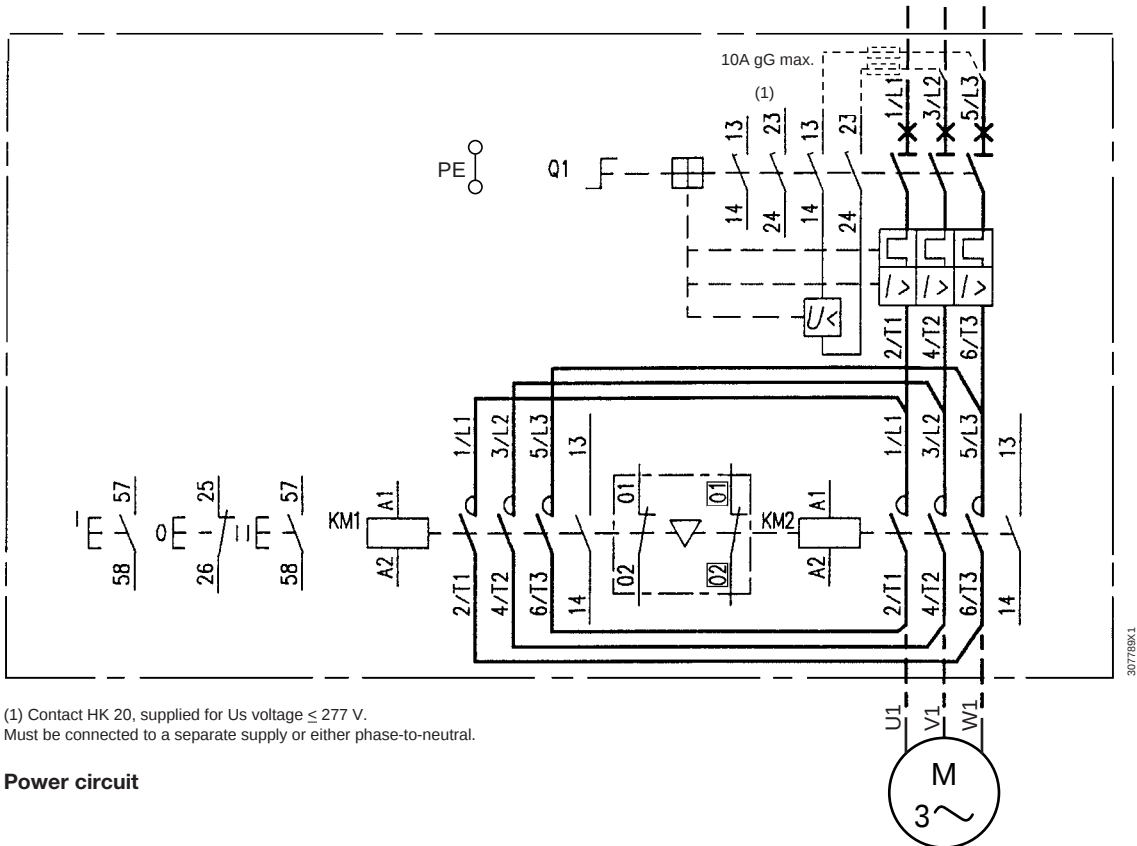
WRA ... DB

Enclosed Reversing Starters

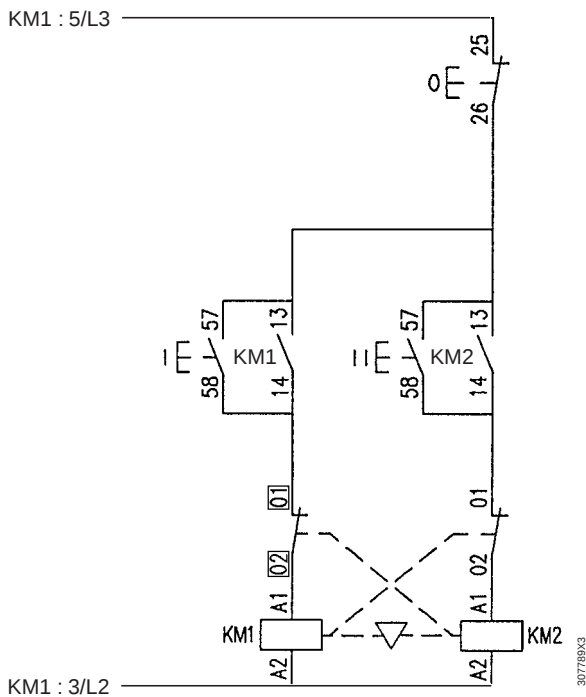
Protection by Associated Manual Motor Starter



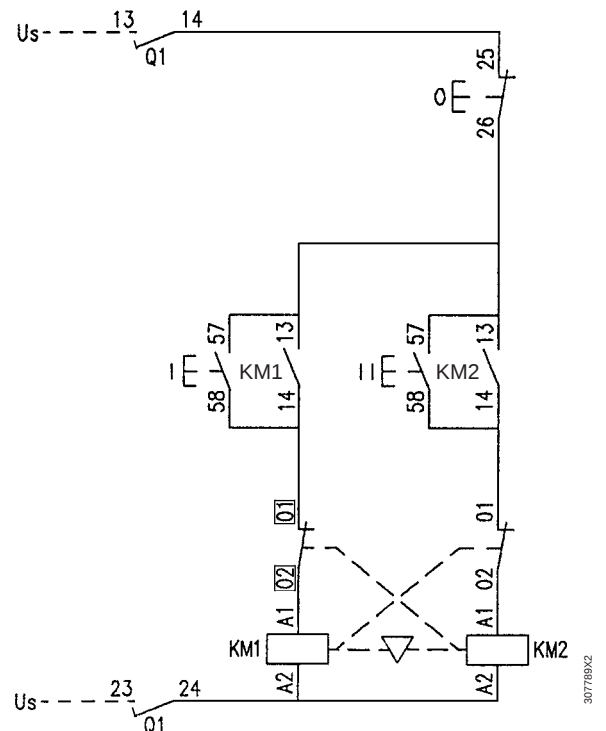
Wiring diagrams



Power circuit



Local control
Phase-to-phase connection
Coil voltage > 277 V

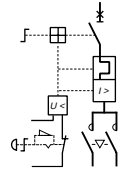


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

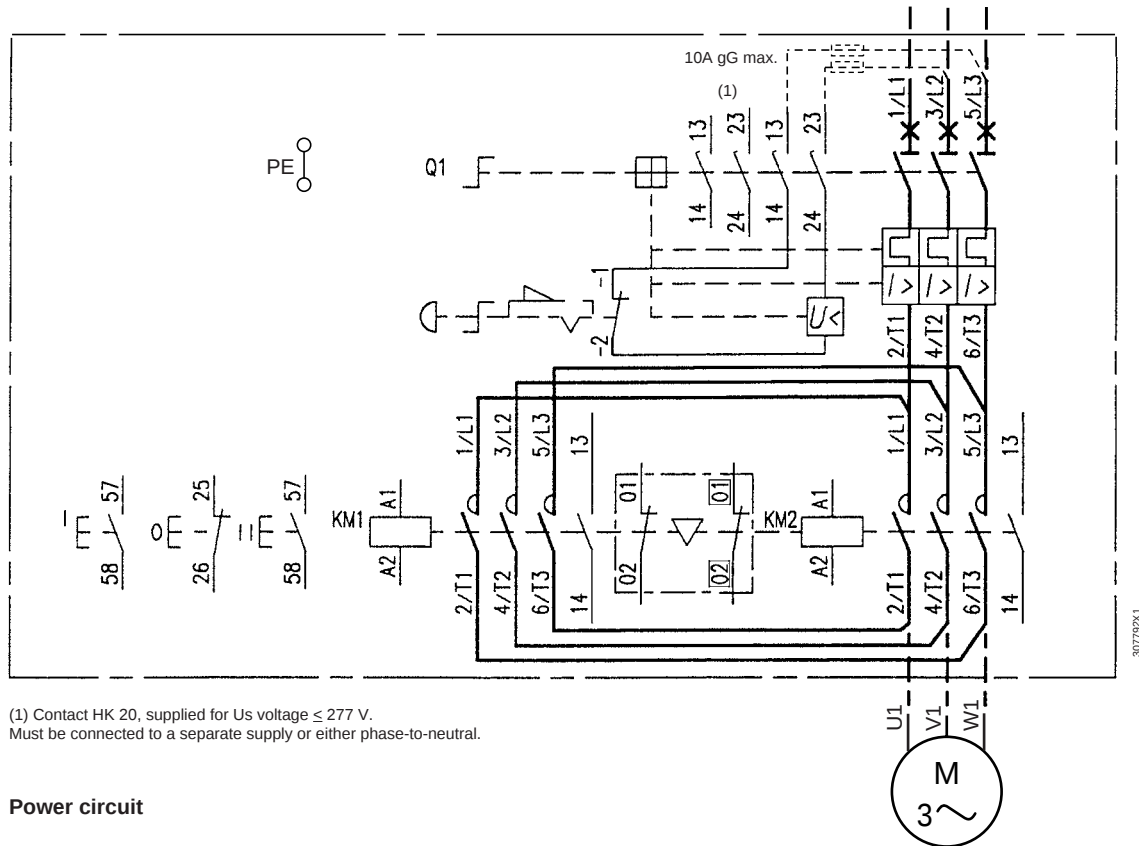
WRA ... DB+BU

Enclosed Reversing Starters

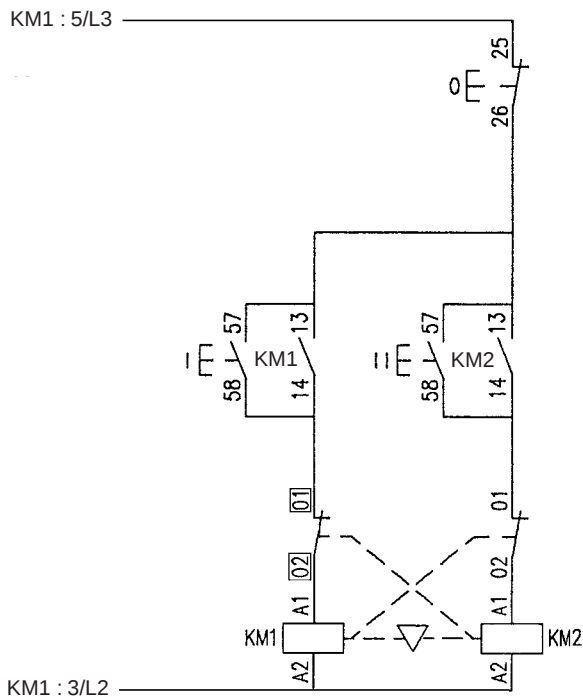
Protection by Associated Manual Motor Starter



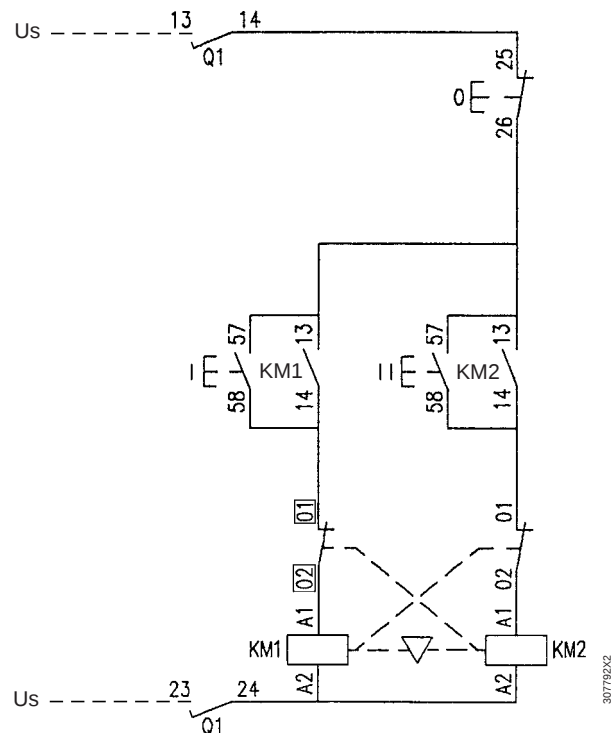
Wiring diagrams



Power circuit



Local control
Phase-to-phase connection
Coil voltage > 277 V

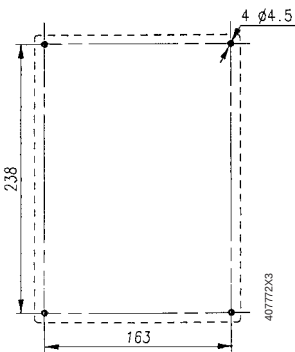
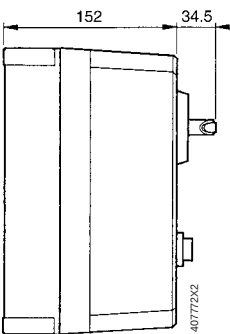
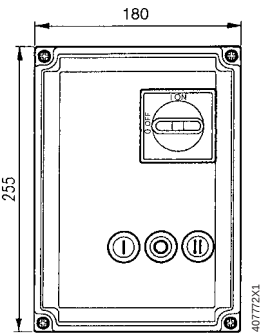


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

WRA ... D, WRA ... DB, WRA ... DB+BU Enclosed Reversing Starters Protection by Associated Manual Motor Starter

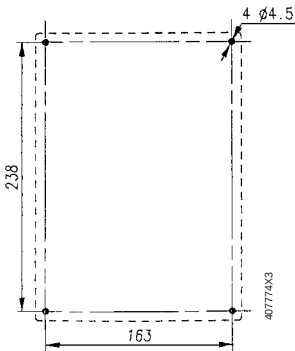
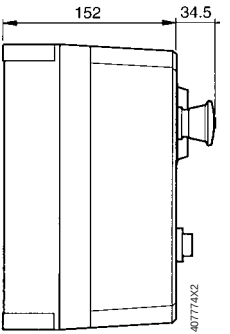
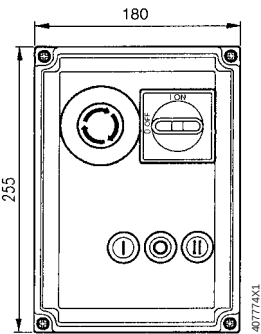


Dimensions (in mm)



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

WRA ... D and WRA ... DB



Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

WRA ... DB + BU

Notes

This image shows a full page of graph paper. The background is a solid light blue color. Overlaid on this background is a precise grid of thin red lines. The grid consists of small, equal-sized squares that cover the entire area of the page, leaving no margins or other markings.

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DRA...-30	Enclosed D.O.L. Starters - Protection by Thermal O/L Relay	7/2
DRA...-30 D	Enclosed D.O.L. Starters - Protection by Associated Manual Motor Starter	10/2
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Publication
No: 1SBC009500R1002
PDF File (03.2004)