

1SBC 0095 00 R1001



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	415 V	440 V	500 V	600 V	660-690 V
		380-400 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

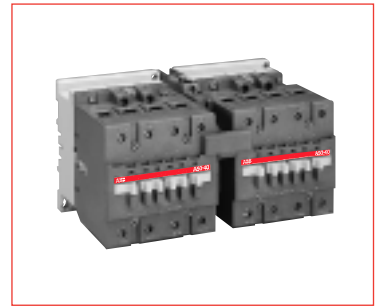
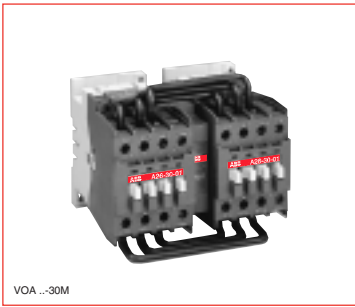
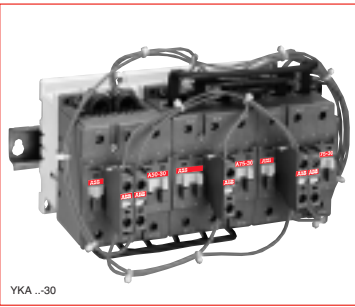


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Open Type Starters

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)

170 A AC-3

110 A AC-3

125 A AC-1

Rated operational power

90 kW

55 kW

–

Starter type

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

VOA ...30M / VNA ...30M

VOA ...40Z

Thermal O/L relay

TA ... (order separately)

–

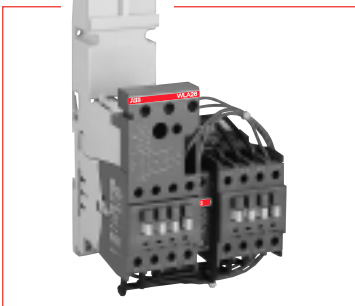
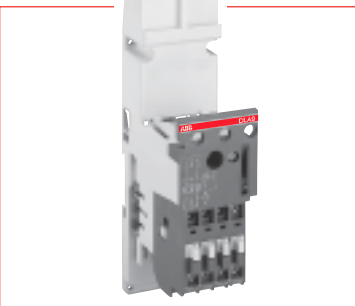
Section

2

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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

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)

110 A AC-3

170 A AC-3

110 A AC-3

Rated operational power

55 kW

90 kW

55 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

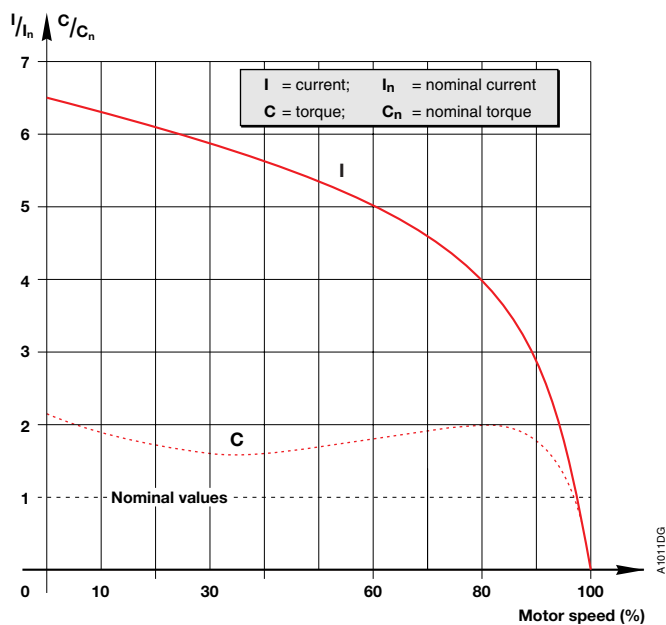
A combination starter performs the following functions:

- 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

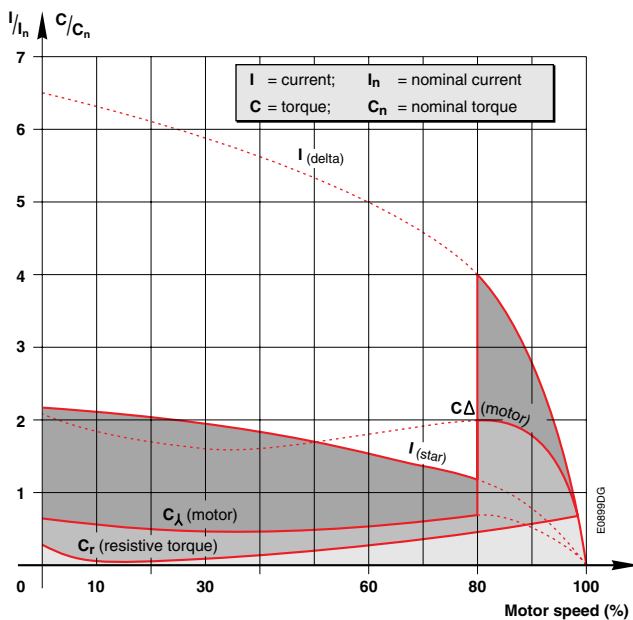
General

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

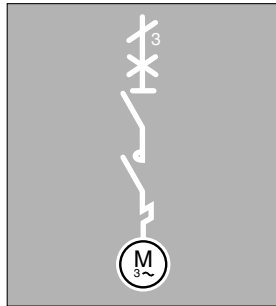
After 50 ms have elapsed, the KM3 "delta" contactor closes, and the motor accelerates until it reaches nominal speed.

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.

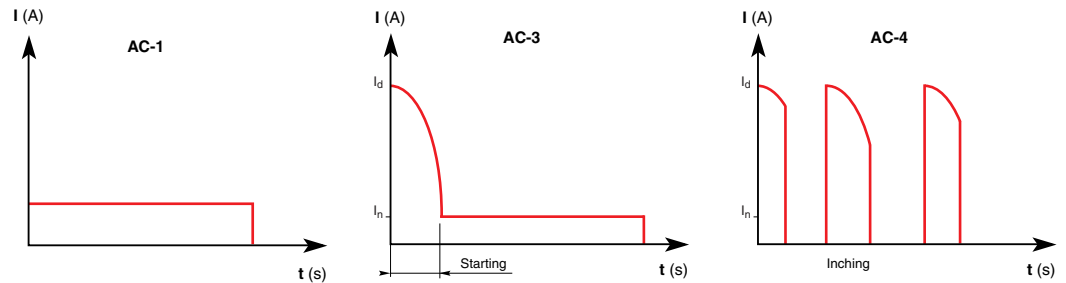
A complete collection of co-ordination tables, according to IEC 947-4-1 (EN 60 947-4-1), is available on request.

General Information

Utilization Categories

1

Utilization categories



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_c/U_e	Cos. φ or L/R (ms)	I_c/I_e	U_c/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

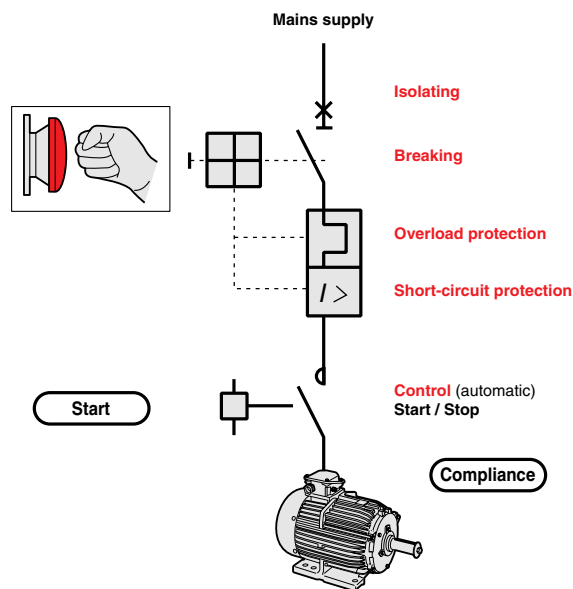


CE marking is part of a procedure for exclusively administrative use and is intended to guarantee the free movement of the product within the European Community.

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.

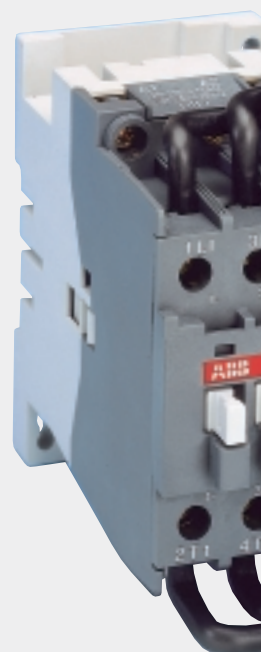
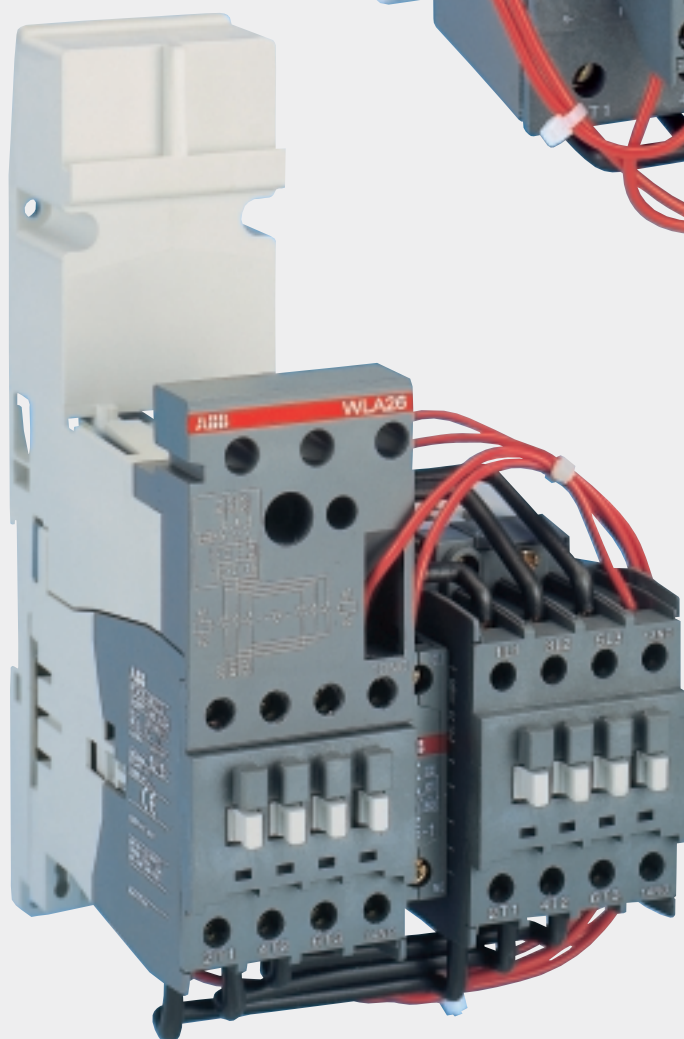
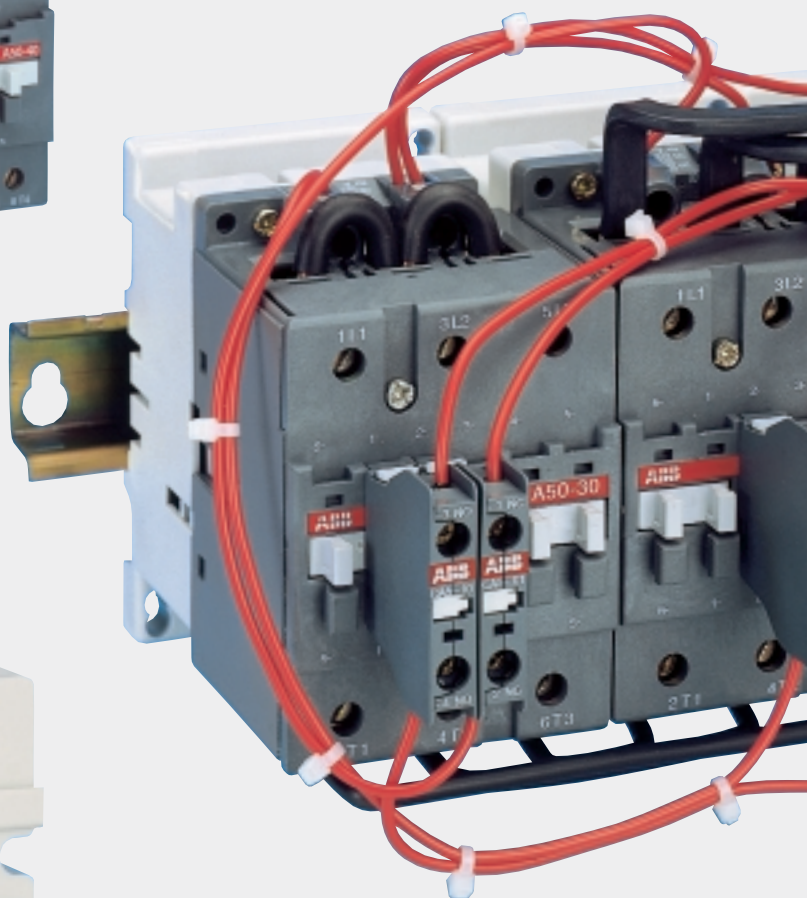
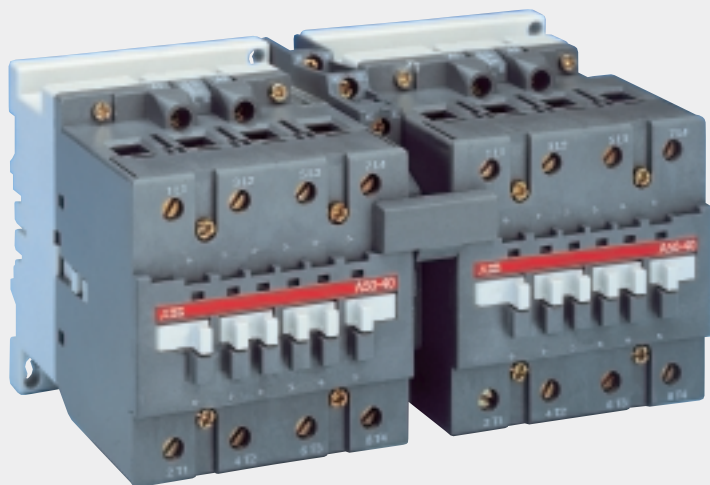




ABB Open type Starters

Contents

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

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Starters with Mechanical Interlock, in Kit Form	2/16

Reversing Contactors

VOA ...-30M, VNA ...-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

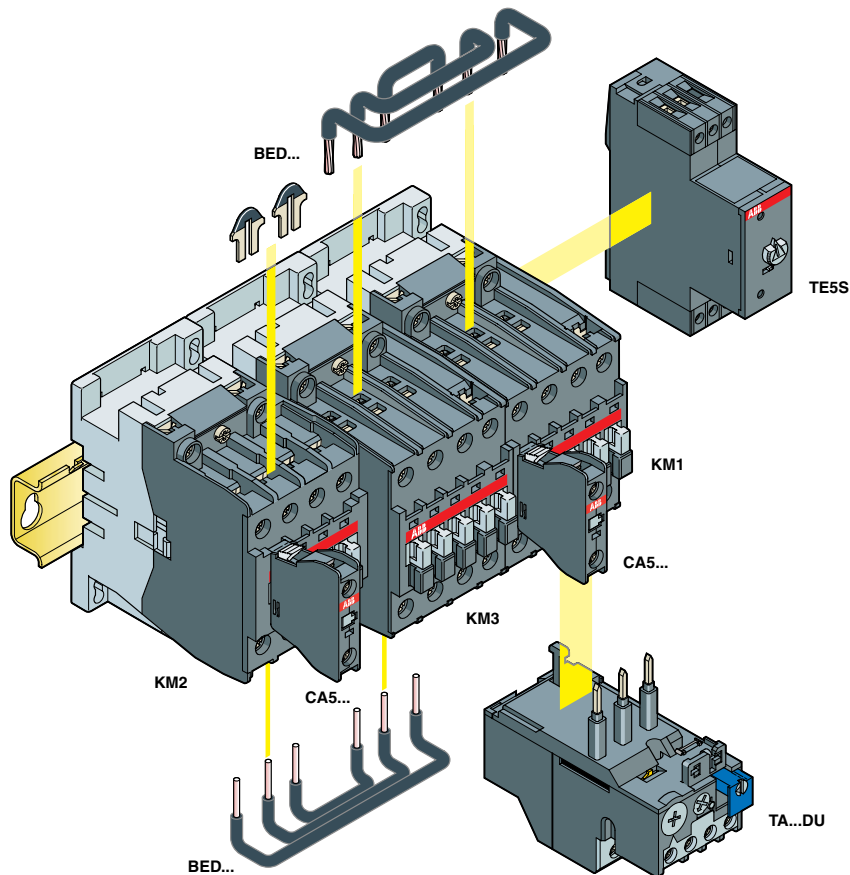
DLA	5/1
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Reversing Starters with Base for Manual Motor-starter

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

Protection by Thermal O/L Relay



E1121D1

YKA...-30 version

Starters with electrical interlock

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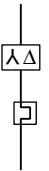
Starters with mechanical and electrical interlock

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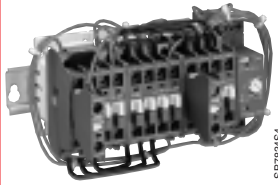
YKA ..-30, YDA ..-30 Star-Delta Starters

Open Type Version

Protection by Thermal O/L Relay

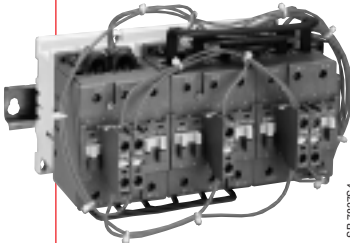


2



YKA 16-30

SB7634S4



YKA 75-30

SB 7637S4



YDA 95-30

YDA95-30

Application

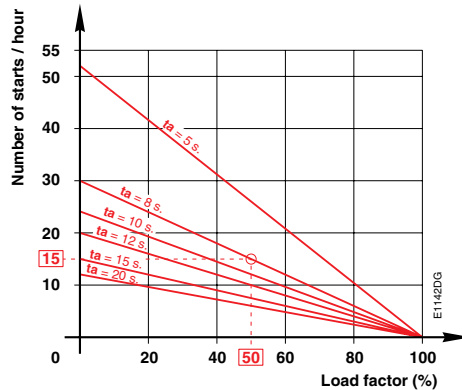
Starters for the control of three-phase asynchronous motors:

- 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

YKA 95 and YKA 110 : The assembly is supplied on a plate

- Degree of protection:
- IP20 for the main terminals of contactors A 9 ... A 40
 - IP10 for the main terminals of contactors A 50 ... A 110
 - IP20 for the control circuit terminals.

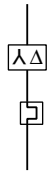
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YKA ...-30, YDA ...-30 Star-Delta Starters

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
140	75	75	90	160	200	YDA 95-30 [...]	1SFK 432 302R8 □ 00	7.000
170	90	100	132	200	250	YDA 110-30 [...]	1SFK 452 302R8 □ 00	7.000

* 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".

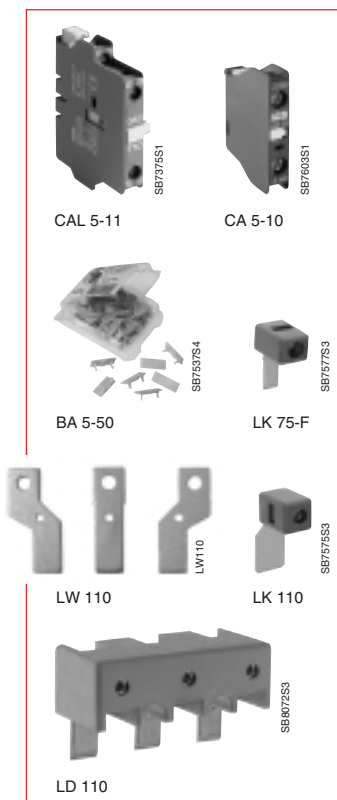
Control voltage code

Voltage V 50 Hz	V 60 Hz	Code 8 □	Control circuit
24	24	1	must be connected
110	110 ... 120	4	– to a separate
110 ... 115	115 ... 120	9	supply
220 ... 230	230 ... 240	0	– or phase-to-phase
230 ... 240	240	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-mnted 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
Control lead terminals (A 95, A 110)				
Right/left connection	LK 110	1 SFN 07 4352 R1000	2	0.010
Add. terminal block (A 95 / A 110)	LD 110	1 SFN 07 4308 R1000	1	0.150
Terminal enlargement pieces (set of 3 bars) for A 95 / A 110	LW110	1 SFN 07 4307 R1000	1	0.100



>> Starters in kit form page 2/8
>> Wiring diagrams page 2/4

>> Thermal O/L relay page 2/3
>> Dimensions page 2/5

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



2

Ordering details, thermal O/L relay

Starter	Setting range (1)		Type	Order code	Weight in kg Packing 1 piece
	A	... A			
YKA 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
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	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 75-30	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
YKA -95-30	29	... 42	TA 80 DU 42	1SAZ 33 1201 R1003	0.360
and	36	... 52	TA 80 DU 52	1SAZ 33 1201 R1004	0.360
YKA 110-30	45	... 63	TA 80 DU 63	1SAZ 33 1201 R1005	0.360
	60	... 80	TA 80 DU 80	1SAZ 33 1201 R1006	0.360
YKA 95-30 and	65	... 90	TA 110 DU 90	1SAZ 41 1201 R1001	0.750
YKA 110-30	80	... 110	TA 110 DU 110	1SAZ 41 1201 R1002	0.750

(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	Order code	Pack- ing	Weight in kg
	State control voltage ☐	to be completed with control voltage code ☐		
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

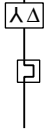
Coil voltage code for DS 25-A/DR 25-A

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

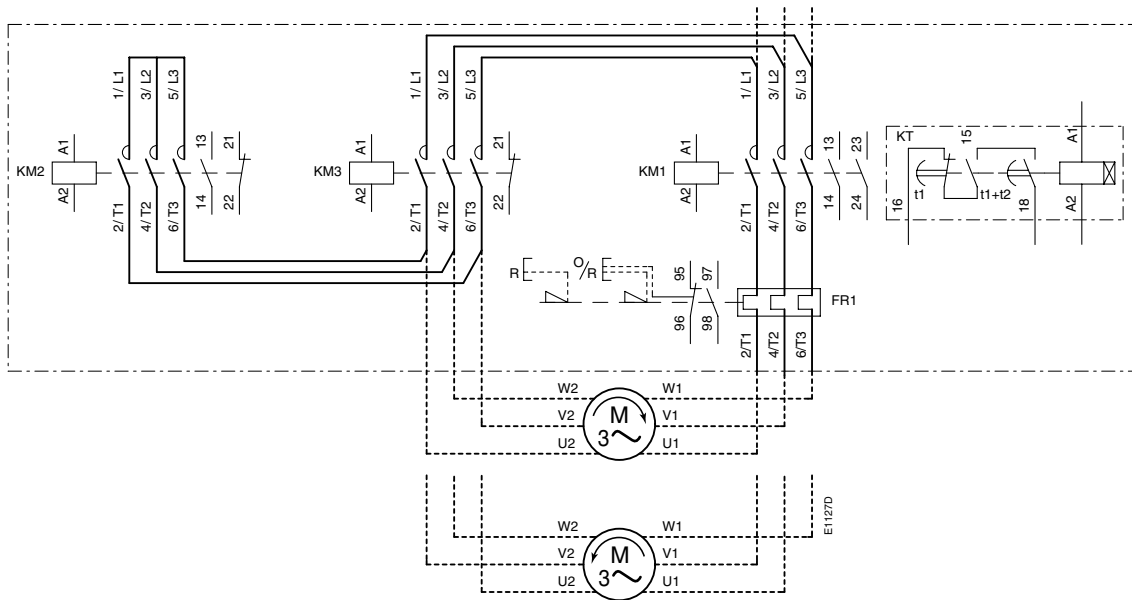
YKA ...-30, YDA ...-30 Star-Delta Starters

Open Type Version

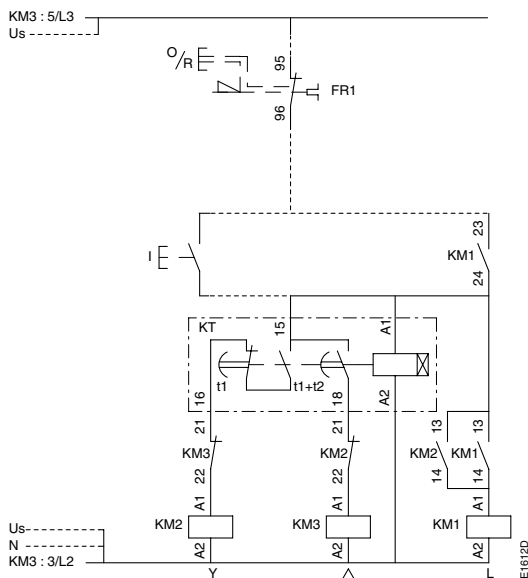
Protection by Thermal O/L Relay



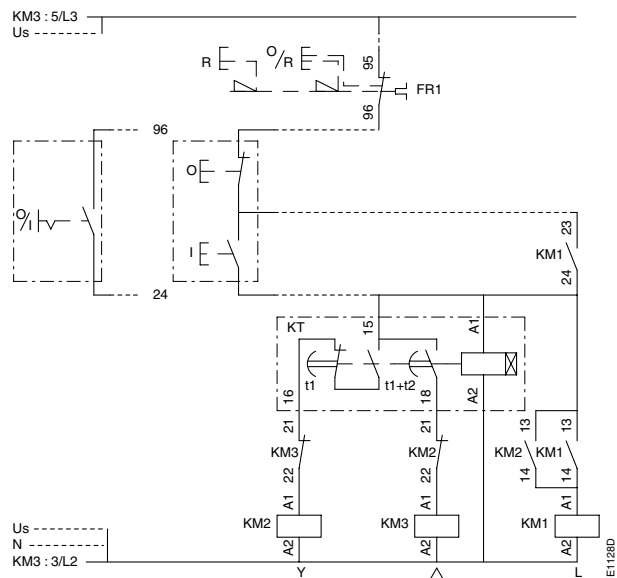
Wiring Diagrams



Power Circuit



Local Control

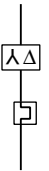


Remote Control

YKA ..-30, YDA ..-30 Star-Delta Starters

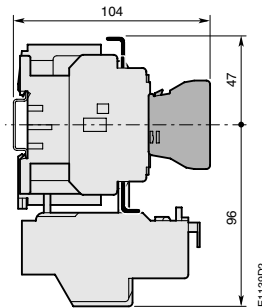
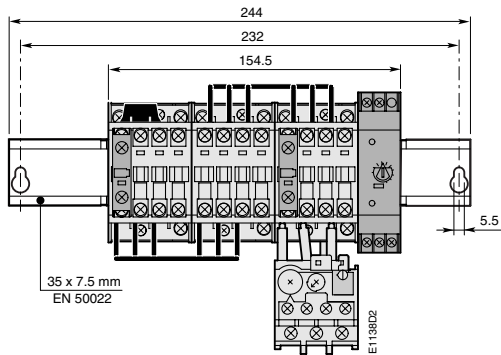
Open Type Version

Protection by Thermal O/L Relay

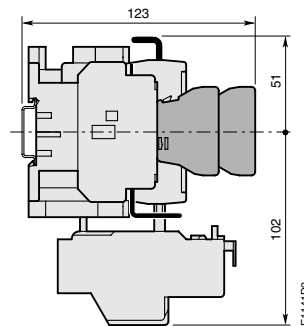
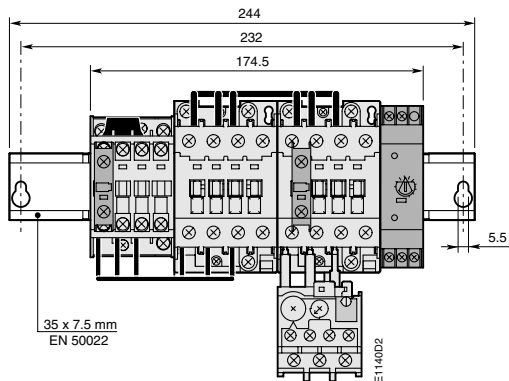


2

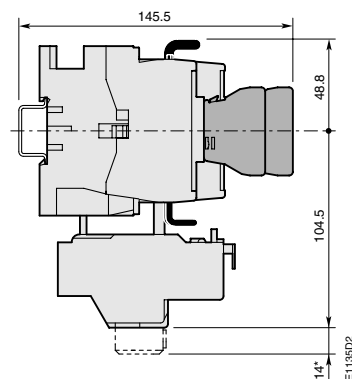
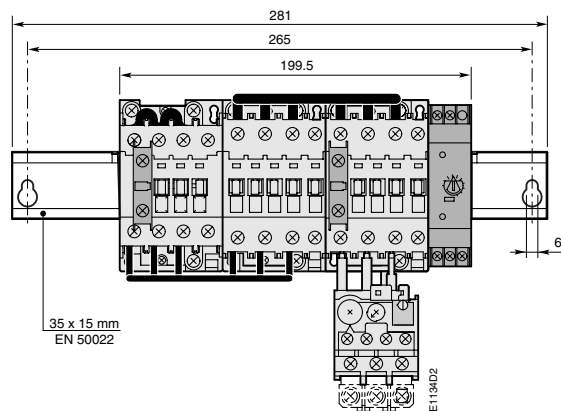
Dimensions (in mm)



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



YKA 26-30 + TA 25



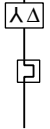
YKA 30-30 + TA 25

* for TA 25 DU 32 only

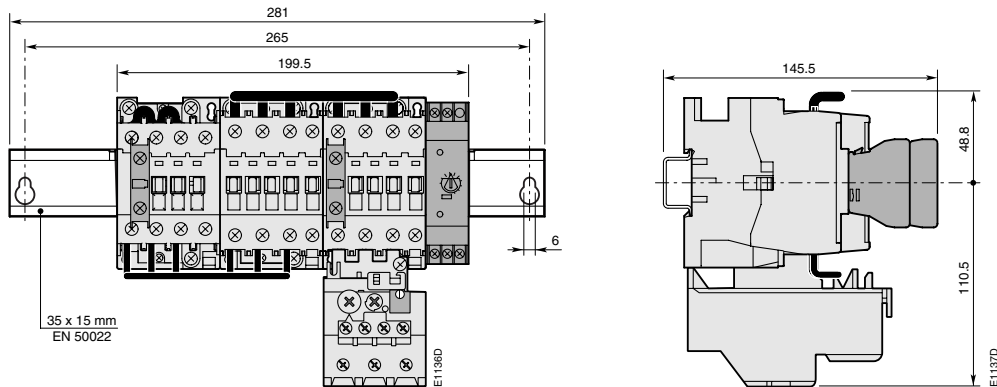
YKA ...-30, YDA ...-30 Star-Delta Starters

Open Type Version

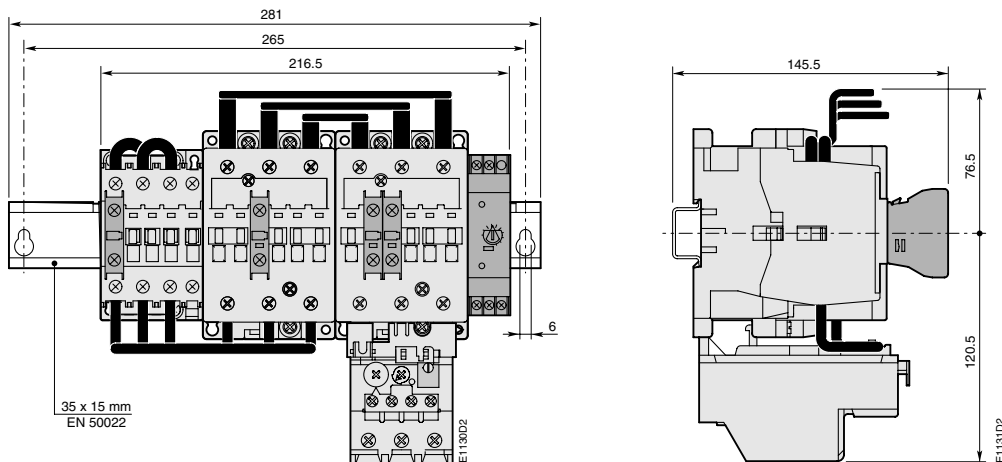
Protection by Thermal O/L Relay



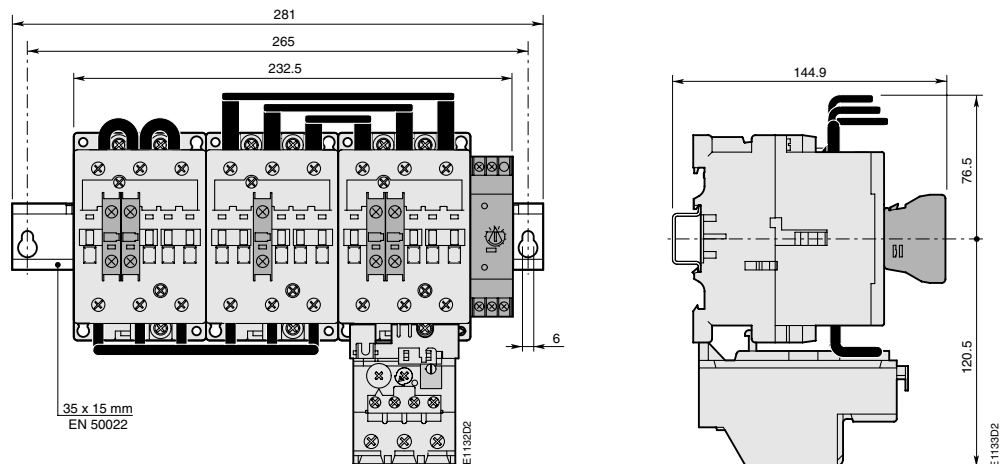
Dimensions (in mm)



YKA 40-30 + TA 42



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



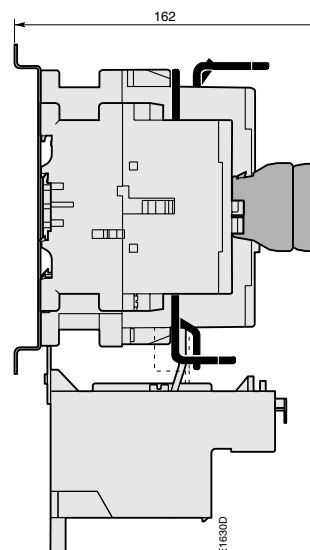
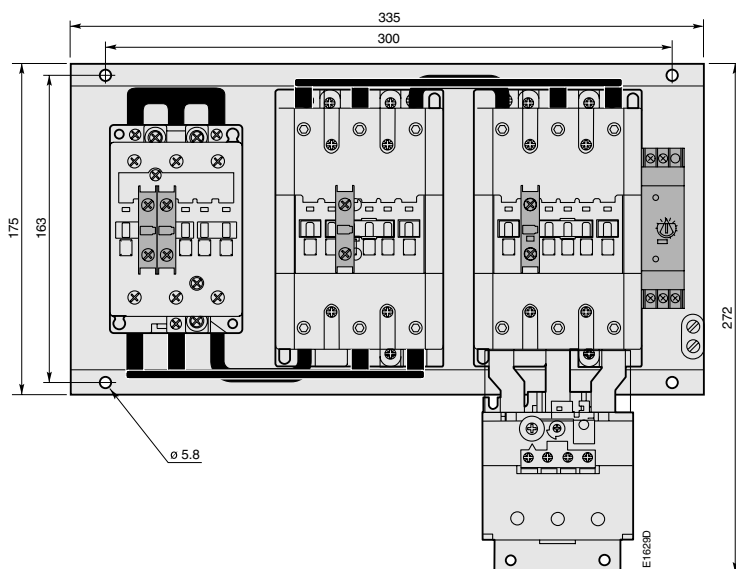
YKA 75-30 + TA 75

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

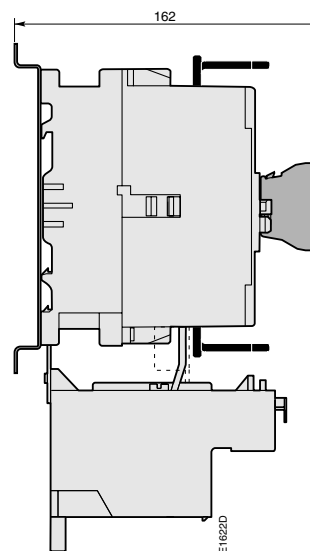
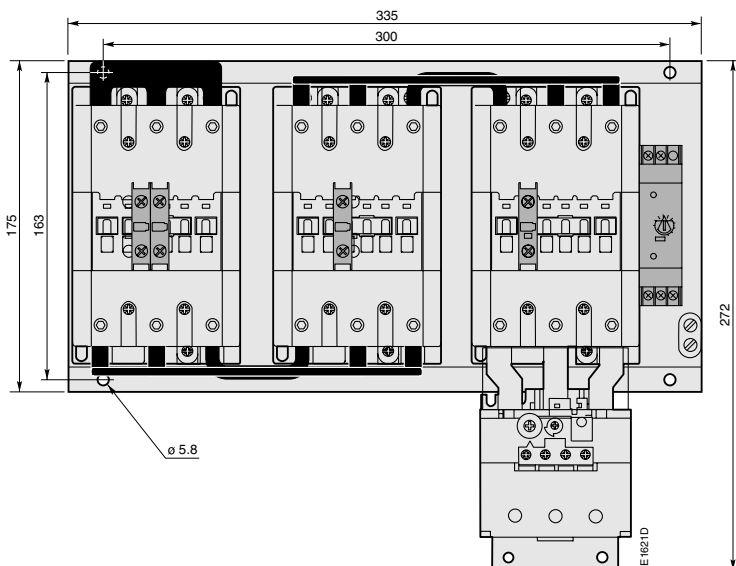


2

Dimensions (in mm)



YKA 95-30 + TA 110



YDA 110-30 + TA 110

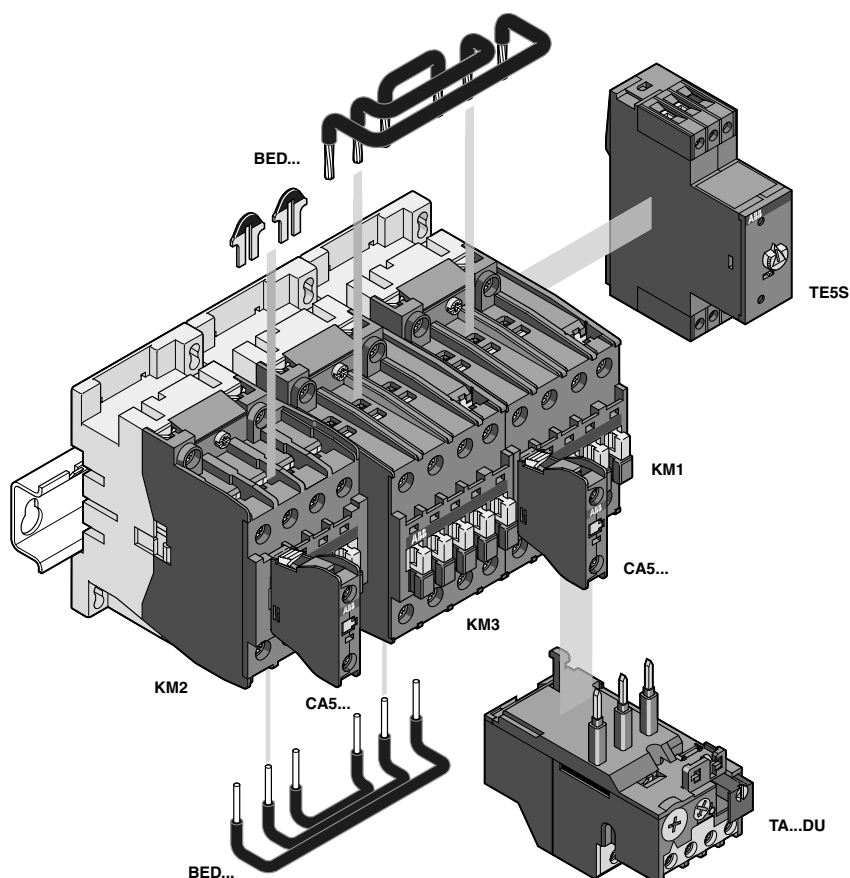
Star-Delta Starters, in Kit Form

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	△ Contactor	Thermal O/L relay (1) FR1 (see page 2/3)	Required accessories (see table below)
	Nominal voltage V	kW	KM1	KM2	KM3	Type	Reference letter
			Type and state coil voltage : ☐ Order code to be completed with coil voltage code : ☐ (see page 2/2)			Order code	
A							
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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	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 ☐ 0	G
182	415	100					
140	690	132					

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

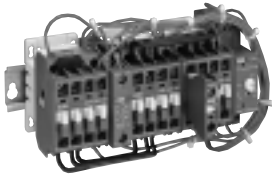
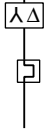
Required accessories

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				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	1 x CA 5-10 1SBN 01 0010 R1010	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		1 x CA 5-01 1SBN 01 0010 R1001			PN110-41 1SFN 09 4303 R1000

YKA ..-30E Star-Delta Starters

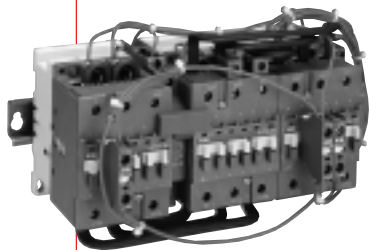
Open Type Version, with Interlock

Protection by Thermal O/L Relay



YKA 9-30 E

SB7827S4



YKA 75-30 E

SB7828S4

Application

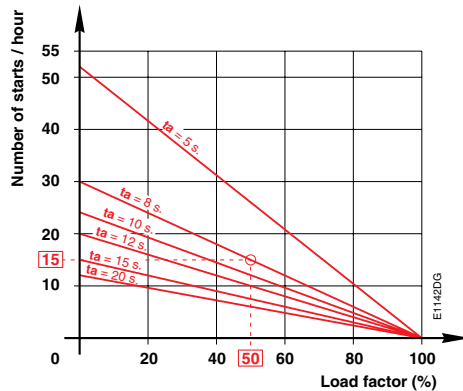
Starters for the control of three-phase asynchronous motors:

- 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



2

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 380 V			Short-circuit protection *		Type	Order code	Weight in kg
	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	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

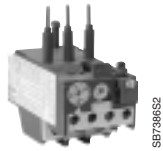
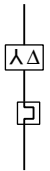
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz		
24	24	1	must be connected
110	110 ... 120	4	– to a separate
110 ... 115	115 ... 120	9	supply
220 ... 230	230 ... 240	0	– or phase-to-phase
230 ... 240	240	8	– or phase-to-neutral
380 ... 400	400 ... 415	5	
400 ... 415	415 ... 440	6	
415 ... 440	440	7*	

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

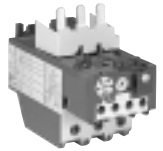
YKA ...30E Star-Delta Starters

Open Type Version, with Interlock

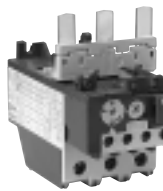
Protection by Thermal O/L Relay



TA 25 DU



TA 42 DU



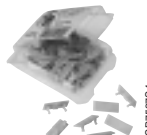
TA 75 DU



CAL 5-11



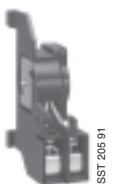
CA 5-10



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 $I_n \times 0.58$

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

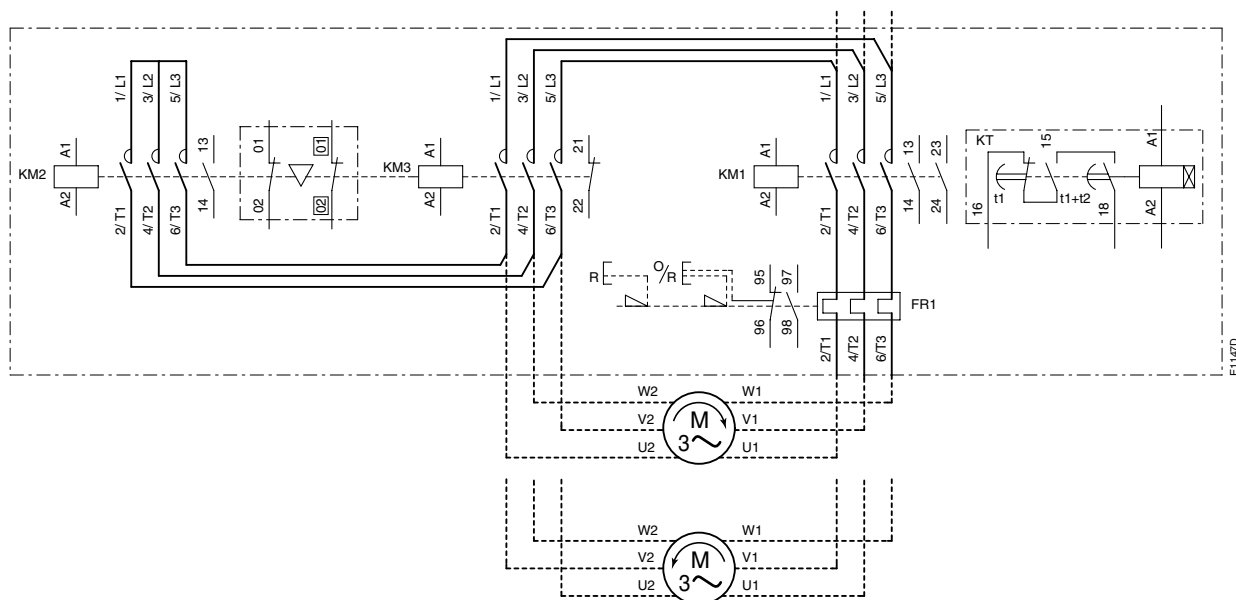
YKA ..-30E Star-Delta Starters

Open Type Version, with Interlock

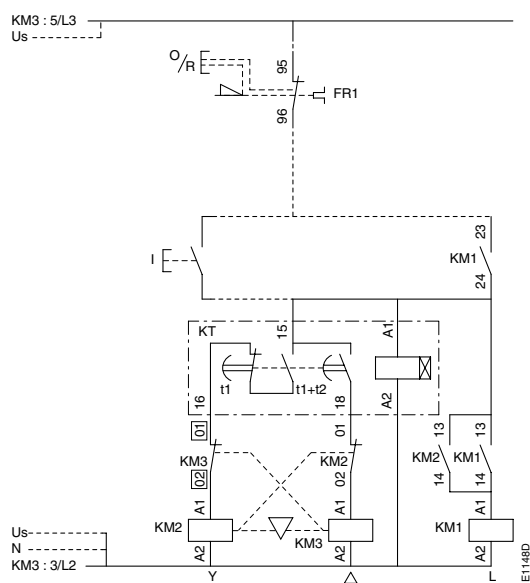
Protection by Thermal O/L Relay



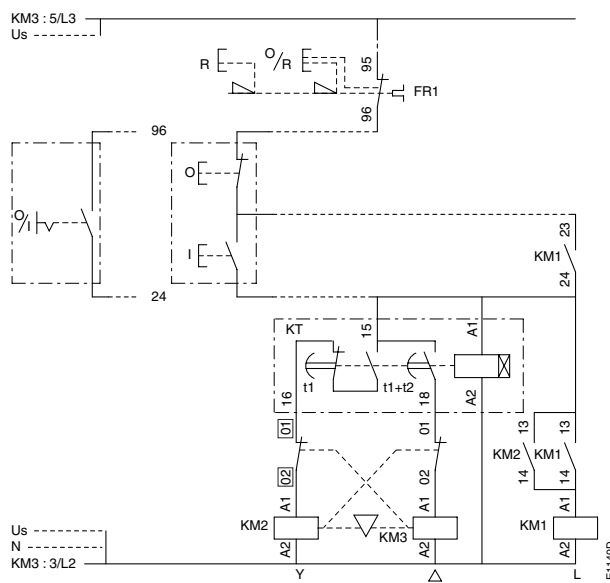
Wiring diagrams



Power circuit



Local control

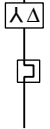


Remote control

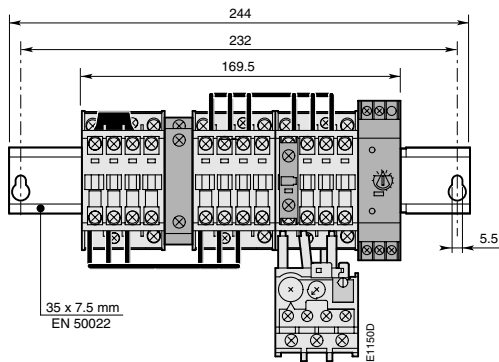
YKA ..-30E Star-Delta Starters

Open Type Version, with Interlock

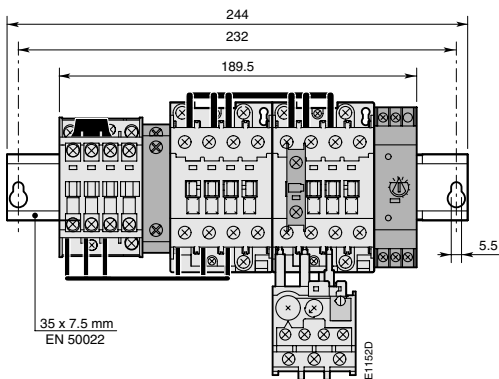
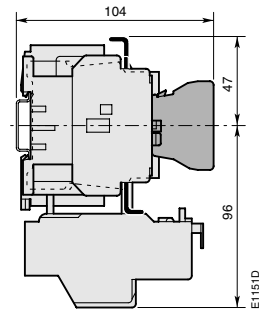
Protection by Thermal O/L Relay



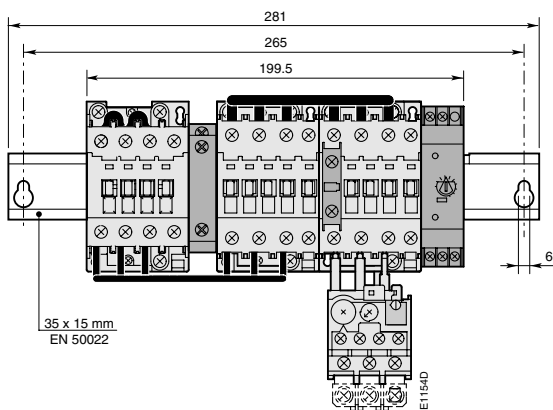
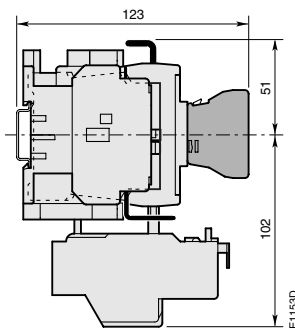
Dimensions (in mm)



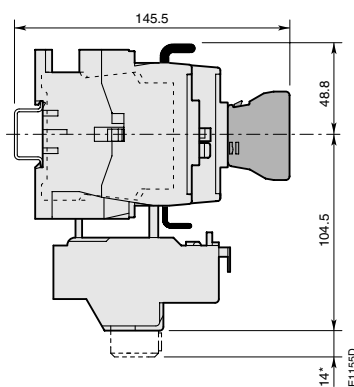
YKA 9-30E ... YKA 16-30E + TA 25



YKA 26-30E + TA 25

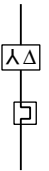


YKA 30-30E + TA 25



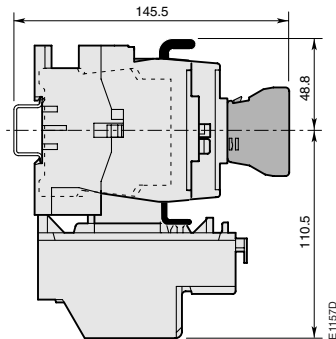
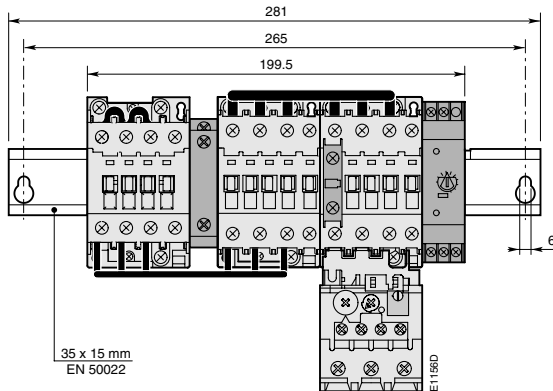
* for TA 25 DU 32 only

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

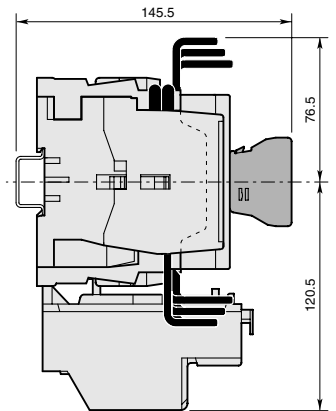
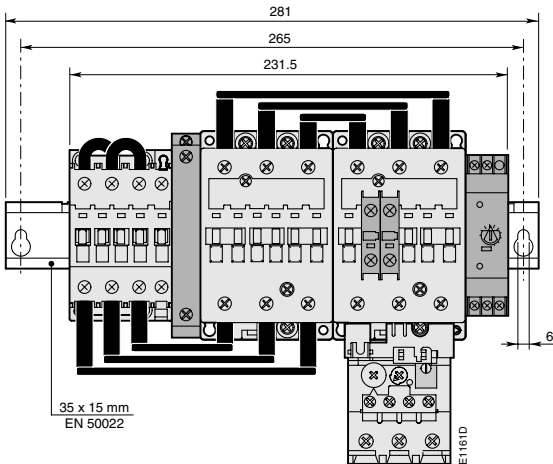


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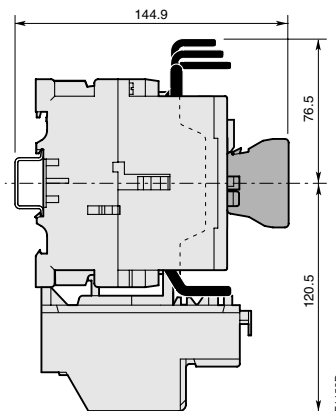
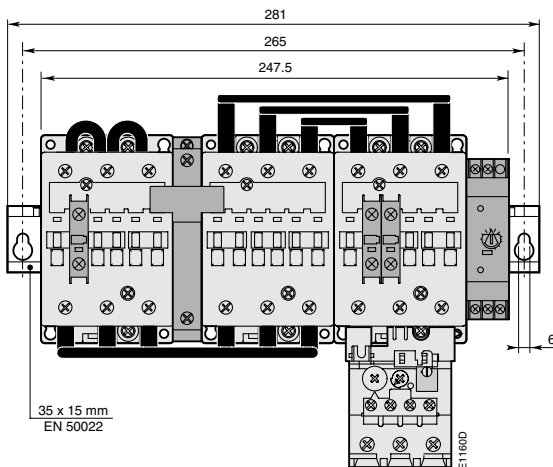
Dimensions (in mm)



YKA 40-30E + TA 42

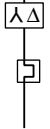


YKA 50-30E ... YKA 63-30E + TA 75

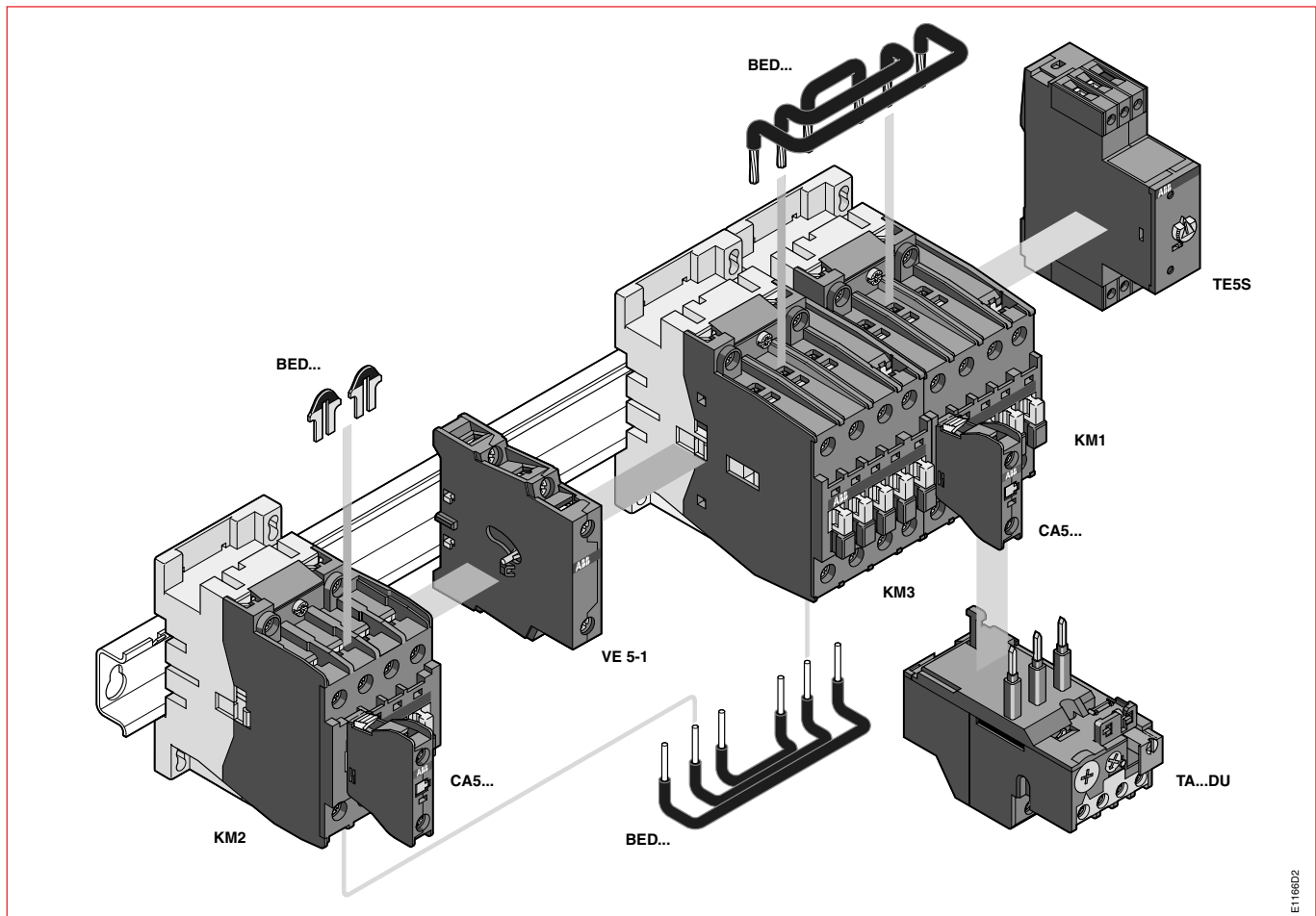


YKA 75-30E + TA 75

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)



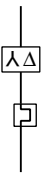
Details of power connections

BED 16	BED 26	BED 40	BED 50	BED 75
2.5 mm² cable insulated rigid solid copper	4 mm² cable insulated rigid solid copper	(a) + (b) 4 mm² cable (c) 10 mm² cable insulated rigid stranded copper	(a) 16 mm² cable insulated rigid stranded copper (b)+(c) 8 x 3 mm bar insulated copper	(a) 16 mm² cable insulated rigid stranded copper (b)+(c) 8 x 3 mm bar insulated copper

Star-Delta Starters, in Kit Form

Open Type Version, with Interlock

Protection by Thermal O/L Relay



2

Contactors and thermal O/L relay

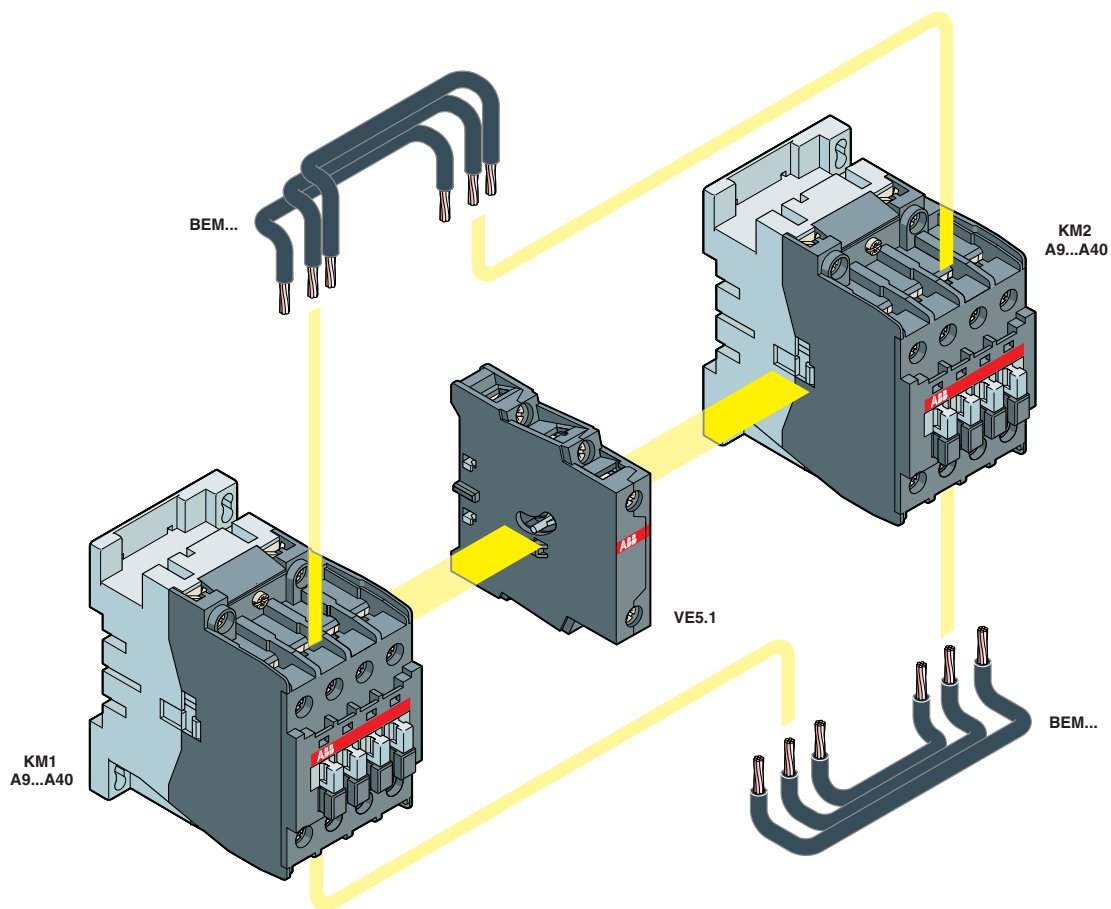
Rated operat. current AC-3	Power AC-3 4-pole motor 50/60 Hz		Line contactor	△ Contactor	△ Contactor	Thermal O/L relay (1) FR1 (see page 2/12)	Required accessories (see table below)
	Nominal voltage V	kW	KM1	KM2	KM3	Type Order code	Reference letter
A	15.5	380-400	7.5	A 9-30-10	A 9-30-10	TA 25 DU	A
	14	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	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	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	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	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	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	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	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	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

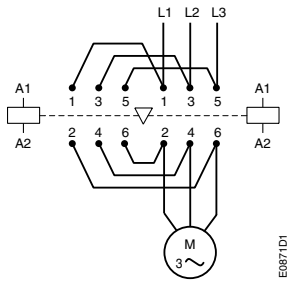
Reversing Contactors Open Type Version



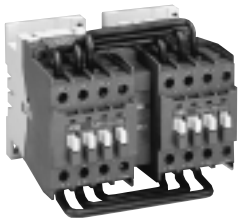
E111201

VOA...-30M version

VOA ...-30M, VNA ...-30M Reversing Contactors Open Type Version



VOA 9-30M



VOA 26-30M



VNA 95-30M

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, VOA40-30M

The **VNA ...-30M** reversing contactors are supplied on a mounting plate, and comprises:

- 2 side-by-side mounted **A 95-30-00** or **A 110-30-00** 3-pole contactors with the same rating.
- 1 **VE 5-2** 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 110-30** power connection set connecting the main poles of the contactors.
Insulated copper bars, cross-section 36 mm².

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, VNA ...-30M Reversing Contactors Open Type Version



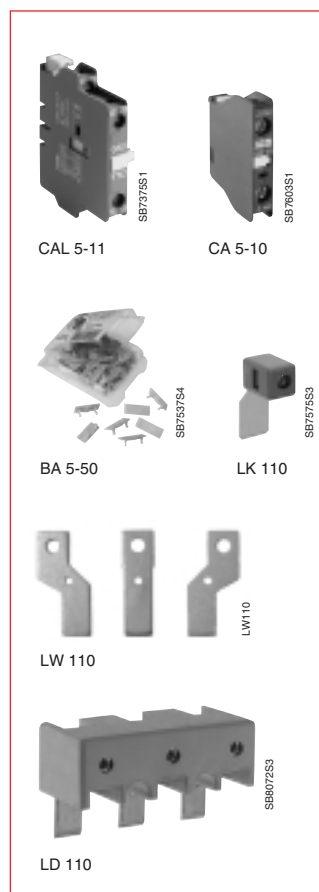
Ordering details

Rated operat. current AC-3 400 V A	Power AC-3 4-pole motor - 50/60 Hz 380 V 400 V 415 V 690 V			Type	Order code	Weight in kg
	kW	kW	kW			
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
96	45	55	55	VNA 95-30M	1SFK 431 702R8 00	6.800
110	55	59	75	VNA 110-30M	1SFK 451 702R8 00	6.800

Control voltage code

Voltage		Code
V 50 Hz	V 60 Hz	
24	24	1
42	42	2
48	48	3
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
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-mtd cont. blk	CAL5-11	1 SBN 01 0020 R1011	2	0.050
Control lead terminals (A 95, A 110) Right/left connection	LK 110	1 SFN 07 4352 R1000	2	0.010
Add. terminal block (A 95 / A 110)	LD 110	1 SFN 07 4308 R1000	1	0.150
Terminal enlargement pieces (set of 3 bars) for A 95 / A 110	LW110	1 SFN 07 4307 R1000	1	0.100

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

>> Dimensions page 3/4

VOA ..-30M, VNA ..-30M Reversing Contactors Open Type Version

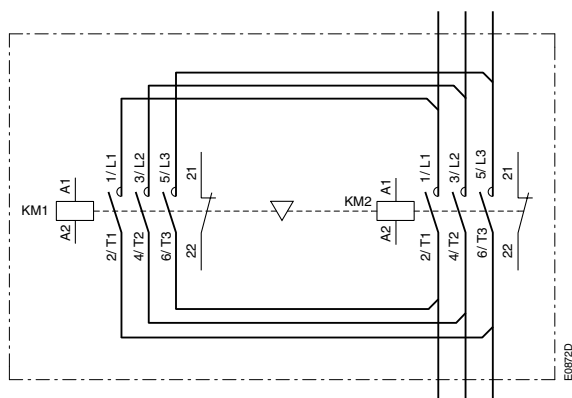


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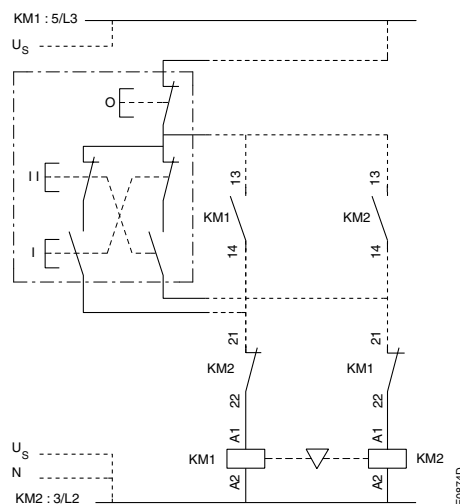
Wiring diagrams

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

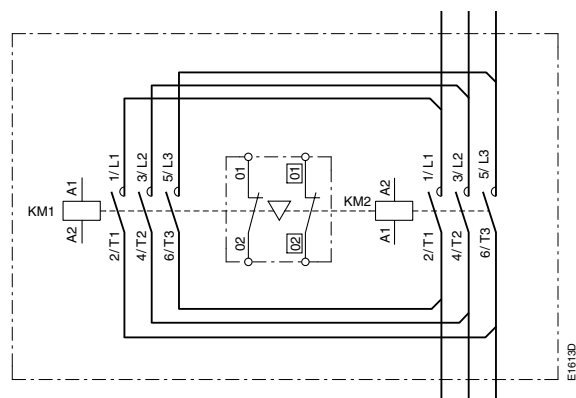


Remote control

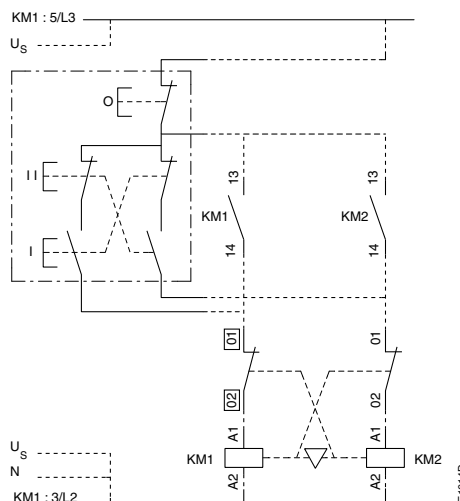
For the hold-in contacts (13-14) of the KM1 and KM2 contactors, supply separately 2 x CA 5-10 type N.O. auxiliary contact (see page 3/2).

VNA 95-30M ... VNA 110-30M reversing contactors, factory assembled

With VE 5-2 mechanical and electrical interlocking.



Power circuit



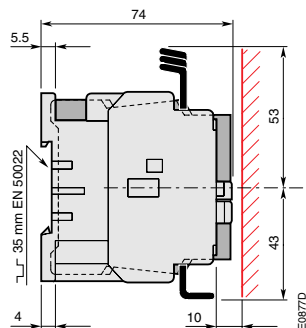
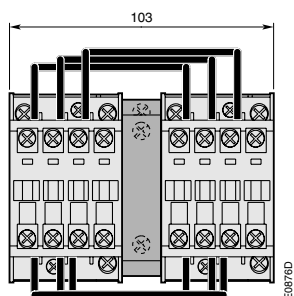
Remote control

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).

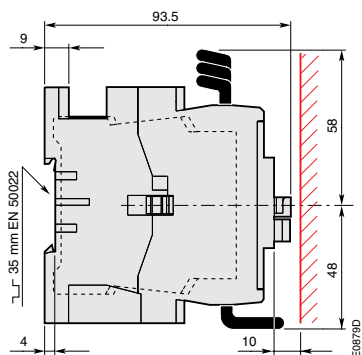
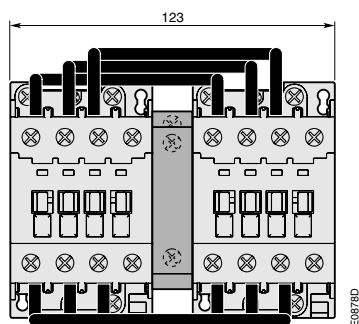
VOA ..-30M, VNA ..-30M Reversing Contactors Open Type Version



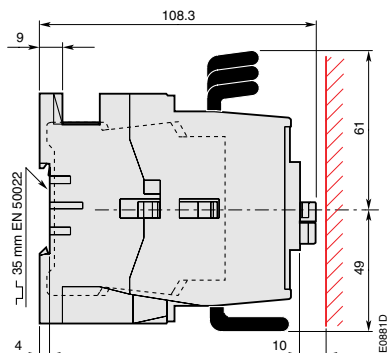
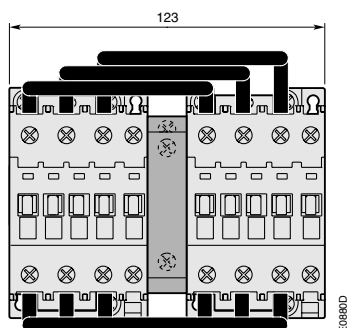
Dimensions (in mm)



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



VOA 26-30M

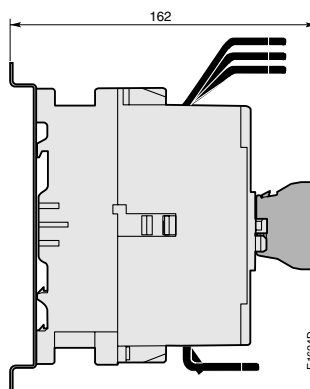
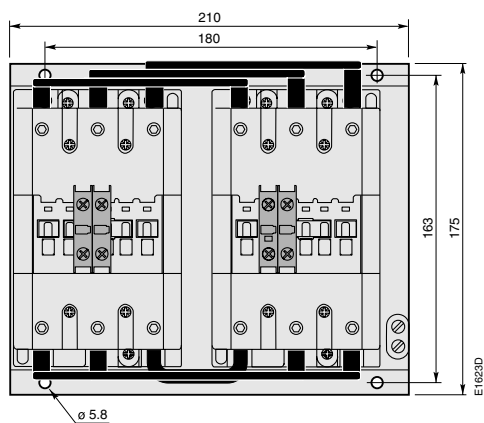


VOA 30-30M, VOA 40-30M

VOA ..-30M, VNA ..-30M Reversing Contactors Open Type Version



Dimensions (in mm)

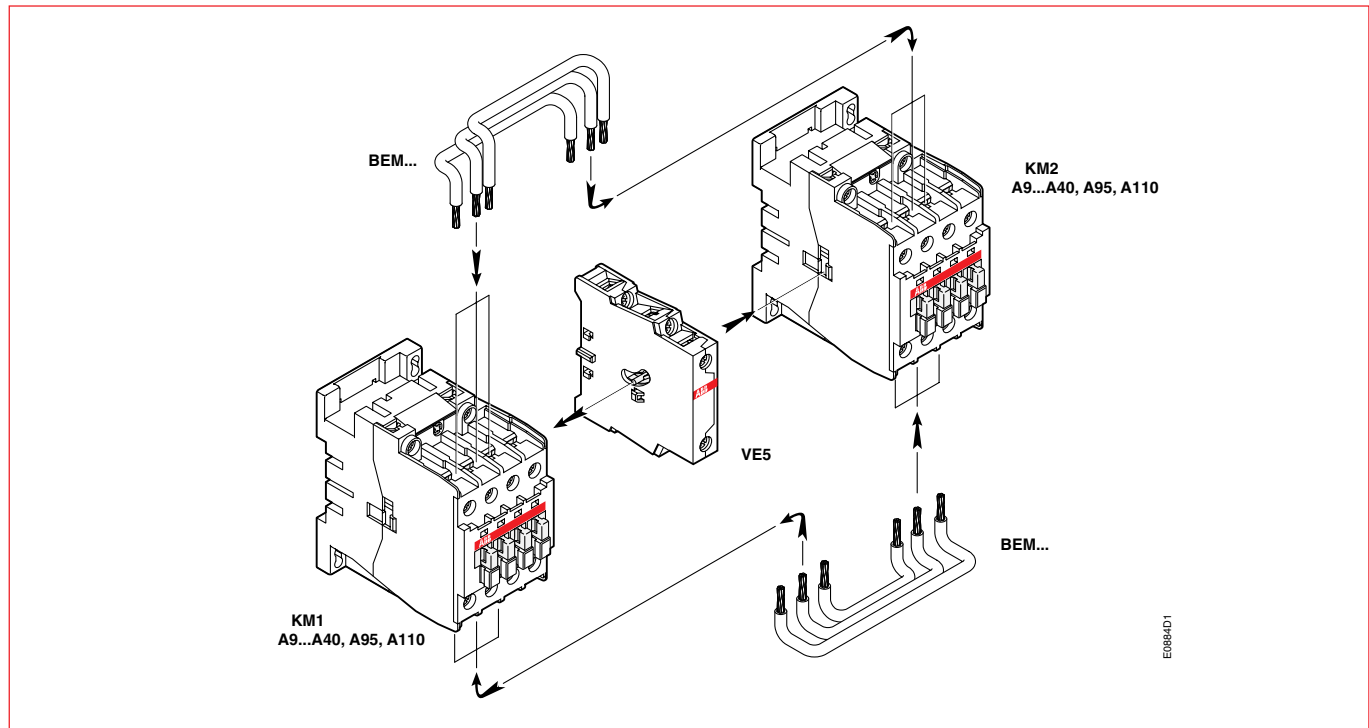


VNA 95-30M, VNA 110-30M

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

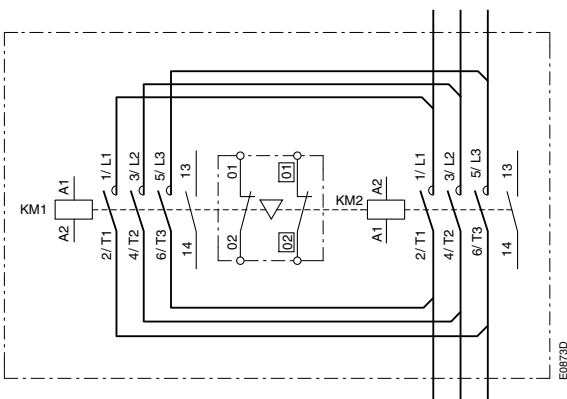
Reversing Contactors in Kit Form Open Type Version



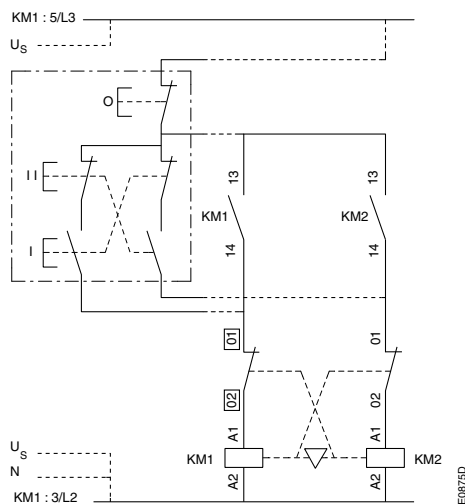
Ordering details

Rated operational current I_e AC-3			Power AC-3 3-phase motor 1500 rpm 50 Hz		Contactors KM1 + KM2 Type state coil voltage: U_c	Interlocking Type	Connection set Type
A			Rated voltage (V)	kW	Order code to be completed with coil voltage code: 8□ (see page 3/6)	Order code	Order code
9	380- 400	4			2 x A 9-30-10 U_c 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 U_c 1SBL 16 1001 R8□10		
12	415	5.5					
9	690	7.5					
17	380-400	7.5			2 x A 16-30-10 U_c 1SBL 18 1001 R8□10		
17	415	9					
10	690	9					
26	380-400	11			2 x A 26-30-10 U_c 1SBL 24 1001 R8□10		
26	415	11				1 x VE 5-2 1SBN 03 0210 R1000	1 x BEM 26-30 1SBN 08 2401 R1000
17	690	15					
32	380-400	15			2 x A 30-30-10 U_c 1SBL 28 1001 R8□10		
32	415	15					
21	690	18.5					
37	380-400	18.5			2 x A 40-30-10 U_c 1SBL 32 1001 R8□10		
37	415	18.5					
25	690	22					
96	380-400	45			2 x A 95-30-00 U_c 1SFL 43 1001 R8□00		
96	415	55					
65	690	55				1 x VE 5-2 1SBN 03 0210 R1000	1 x BEM 110-30 1SBN 08 4301 R1000
110	380-400	55			2 x A 110-30-00 U_c 1SFL 45 1001 R8□00		
110	415	59					
82	690	75					

Wiring diagrams - Reversing contactors with VE 5-1 interlocking (A 9 ... A 40)



Power circuit

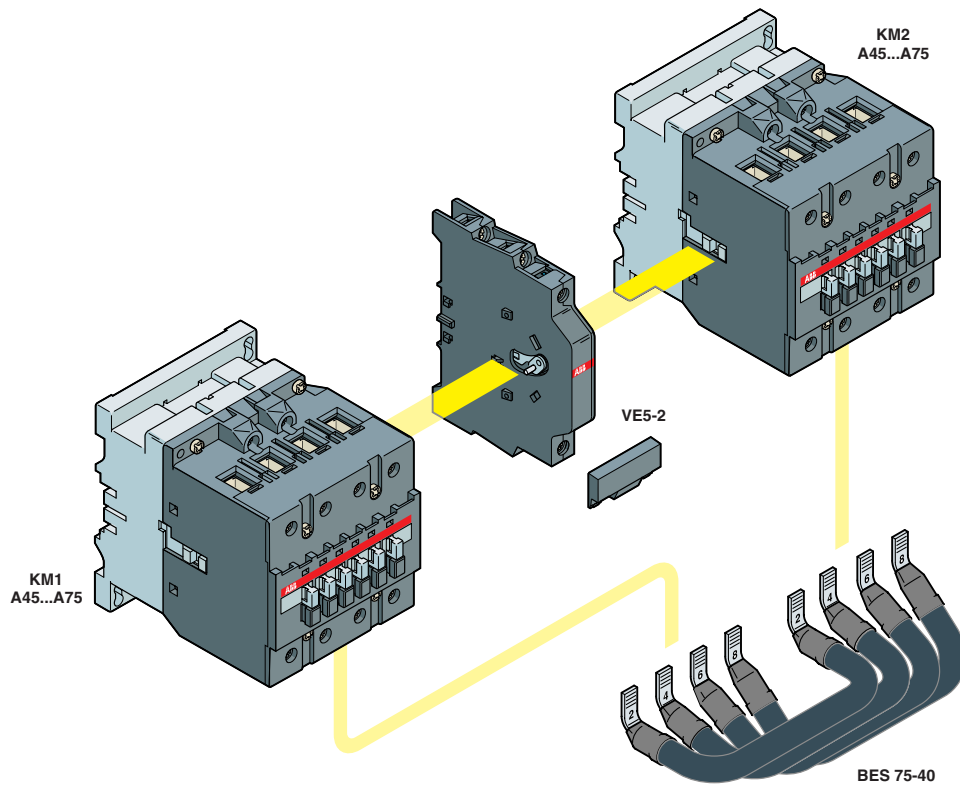


Remote control

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.

For the reversing contactors with VE 5-2 interlocking (A 95 and A 110) use a VNA ...-30M wiring diagrams, page 3/3

Mains Changeover Contactors Open Type Version



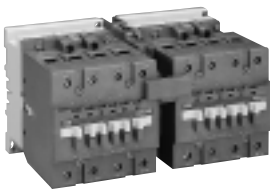
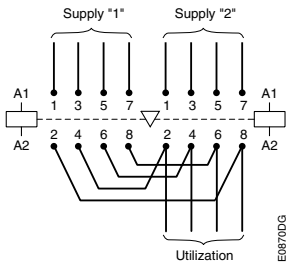
E1108D1

VOA...40Z version

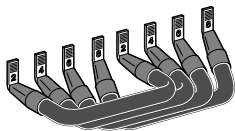
VOA ..-40Z

Mains Changeover Contactors

Open Type Version



VOA 50-40Z



BES 75-40

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	3.020
100	85	70	100	VOA 50-40Z	1SBK 35 1900 R8	3.020
125	105	85	160	VOA 75-40Z	1SBK 41 1900 R8	3.020

(1) $U_e \leq 500$ 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	1SBN 08 3302 R1000	0.400

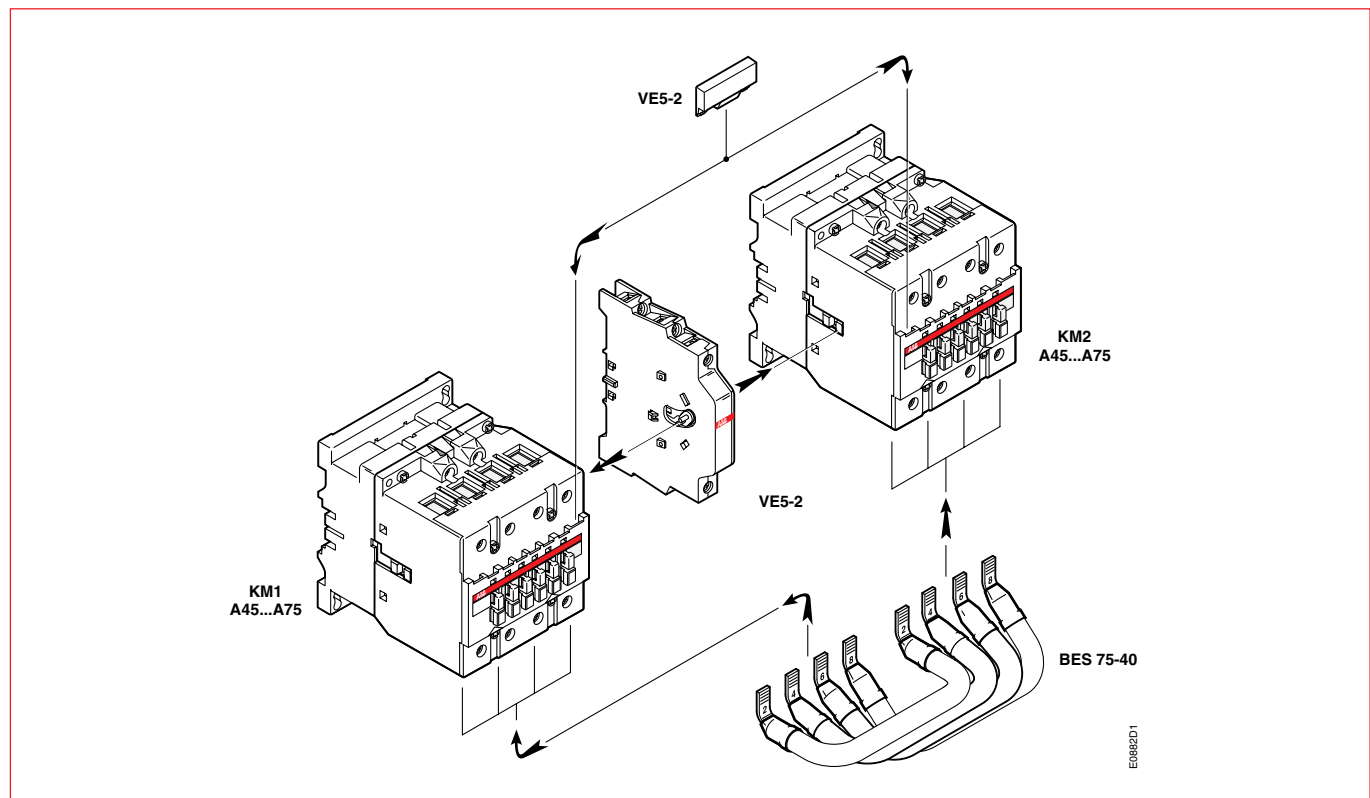
VOA ..-40Z

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		
100	85	70	2 x A 50-40-00 1SBL 35 1201 R8 00	1 x VE 5-2 1SBN 03 0210 R1000	1 x BES 75-40 1SBN 08 3302 R1000
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

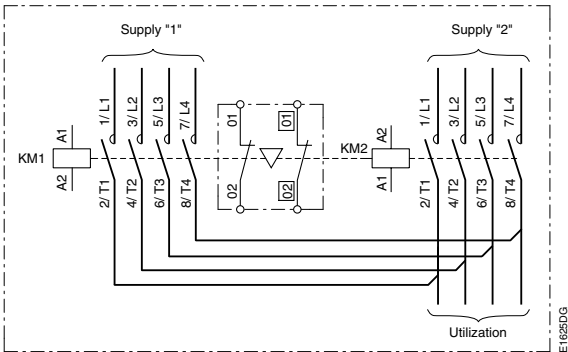
VOA ..-40Z

Mains Changeover Contactors

Open Type Version

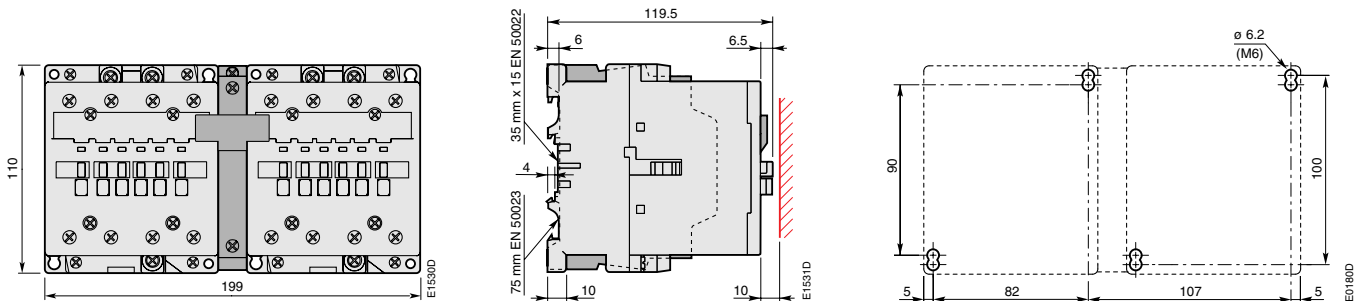


Wiring diagram, for mains changeover contactors factory-assembled or in kit form

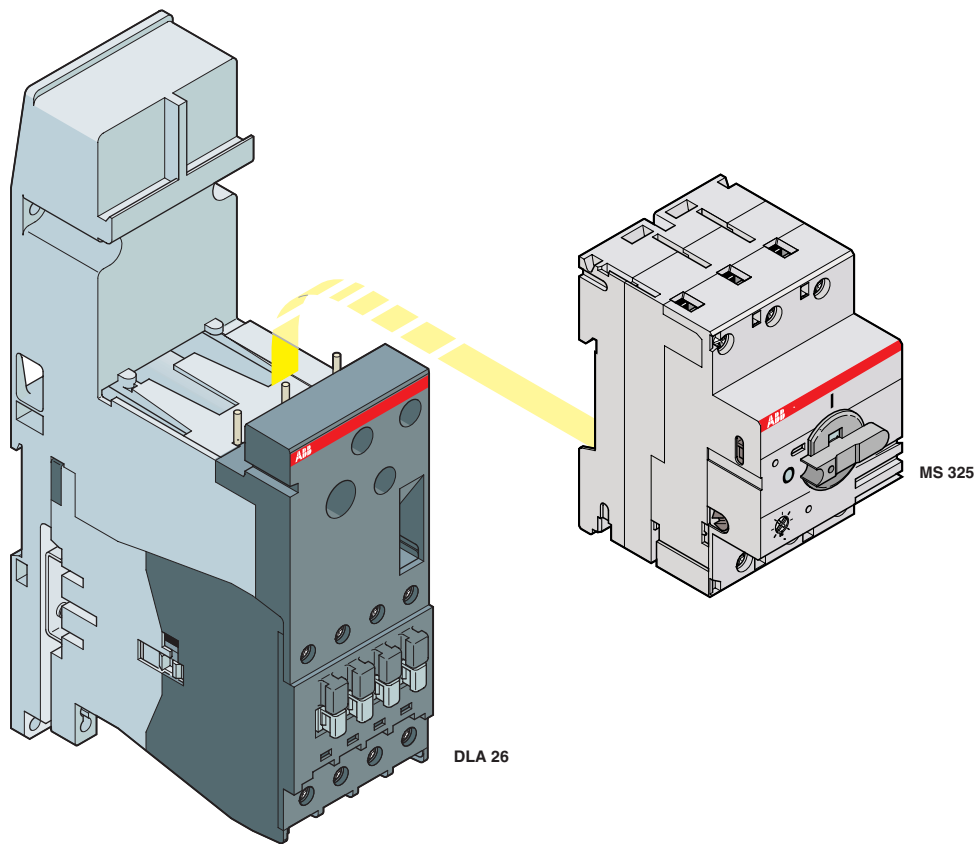


4

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

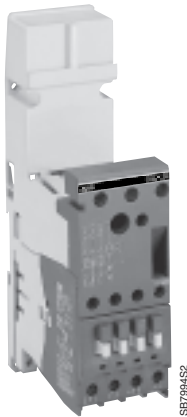
DLA

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 $\leq 50\text{ }^{\circ}\text{C}$,
- 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
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5
0.75	2	1.6 ... 2.5	MS 325 - 2.5	DLA 9-30	1.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	DLA 9-30	1.5
1.5	3.5	2.5 ... 4.0	MS 325 - 4	DLA 9-30	1.5
2.2	5	4.0 ... 6.3	MS 325 - 6.3	DLA 9-30	1.5
3	6.6	6.3 ... 9.0	MS 325 - 9	DLA 9-30	1.5
4	8.5	6.3 ... 9.0	MS 325 - 9	DLA 9-30	1.5
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	DLA 12-30	1.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	DLA 16-30	2.5
11	22	16.0 ... 25.0	MS 325 - 25	DLA 26-30	4
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
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	DLA 9-30	1.5
0.75	2	1.6 ... 2.5	MS 325 - 2.5	DLA 9-30	1.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	DLA 12-30	1.5
1.5	3.5	2.5 ... 4.0	MS 325 - 4	DLA 12-30	1.5
2.2	5	4.0 ... 6.3	MS 325 - 6.3	DLA 26-30	1.5
3	6.6	6.3 ... 9.0	MS 325 - 9	DLA 26-30	1.5
4	8.5	6.3 ... 9.0	MS 325 - 9	DLA 26-30	1.5
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	DLA 26-30	1.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	DLA 26-30	2.5
11	22	16.0 ... 25.0	MS 325 - 25	DLA 26-30	4

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

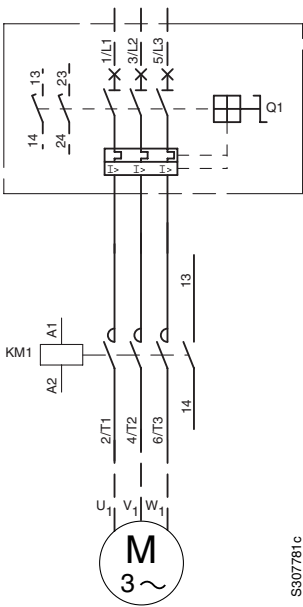
Ordering details

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

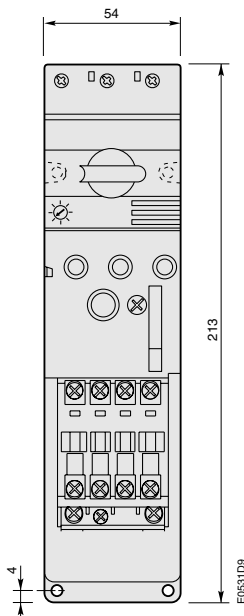


Wiring diagrams

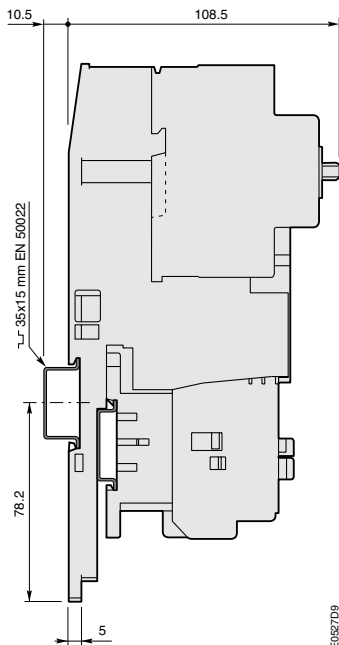


Power circuit

Dimensions (in mm)

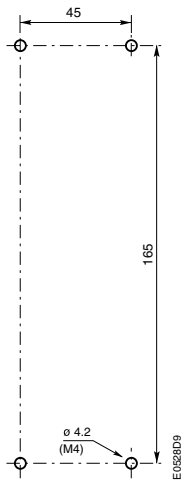


DLA 9 ... DLA 16

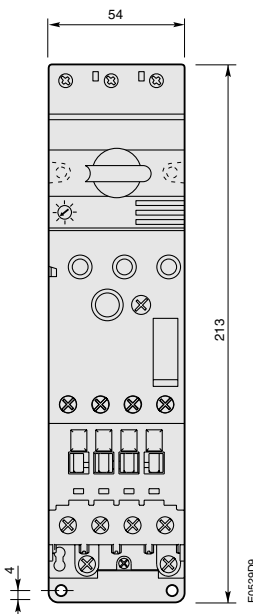


E0527D9

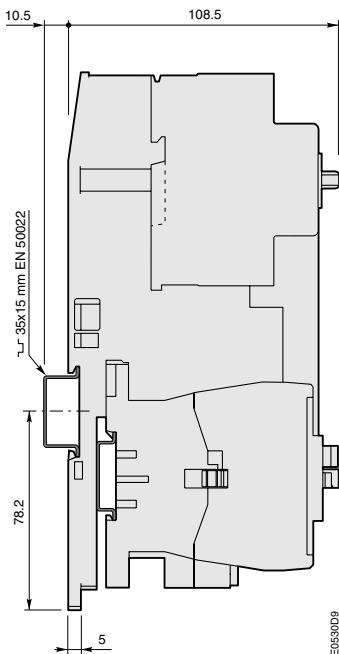
Drilling diagram



DLA 9 ... DLA 26

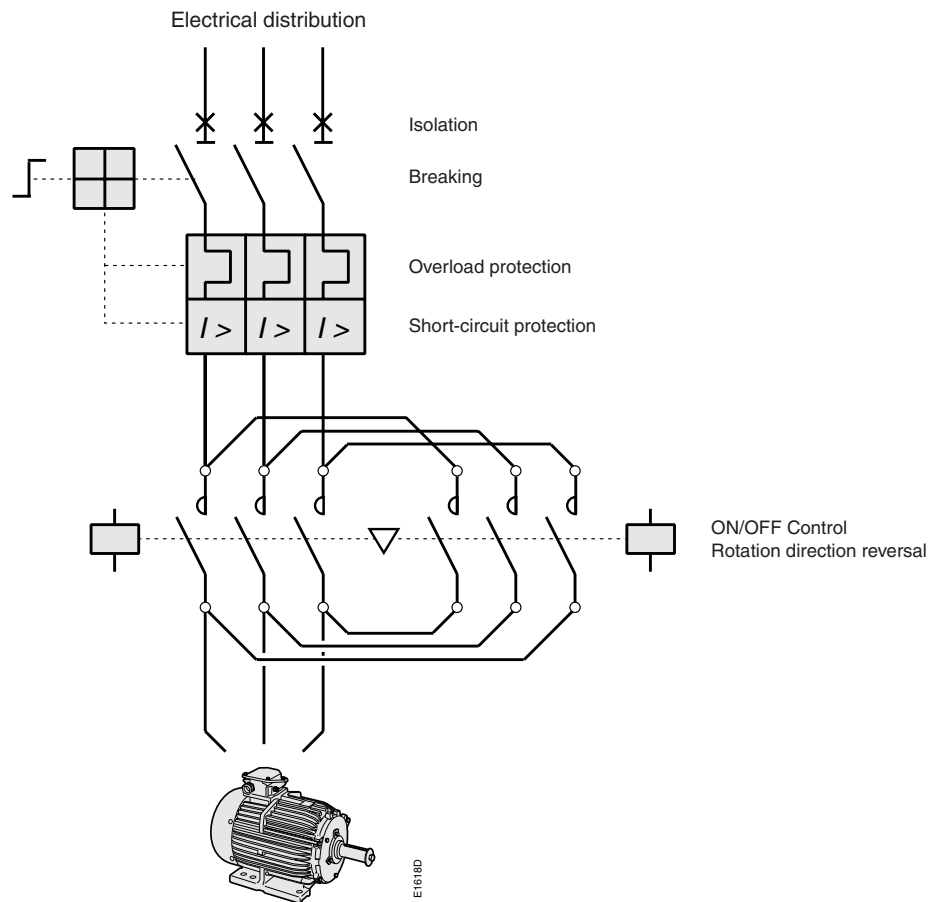
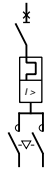


DLA 26



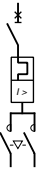
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Reversing Starters Open Type Version with Base for Manual Motor Starter

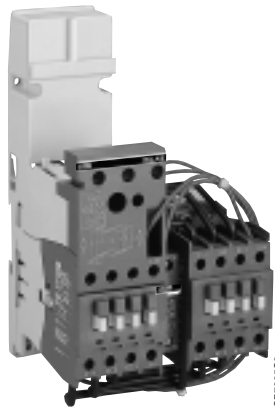


Block diagram

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 $\leq 50\text{ }^{\circ}\text{C}$,
- 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.

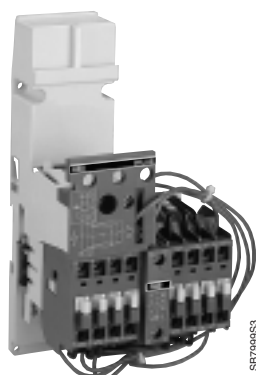
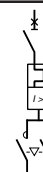
The capacity to withstand these high stresses depends on the perfect coordination of the devices which make up the combination starter.

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.

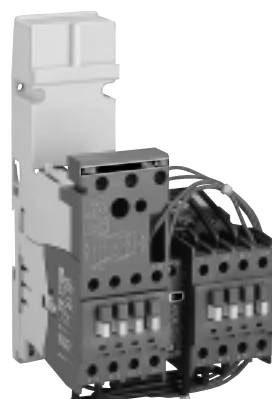
Type 1 : In the event of a short-circuit, the starter causes no danger to persons or facilities, and may not be able to function thereafter without repairs being made or parts being replaced.

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
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5
0.75	2	1.6 ... 2.5	MS 325 - 2.5	WLA 9-30	1.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	WLA 9-30	1.5
1.5	3.5	2.5 ... 4.0	MS 325 - 4	WLA 9-30	1.5
2.2	5	4.0 ... 6.3	MS 325 - 6.3	WLA 9-30	1.5
3	6.6	6.3 ... 9.0	MS 325 - 9	WLA 9-30	1.5
4	8.5	6.3 ... 9.0	MS 325 - 9	WLA 9-30	1.5
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	WLA 12-30	1.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	WLA 16-30	2.5
11	22	16.0 ... 25.0	MS 325 - 25	WLA 26-30	4
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
0.55	1.5	1.0 ... 1.6	MS 325 - 1.6	WLA 9-30	1.5
0.75	2	1.6 ... 2.5	MS 325 - 2.5	WLA 9-30	1.5
1.1	2.6	2.5 ... 4.0	MS 325 - 4	WLA 12-30	1.5
1.5	3.5	2.5 ... 4.0	MS 325 - 4	WLA 12-30	1.5
2.2	5	4.0 ... 6.3	MS 325 - 6.3	WLA 26-30	1.5
3	6.6	6.3 ... 9.0	MS 325 - 9	WLA 26-30	1.5
4	8.5	6.3 ... 9.0	MS 325 - 9	WLA 26-30	1.5
5.5	11.5	9.0 ... 12.5	MS 325 - 12.5	WLA 26-30	1.5
7.5	15.2	12.5 ... 16.0	MS 325 - 16	WLA 26-30	2.5
11	22	16.0 ... 25.0	MS 325 - 25	WLA 26-30	4

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

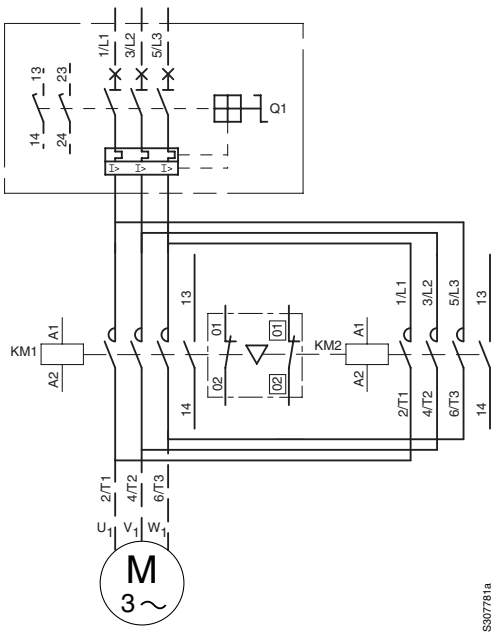
Ordering details

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

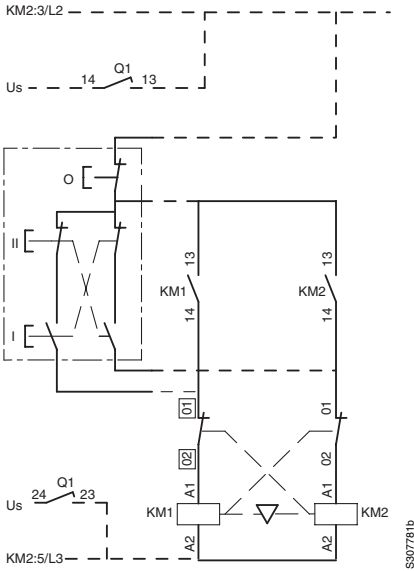
WLA Reversing Starters Open Type Version with Base for Manual Motor Starter



Wiring diagrams

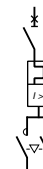


Power circuit

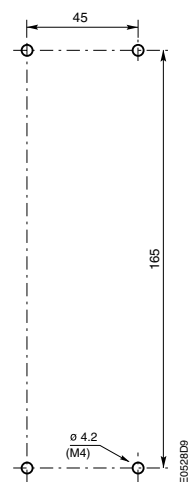
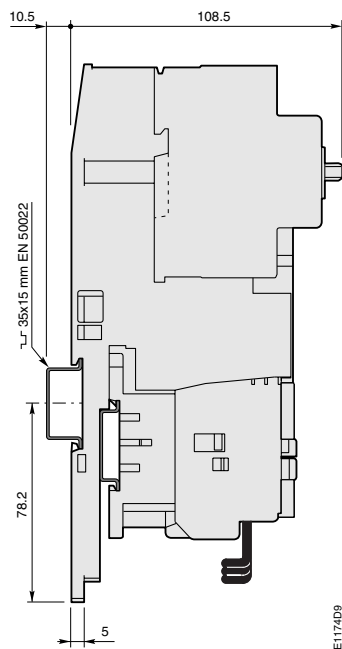
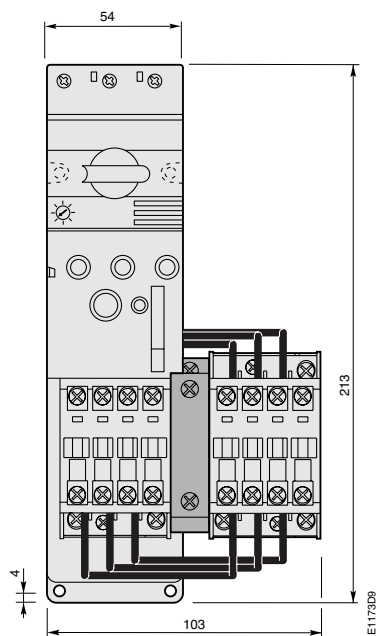


Remote control

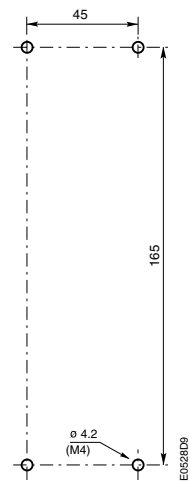
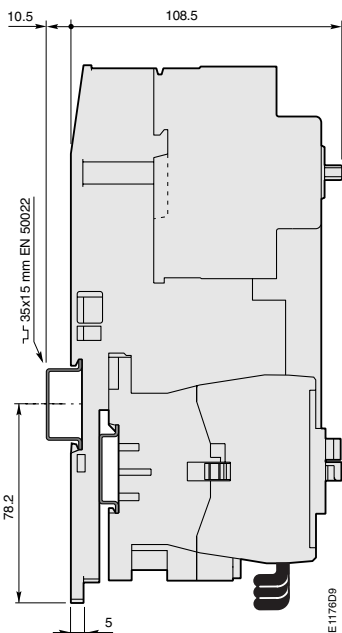
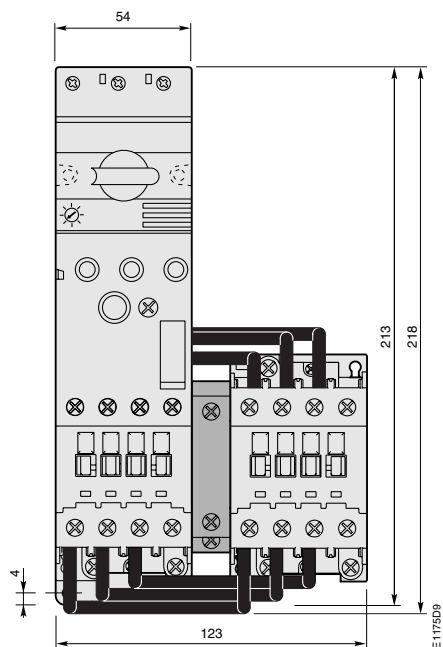
WLA Reversing Starters Open Type Version with Base for Manual Motor Starter



Dimensions (in mm)



WLA 9 ... WLA 16



WLA 26

Notes

6





Enclosed Starters

Contents

D.O.L. Starters, Protection by Thermal O/L Relay

DWA, DYA, DRA, DEA	7/1
Starters in Kit Form	7/10

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

YRA, YEA	8/1
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Reversing Starters, Protection by Thermal O/L Relay

WRA, WEA	9/1
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D.O.L. Starters with Associated Manual Motor Starter

DRA ... D, DRA ... DB, DRA ... DB+BU	10/1
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Star-Delta Starters with Associated Manual Motor Starter

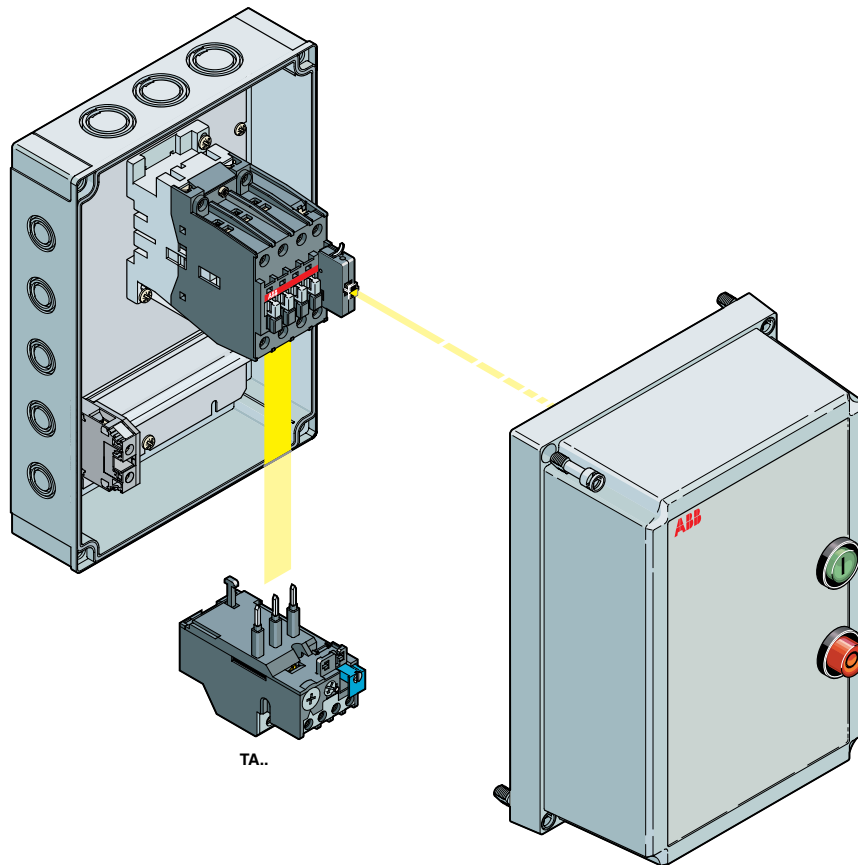
YRA ... D, YRA ... DB, YRA ... DB+BU	11/1
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Reversing Starters with Associated Manual Motor Starter

WRA ... D, WRA ... DB, WRA ... DB+BU	12/1
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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	page 7/1
>> Enclosed D.O.L. starters in kit form	page 7/10

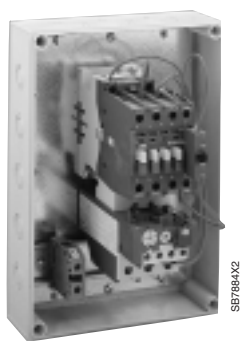
DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay



DYA 9-30



DRA 40-30 + TA 42 DU



DEA 50-30



DEA 110-30

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.

>> Ordering details	page 7/2	>> Accessories	page 7/4
>> Starters in kit form	page 7/10	>> Empty enclosures	page 7/5
>> Wiring diagrams	page 7/6	>> Dimensions	page 7/8

DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay

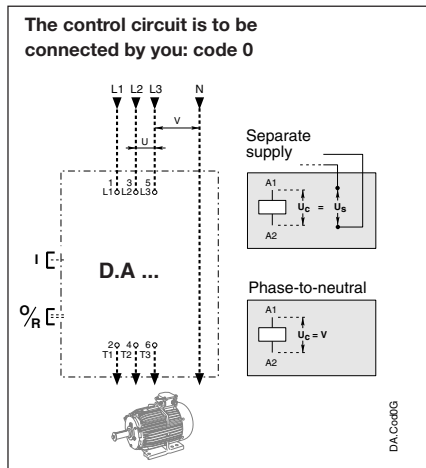


Ordering details (Order the thermal O/L relay separately, see page 7/3)

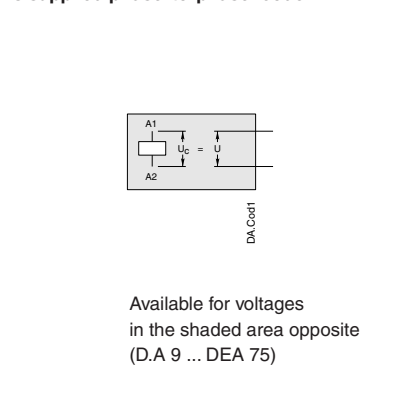
Rated operat. current	Power AC-3 4-pole motor - 50/60 Hz				Short-circuit protection *		Type	Order code	Weight in kg
AC-3 400 V	400 V	415 V	690 V		Type 2 co-ordination as per EN 60947-4-1/IEC 947-4-1 380-400 V		State control voltage _____	to be completed with the following codes - control voltage ☐ - control supply ☐	Packing 1 piece
A	kW	kW	kW		aM fuses	gG fuses			
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
Starters in IP 66 sheet metal enclosure									
96	45	55	55		125	200	DEA 95-30 _____	1SFK 430 0 33 R8 ☐ 00	10.00
110	55	59	75		160	200	DEA 110-30 _____	1SFK 450 0 33 R8 ☐ 00	10.00

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

Control supply code



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



Control voltage code

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



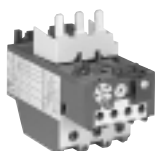
DYA SB

DYA 9-30 SB



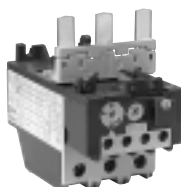
SB7386S2

TA 25 DU



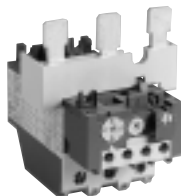
SB7361S3

TA 42 DU



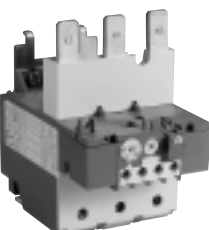
SB7387S2

TA 75 DU



SB7388S3

TA 80 DU



SB7389S4

TA 110 DU

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

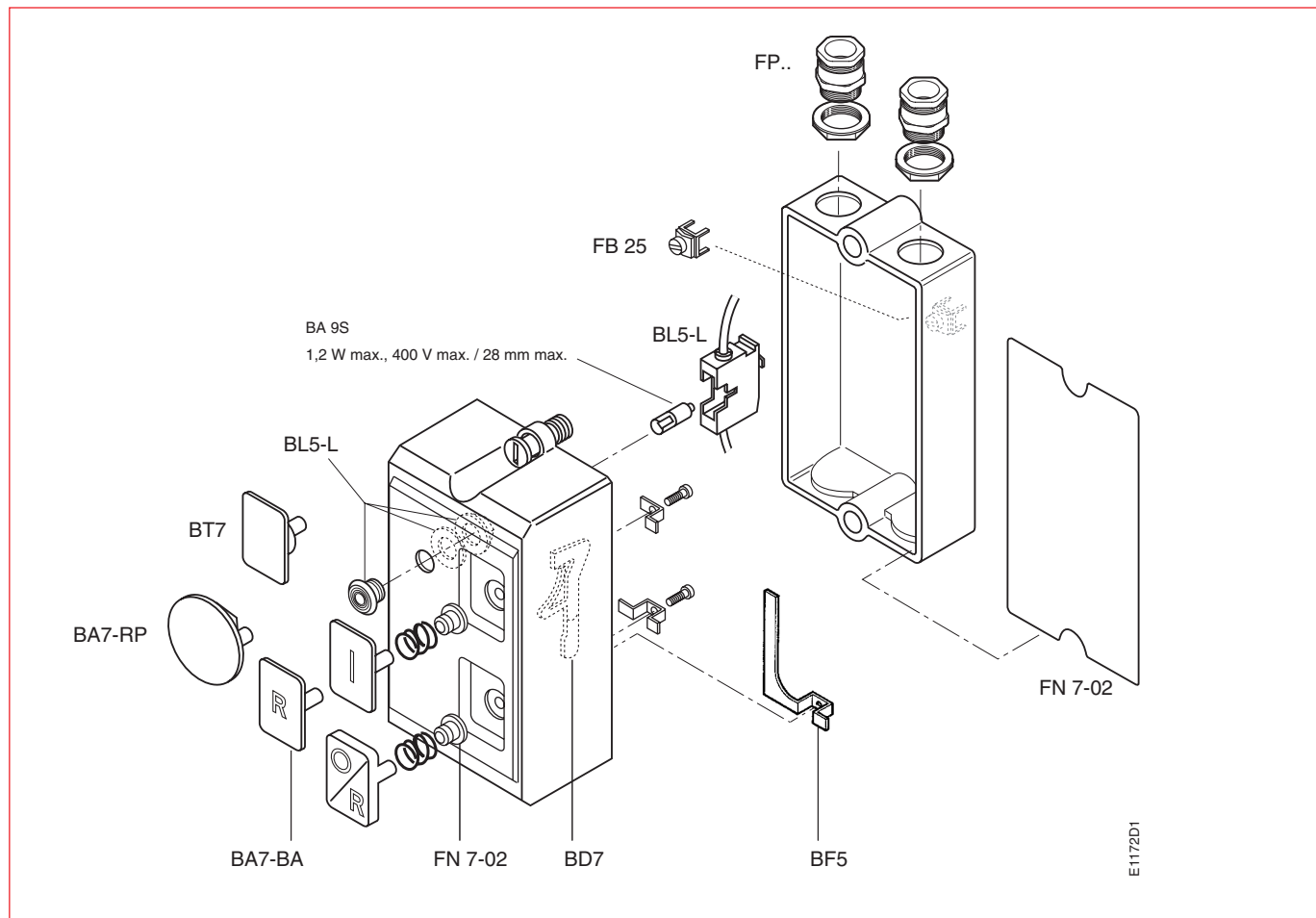
Ordering details, thermal O/L relays

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
DEA 95-30	29 ... 42	TA 80 DU 42	1SAZ 33 1201 R1003	0.360
and	36 ... 52	TA 80 DU 52	1SAZ 33 1201 R1004	0.360
DEA 110-30	45 ... 63	TA 80 DU 63	1SAZ 33 1201 R1005	0.360
	60 ... 80	TA 80 DU 80	1SAZ 33 1201 R1006	0.360
DEA 95-30 and	65 ... 90	TA 110 DU 90	1SAZ 41 1201 R1001	0.750
DEA 110-30	80 ... 110	TA 110 DU 110	1SAZ 41 1201 R1002	0.750

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 R 1001	1	0.012

Ordering details, enclosure cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 110312 R1000	2	0.008
ISO 25 cable gland	FP25	1SBN 110313 R1000	2	0.016
ISO 32 cable gland	FP32	1SBN 110314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 110315 R1000	2	0.048

DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

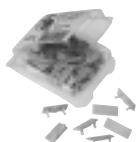
Protection by Thermal O/L Relay



DYA 9-30 SB



FE 50-12 VARS



BA5-50



CA5-10



CB5-10



CAL 5-11



LK 75-L



LP16

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
DEA 95, DEA 110	FE 110.12 VARS	1SFN 104333 R1000	1	7.000

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
Control lead terminals (A 95, A 110)				
Right/left connection	LK 110	1 SFN 07 4352 R1000	2	0.010
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
Connecting strip (A 95 / 110)	LY 110	1 SFN 07 4303 R1000	1	0.055
Add. terminal block (A 95 / A 110)	LD 110	1 SFN 07 4308 R1000	1	0.150
Terminal enlargement pieces (set of 3 bars) for A 95 / A 110	LW 110	1 SFN 07 4307 R1000	1	0.100

(1) for DWA ... and DYA only

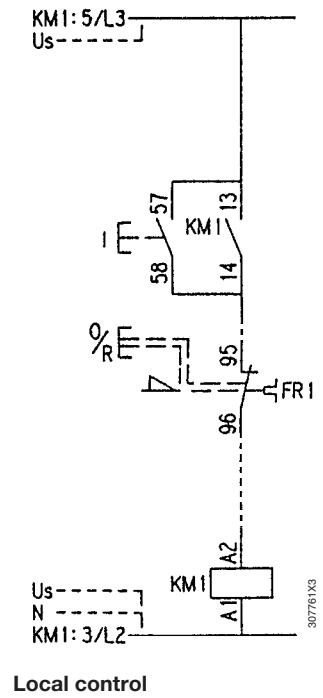
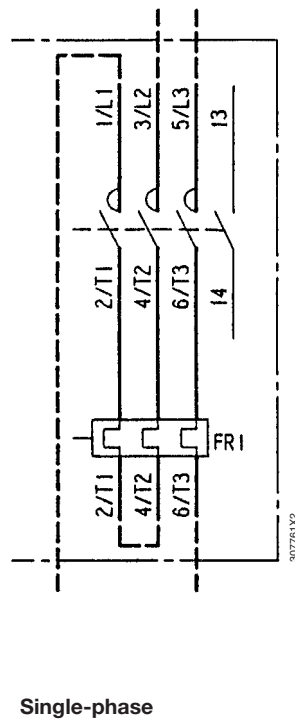
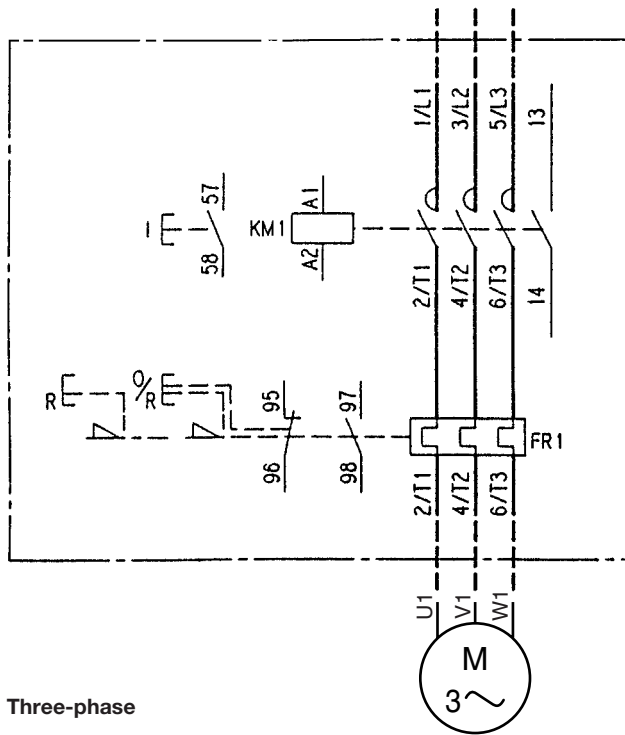
Ordering details, thermal O/L relay accessories

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 11000 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

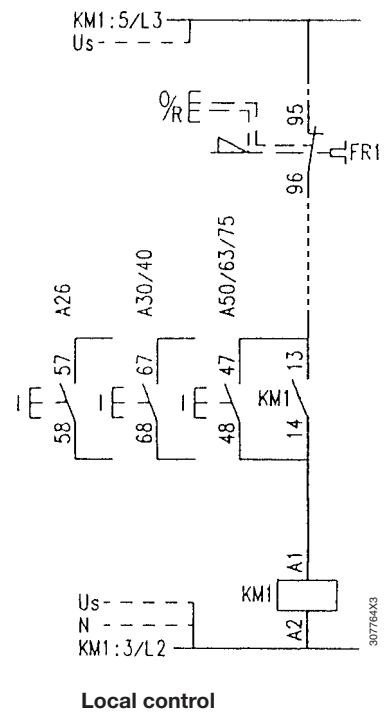
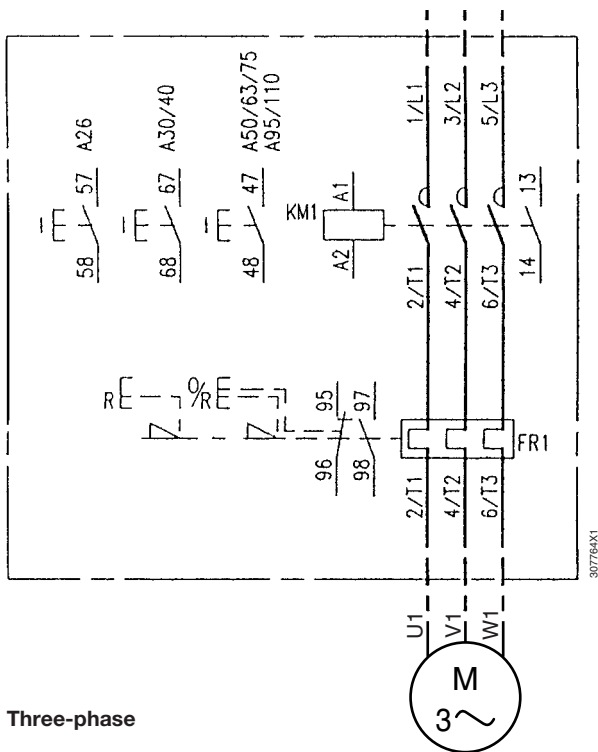
DWA, DYA, DRA, DEA Enclosed D.O.L. Starters Protection by Thermal O/L Relay



D.A 9 ... D.A 16 wiring diagrams



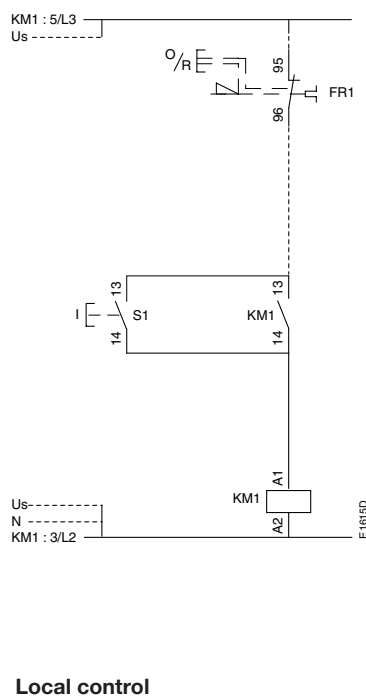
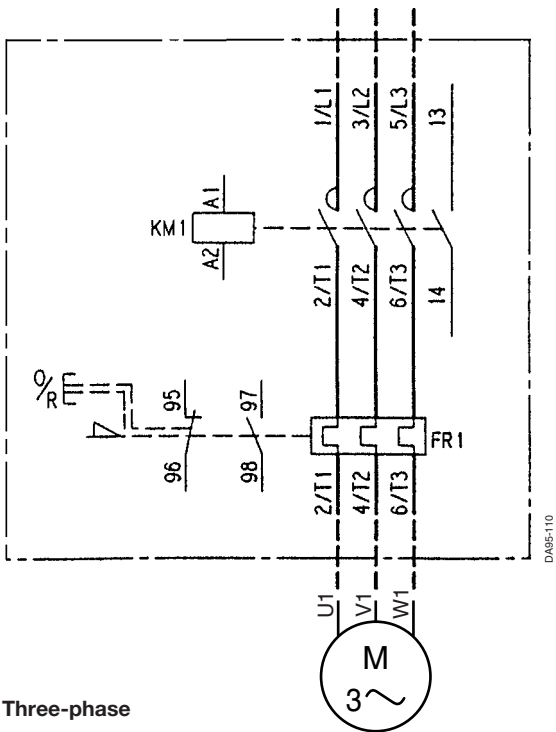
D.A 26 ... D.A 75 wiring diagrams



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



DEA 95, DEA 110 wiring diagrams



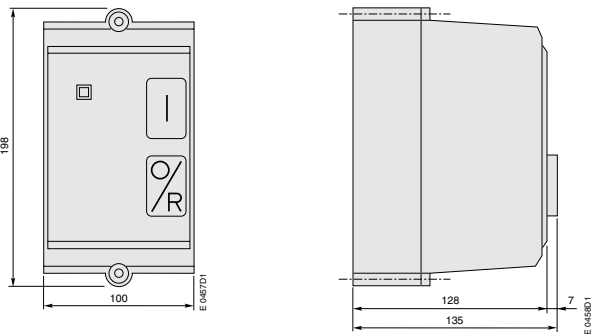
DWA, DYA, DRA, DEA

Enclosed D.O.L. Starters

Protection by Thermal O/L Relay

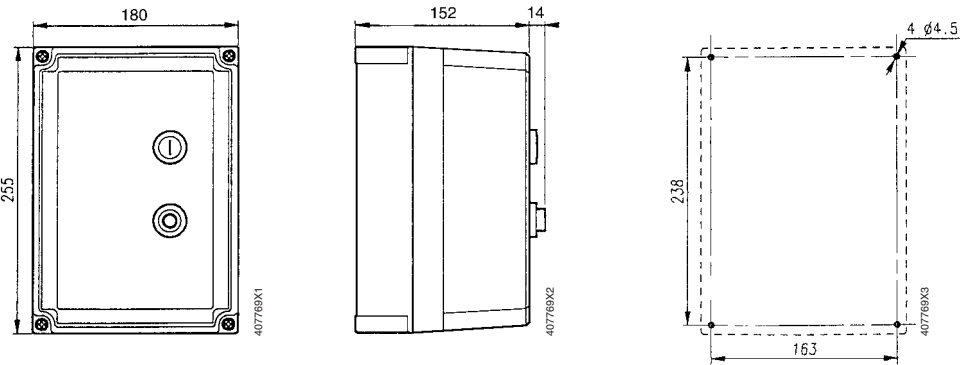


Dimensions (in mm)



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	

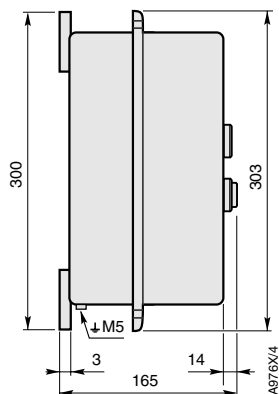
D.A 9 ... D.A 16



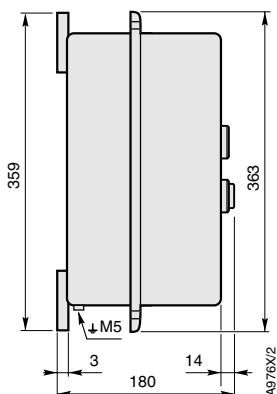
Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20	
$\varnothing$ 32.5 for ISO 32	

DRA 26 ... DRA 40

The circuit diagram shows a battery on the left, connected in series with a switch, a light bulb, and a resistor. The components are connected in a single loop.



ø 32.5 for ISO 32



ø 20.5 for ISO 20
ø 40.5 for ISO 40

1SBC 0095 00 R1001 - Rev. 1 - 05.2002

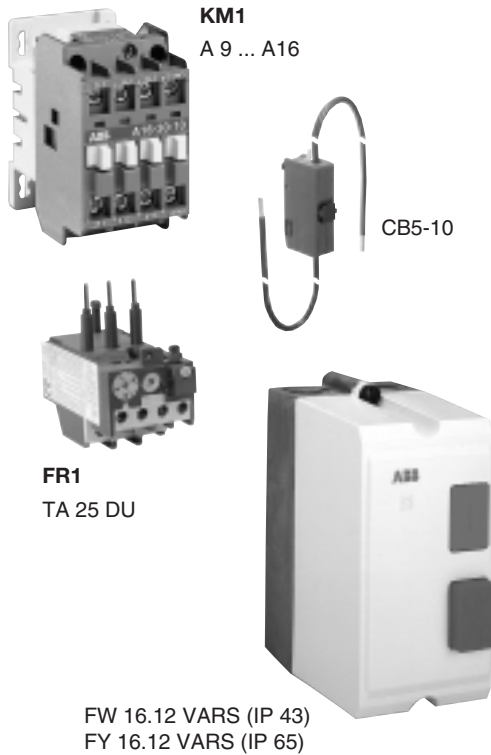
Enclosed D.O.L. Starters in Kit Form

Protection by Thermal O/L Relay

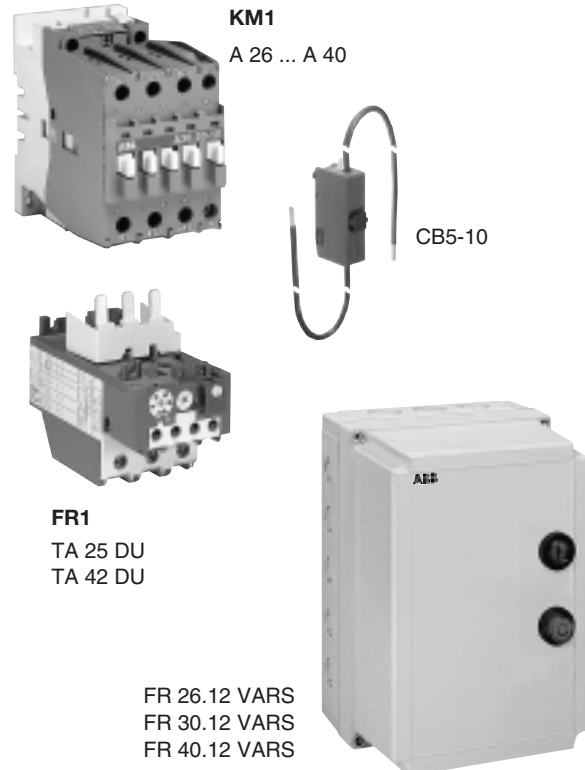


Starters in kit form

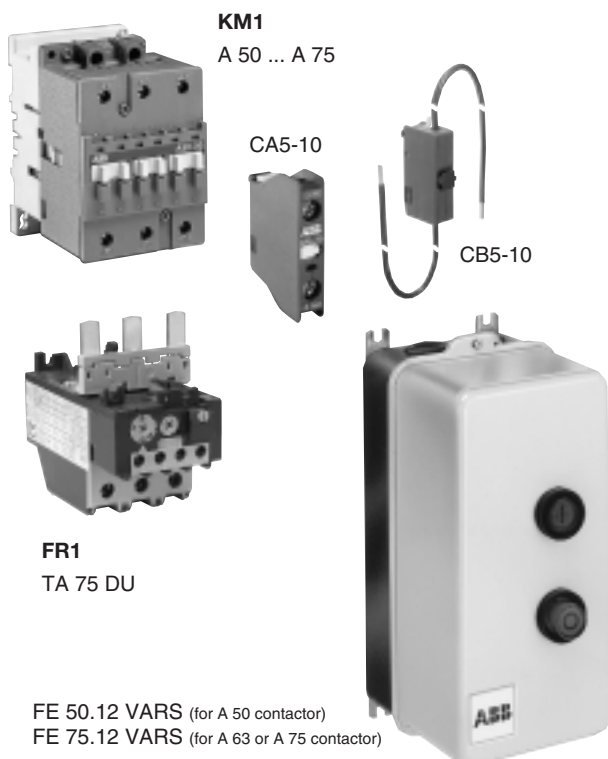
Ratings A 9 ... A 16



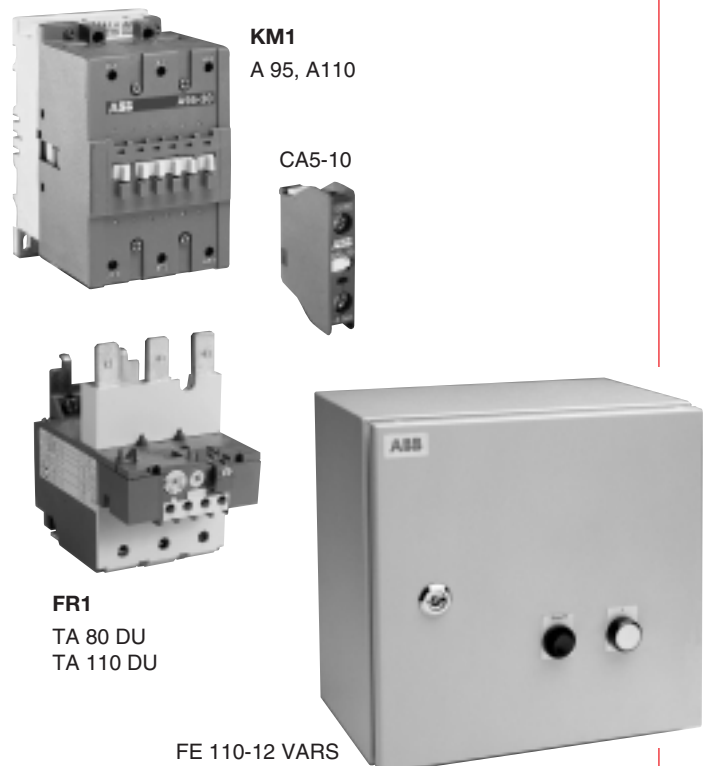
Ratings A 26 ... A 40



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 _n , 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 ☐	1 x FR 40.12VARS	
37	415	18.5					1SBL 32 1001 R8 ☐ 10		1SBN 01 0013 R1010	1SAZ 31 1201 R10 ☐ ☐	1SBN103222R1000	
25	690	22					("13" - "14" hold-in)				(IP 65 plastic)	
50	380-400	22					1 x A 50-30-00 ☐				1 x FE50.12VARS	
50	415	25					1SBL 35 1001 R8 ☐ 00				FPTN372206R0025	
35	690	30					plus hold-in contact: 1 x CA5-10				(IP 55 sheet metal)	
							1SBN 01 0010 R1010					
65	380-400	30					1 x A 63-30-00 ☐		1 x CB5-10	1 x TA 75 DU ☐	1 x FE75.12VARS	
65	415	37					1SBL 37 1001 R8 ☐ 00		1SBN 01 0013 R1010	1SAZ 32 1201 R10 ☐ ☐	FPTN372208R0019	
43	690	37					plus hold-in contact: 1 x CA5-10				(IP 55 sheet metal)	
							1SBN 01 0010 R1010					
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 FE110-12VARS	
96	415	55					1SFL 43 1001 R8 ☐ 00			1 x TA 80 DU ☐	1SFN104333R1000	
65	690	55					plus hold-in contact: 1 x CA5-10			1SAZ 33 1201 R10 ☐ ☐	(IP 66 sheet metal)	
							1SBN 01 0010 R1010			or		
110	380-400	55					1 x A 110-30-00 ☐		—	1 x TA 110 DU ☐		
110	415	59					1SFL 45 1001 R8 ☐ 00			1SAZ 41 1201 R10 ☐ ☐		
82	690	75					plus hold-in contact: 1 x CA5-10					
							1SBN 01 0010 R1010					

* Ambient temperature around the starter enclosure ≤ 40°C

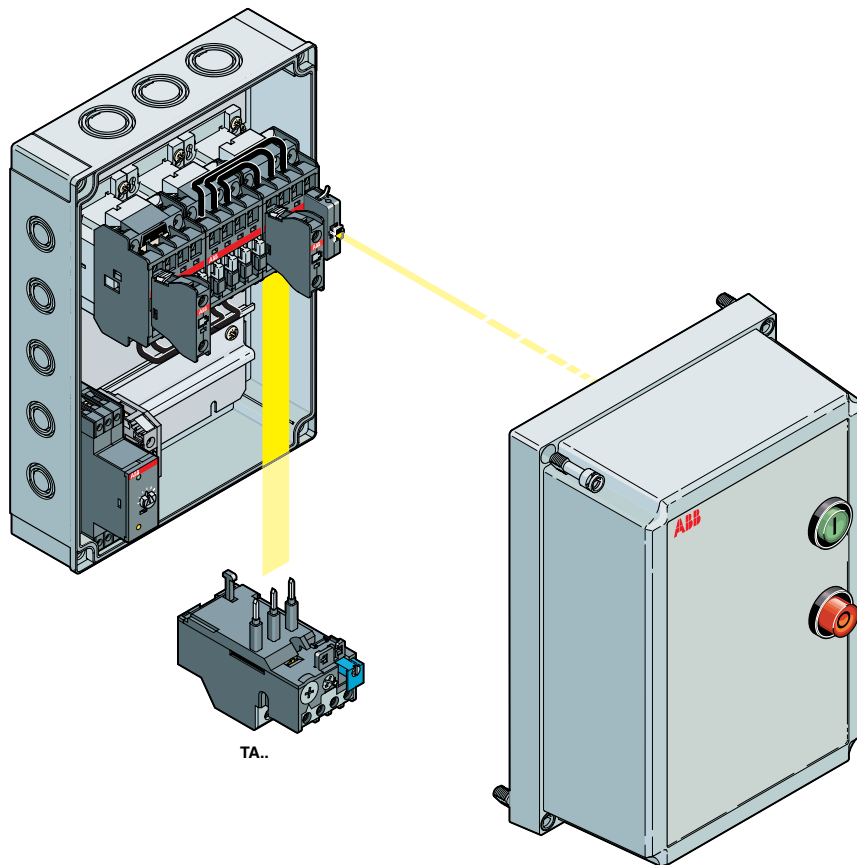
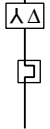
Cabling accessories (see page 7/5 for ordering details)

>> Accessories page 7/4
>> Factory-assembled starters page 7/1

>> Wiring diagrams page 7/6
>> Dimensions of assembled starters page 7/8

Enclosed Star-Delta Starters

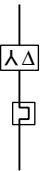
Protection by Thermal O/L Relay



YRA...-30 version

E1376D1

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



YRA 9-30

SB000253



YRA 26-30

SB000453



YEA 75-30

YEA75X



YEA 110-30

91399-24

Application

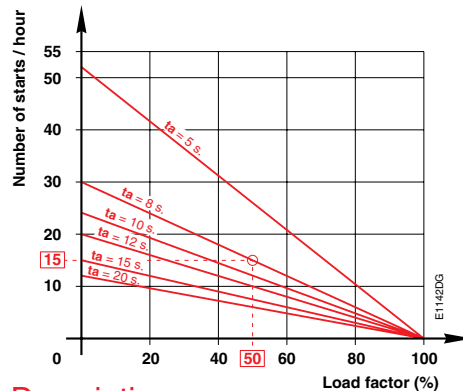
Starters for the control of three-phase asynchronous motors

- up to an operational voltage of 690 V, 50 or 60 Hz,
- at an ambient temperature ≤ 40 °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.

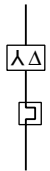
- 1 TE5S electronic timer with time lapse.
- The power circuit connections.
- The control circuit cabling ready to be connected to the chosen control supply:
 - either a separate supply
 - or phase-to-phase
 - or phase-to-neutral
- 1 PE terminal for connection of the external protective conductor (on 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)

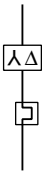
Rated operat. current AC-3 400 V A	Motor power AC-3			Short-circuit protection*		Type	Order code	Weight in kg
	380 V 400 V	415 V	690 V	Type 1 co-ordination as per EN 60947-4-1/IEC 947-4-1 380-400 V				
	kW	kW	kW	aM fuses	gG fuses	State control voltage [...]	to be completed with control voltage code □	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
140	75	75	90	160	200	YEA 95-30 [...]	1SFK 432 333R8 □ 00	19.00
170	90	100	132	200	250	YEA 110-30 [...]	1SFK 452 333R8 □ 00	19.00

* 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 ... 120	9	supply
220 ... 230	230 ... 240	0	– or phase-to-phase
230 ... 240	240	8	– or phase-to-neutral
380 ... 400	400 ... 415	5	
400 ... 415	415 ... 440	6	

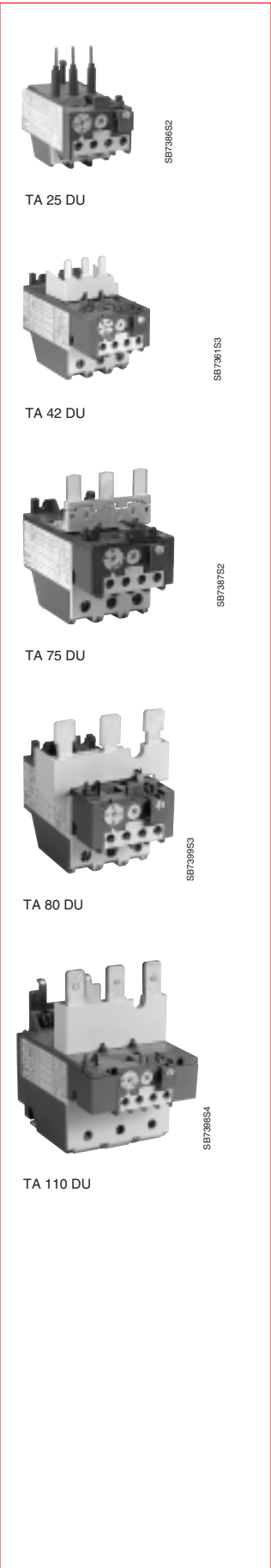
YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



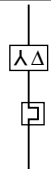
Ordering details, thermal O/L relay

Starter	Setting range (1)		Type	Order code	Weight in kg Packing 1 piece
	A	... A			
YRA 9-30 to YRA 30-30	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
	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
YRA 40-30	18	... 25	TA 25 DU 25	1SAZ 21 1201 R1051	0.150
	24	... 32	TA 25 DU 32	1SAZ 21 1201 R1053	0.170
	18	... 25	TA 42 DU 25	1SAZ 31 1201 R1001	0.330
	22	... 32	TA 42 DU 32	1SAZ 31 1201 R1002	0.330
YEA 50-30 to YEA 75-30	29	... 42	TA 42 DU 42	1SAZ 31 1201 R1003	0.330
	18	... 25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
	22	... 32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
	29	... 42	TA 75 DU 42	1SAZ 32 1201 R1003	0.330
YEA 95-30 and YEA 110-30	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
	29	... 42	TA 80 DU 42	1SAZ 33 1201 R1003	0.360
YEA 95-30 and YEA 110-30	36	... 52	TA 80 DU 52	1SAZ 33 1201 R1004	0.360
	45	... 63	TA 80 DU 63	1SAZ 33 1201 R1005	0.360
	60	... 80	TA 80 DU 80	1SAZ 33 1201 R1006	0.360
	65	... 90	TA 110 DU 90	1SAZ 41 1201 R1001	0.750
	80	... 110	TA 110 DU 110	1SAZ 41 1201 R1002	0.750

(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 A x 0.58 = **17.4 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

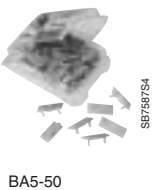
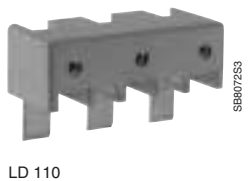
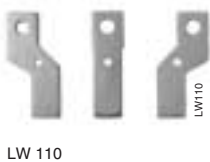
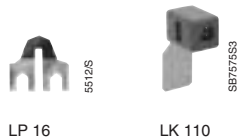
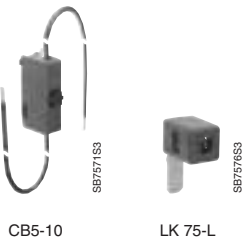
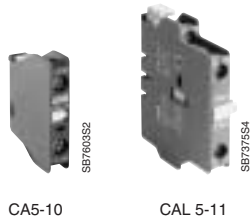


Ordering details, accessories for contactors

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	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
Control lead terminals (A 95, A 110)				
Right/left connection	LK 110	1 SFN 07 4352 R1000	2	0.010
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
Connecting strip (A 95 / 110)	LY 110	1 SFN 07 4303 R1000	1	0.055
Add. terminal block (A 95 / A 110)	LD 110	1 SFN 07 4308 R1000	1	0.150
Terminal enlargement pieces (set of 3 bars) for A 95 / A 110	LW110	1 SFN 07 4307 R1000	1	0.100

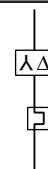
Ordering details, cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 110312 R1000	2	0.008
ISO 25 cable gland	FP25	1SBN 110313 R1000	2	0.016
ISO 32 cable gland	FP32	1SBN 110314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 110315 R1000	2	0.048



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

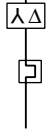
YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



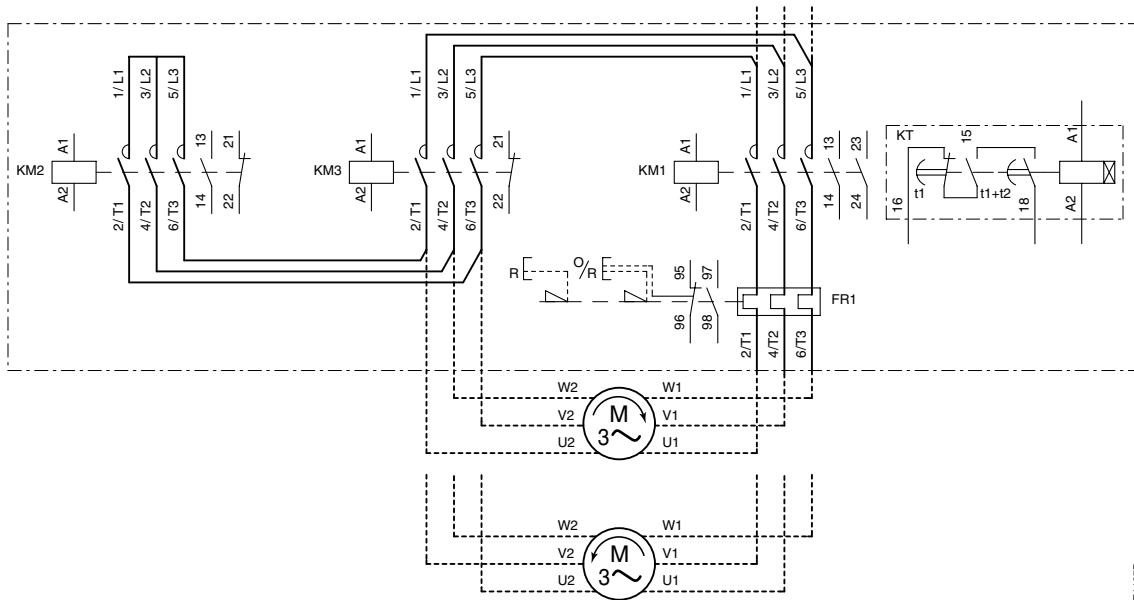
Technical data

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	A95, A110
Rigid solid/Rigid stranded	1 x mm²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50	10 ... 95
Flexible without cable end	1 x mm²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16	10 ... 70
Main downstream conductors on KM3 (as per contactor rating)		A9 to A16	A26	A30, A40	A50 to A75	A95, A110
Rigid solid/Rigid stranded	1 x mm²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50	10 ... 95
Flexible without cable end	1 x mm²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16	10 ... 70
Main downstream conductors on FR1 (as per thermal O/L relay)			TA 25 DU		TA 42/75 DU	TA 80/110 DU
Rigid solid/Rigid stranded	mm²		2 x 1.5 ... 6		1 x 2.5 ... 35	1 x 2.5...35 / 16...35
Flexible without cable end	mm²		2 x 1.5 ... 4		1 x 2.5 ... 25	1 x 2.5...25 / 16...35
Auxiliary conductors - Flexible	1 or 2 x mm²			0.75 ... 2.5		
Contactors	A 9 to A 110	see main catalogue "Contactors", section 2				
Thermal O/L relay	TA ...	see main catalogue "Contactors", section 5				
Timer	TE 5S	see main catalogue "Contactors", section 4				
Enclosure						
YRA 9-30 ... YRA 40-30 starters			Plastic - UL 94 V2 - Double insulation IP 64Protection			
YEA 50-30 ... YEA 75-30 starters			Sheet Metal - IP 55 Protection			
YEA 95-30 ... YEA 110-30 starters			Sheet Metal - IP 66 Protection			

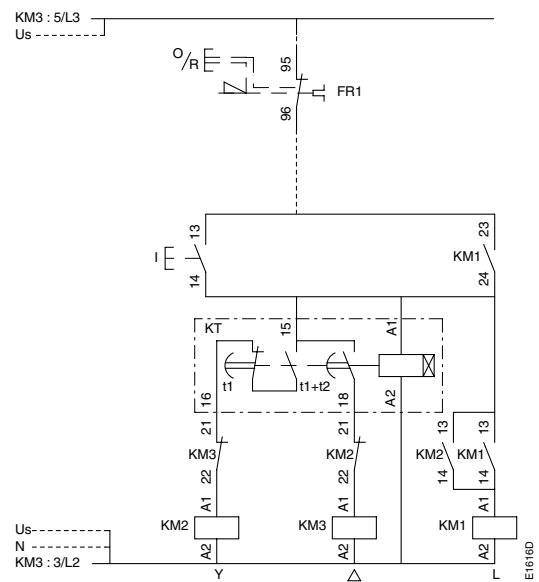
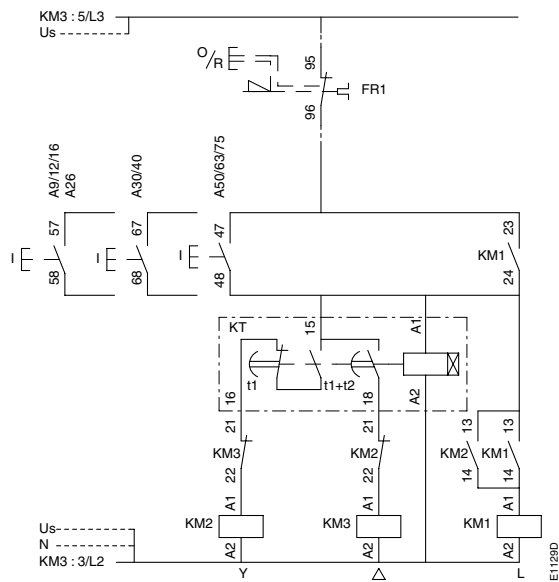
YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Wiring diagrams



Power circuit



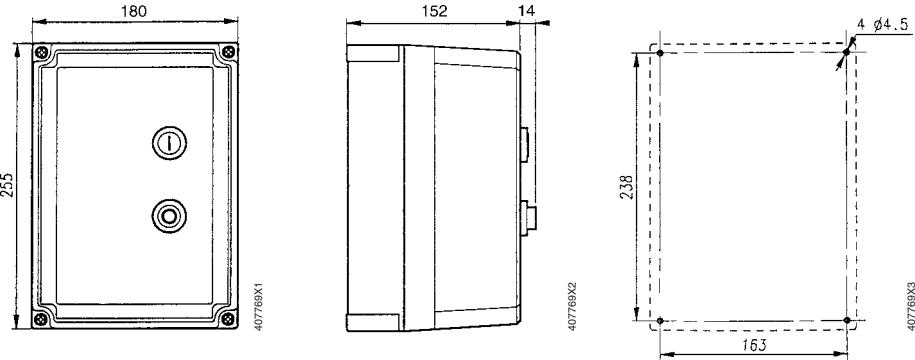
**YRA 9-30 ... YRA 40-30 and YEA 50-30 ... YEA 75-30
local control**

YEA 95-30, YEA 110-30 local control

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

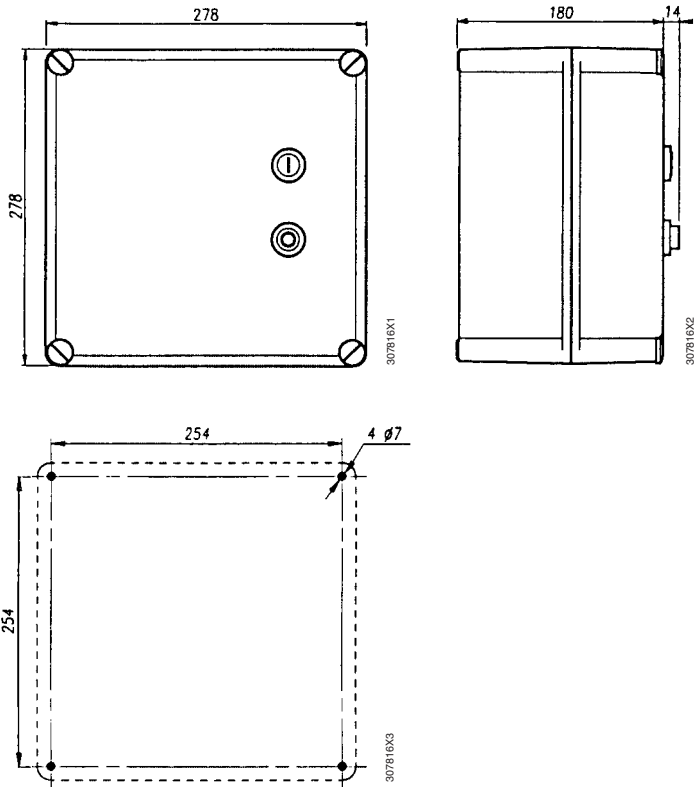


Dimensions (in mm)



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



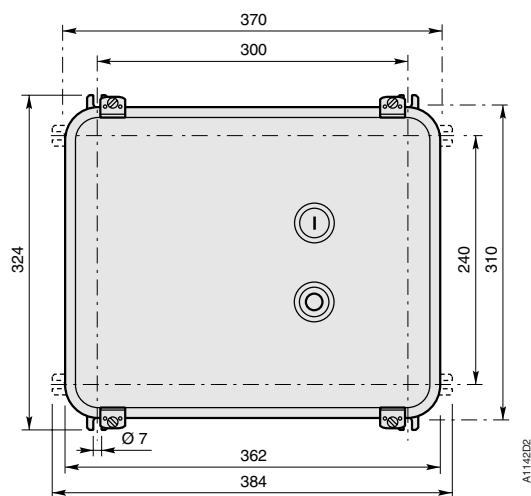
Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
1 x Ø 32.5/40.5	1 x Ø 32.5/40.5
3 x Ø 25.5	3 x Ø 25.5
3 x Ø 12.5/20.5	3 x Ø 12.5/20.5
4 x Ø 16.5	4 x Ø 16.5
Ø 12.5 for ISO 12 Ø 16.5 for ISO 16 Ø 20.5 for ISO 20 Ø 25.5 for ISO 25 Ø 32.5 for ISO 32 Ø 40.5 for ISO 40	
Note: ISO enclosure will be available in 2003. Pg version is still available.	

YRA 26-30 ... YRA 40-30

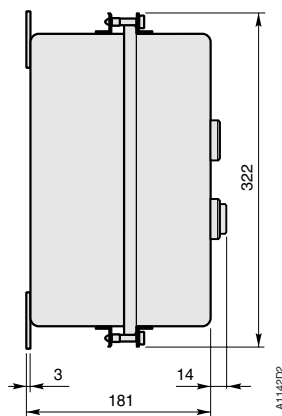
YRA ... and YEA ... Enclosed Star-Delta Starters Protection by Thermal O/L Relay



Dimensions (in mm)



A1142D2



A1142D2

Cable inlets Enclosure top

1 x Ø 40.5

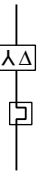
Ø 20.5 for ISO 20
Ø 40.5 for ISO 40

Cable outlets Enclosure bottom

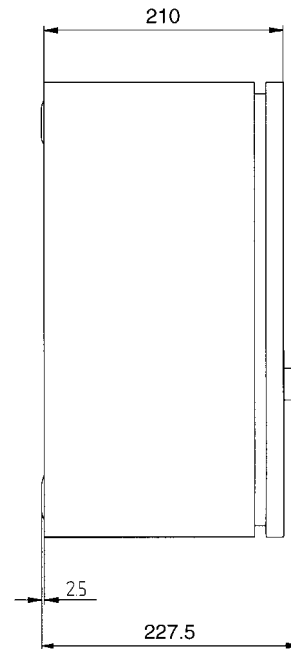
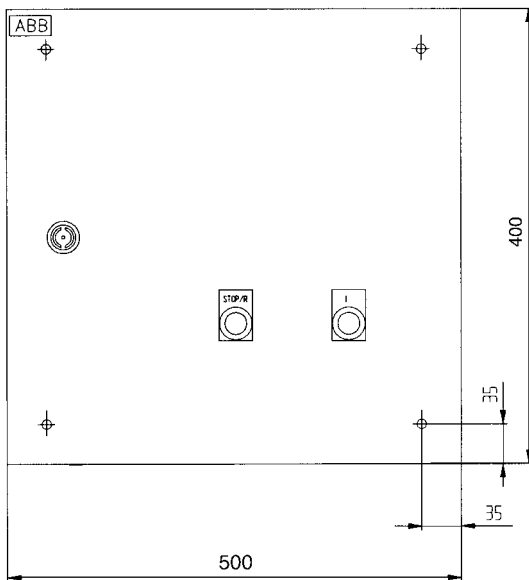
1 x Ø 20.5
3 x Ø 40.5

YEA 50-30 ... YEA 75-30

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



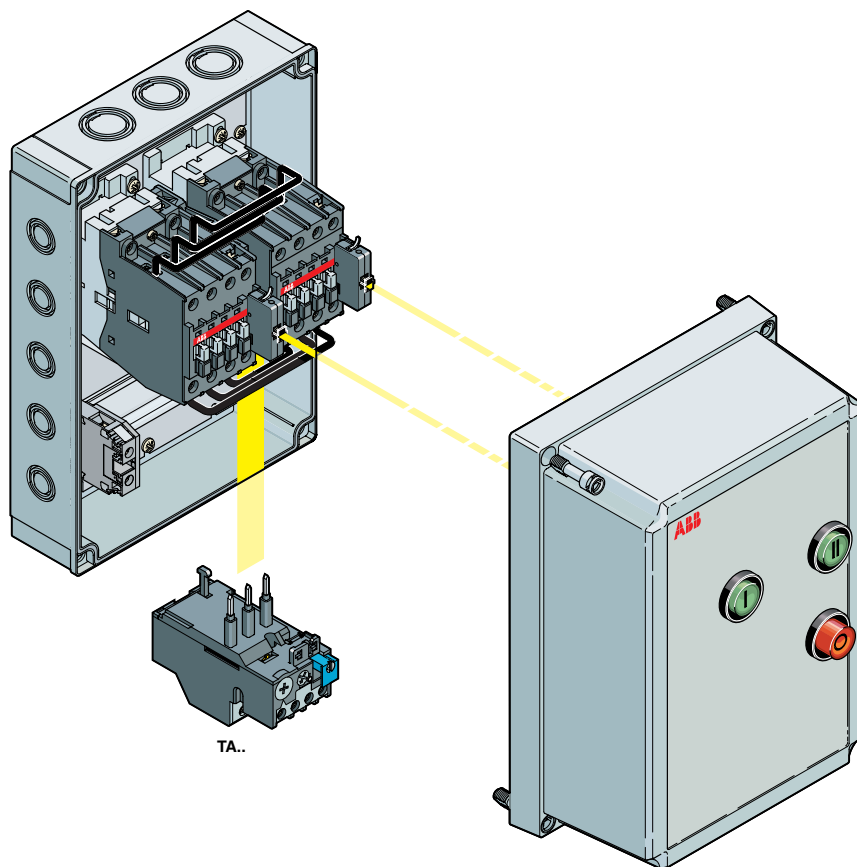
Dimensions (in mm)



YEA 95-30, YEA 110-30

Enclosed Reversing Starters

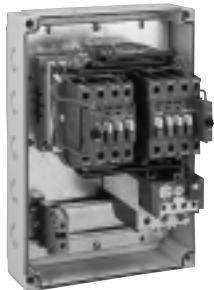
Protection by Thermal O/L Relay



WRA...30 version

E1371D1

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



SE7909X2

WRA 40-30



SB8004S3

WRA 9-30



WEA75X

WEA 75-30



91399-22

WEA 110-30

Application

Reversing starters for the control of three-phase asynchronous motors

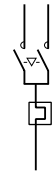
- up to an operational voltage of 690 V, 50 or 60 Hz,
- for a starting time of 1.5 s maximum,
and a switching frequency ≤ 15 starts/hour with a load factor of 80 %, or ≤ 30 starts/hour with a load factor of 50 %.
- at an ambient temperature ≤ 40 °C around the enclosure,
- in conformity with EN 60947-4-1/IEC 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 110, 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



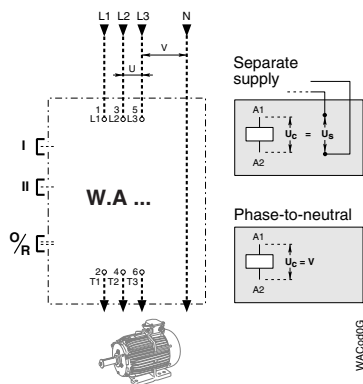
Ordering details (order the thermal O/L relay separately, see page 9/3)

Rated operat. current AC-3 400 V A	Motor power AC-3				Short-circuit protection *		Type	Order code	Weight in kg
	380 V 400 V	415 V	690 V		Type 2 co-ordination as per EN 60947-4-1/IEC 947-4-1 380-400 V aM fuses	gG fuses			
	kW	kW	kW				State control voltage ☐	to be completed with the following codes - control voltage ☐ - control supply ☐	Packing 1 piece
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
96	45	55	55		125	200	WEA 95-30 ☐	1SBK 431 ☐ 32R8 ☐ 00	15.00
110	55	59	75		160	200	WEA 110-30 ☐	1SBK 451 ☐ 32R8 ☐ 00	15.00

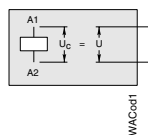
* For other short-circuit protection devices, please consult our co-ordination tables.

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
(WRA 9 ... WEA 75)

Control voltage code

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

>> Thermal O/L relay ordering details page 9/3
>> Wiring diagrams page 9/6

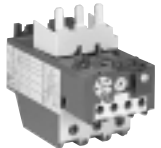
>> Technical data page 9/5
>> Dimensions page 9/8

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



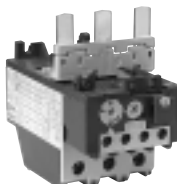
TA 25 DU

SB7396S2



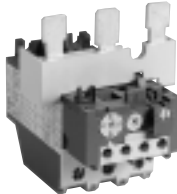
TA 42 DU

SB7361S3



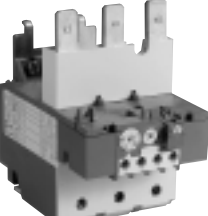
TA 75 DU

SB7387S2



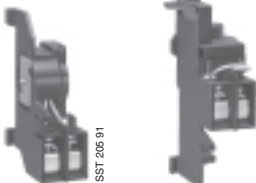
TA 80 DU

SB7399S3



TA 110 DU

SB7398S4



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 to WRA 30-30	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
	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
WRA 40-30	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
	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
	18	... 25	TA 75 DU 25	1SAZ 32 1201 R1001	0.330
	22	... 32	TA 75 DU 32	1SAZ 32 1201 R1002	0.330
	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
	29	... 42	TA 80 DU 42	1SAZ 33 1201 R1003	0.360
	36	... 52	TA 80 DU 52	1SAZ 33 1201 R1004	0.360
WEA 50-30 to WEA 75-30	45	... 63	TA 80 DU 63	1SAZ 33 1201 R1005	0.360
	60	... 80	TA 80 DU 80	1SAZ 33 1201 R1006	0.360
WEA 95-30 and WEA 110-30	65	... 90	TA 110 DU 90	1SAZ 41 1201 R1001	0.750
	80	... 110	TA 110 DU 110	1SAZ 41 1201 R1002	0.750

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 11000 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**

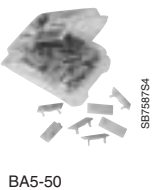
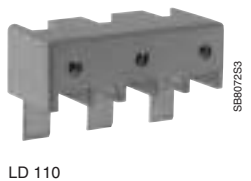
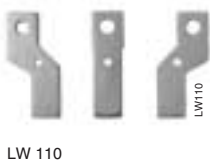
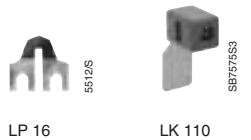
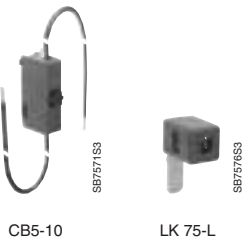
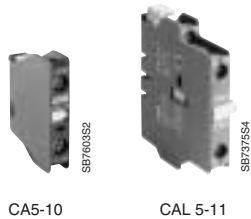


Ordering details, accessories for contactors

Description	Type	Order code	Pack- ing	Weight in kg
Function markers (50 pieces)	BA5-50	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
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
Control lead terminals (A 95, A 110)				
Right/left connection	LK 110	1 SFN 07 4352 R1000	2	0.010
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
Connecting strip (A 95 / 110)	LY 110	1 SFN 07 4303 R1000	1	0.055
Add. terminal block (A 95 / A 110)	LD 110	1 SFN 07 4308 R1000	1	0.150
Terminal enlargement pieces (set of 3 bars) for A 95 / A 110	LW110	1 SFN 07 4307 R1000	1	0.100

Ordering details, cable glands

Description	Type	Order code	Pack- ing	Weight in kg
ISO 20 cable gland	FP20	1SBN 110312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 110314 R1000	2	0.027
ISO 40 cable gland	FP40	1SBN 110315 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	A95, A110
Rigid solid/Rigid stranded	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 50	10 ... 95
Flexible without cable end	1 x mm ²	1 ... 4	1.5 ... 6	2.5 ... 16	6 ... 16	10 ... 70
Main downstream conductors (as per thermal O/L relay)		TA 25 DU			TA 42/75 DU	TA 80/110 DU
Rigid solid/Rigid stranded	mm ²	2 x 1.5 ... 6			1 x 2.5 ... 35	1 x 2.5...35 / 16...35
Flexible without cable end	mm ²	2 x 1.5 ... 4			1 x 2.5 ... 25	1 x 2.5...25 / 16...35
Auxiliary conductors - Flexible	1 or 2 x mm ²			0.75 ... 2.5		

Contactors **A 9 to A 110** 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
WEA 95-30, WEA 110-30	BEM110-30 (bar)	12 x 3 mm

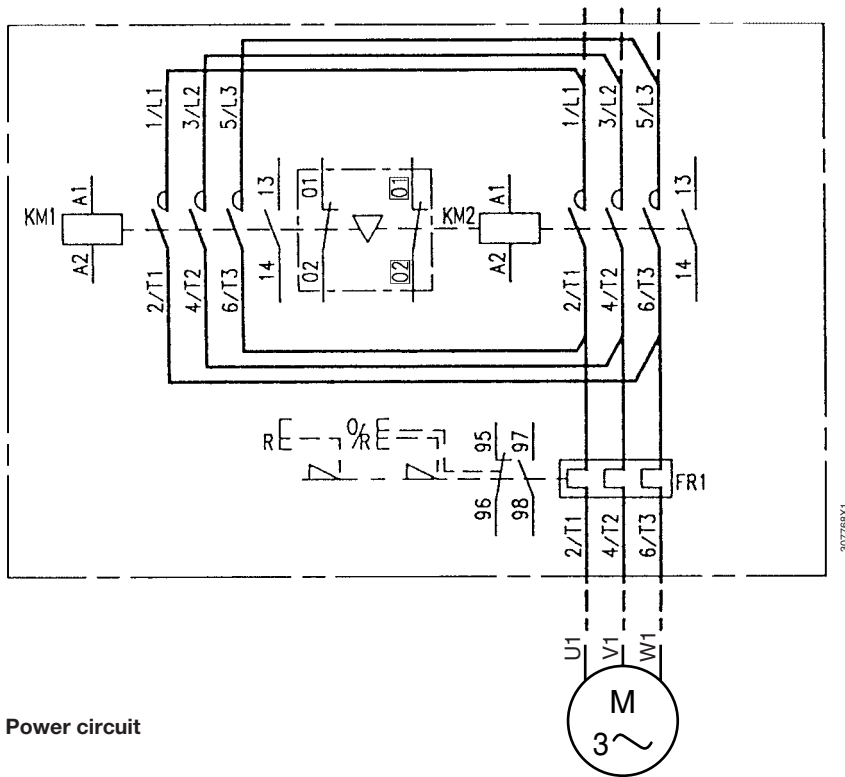
Enclosure

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
WEA 95-30 ... WEA 110-30 starters	Sheet Metal - IP 66 Protection

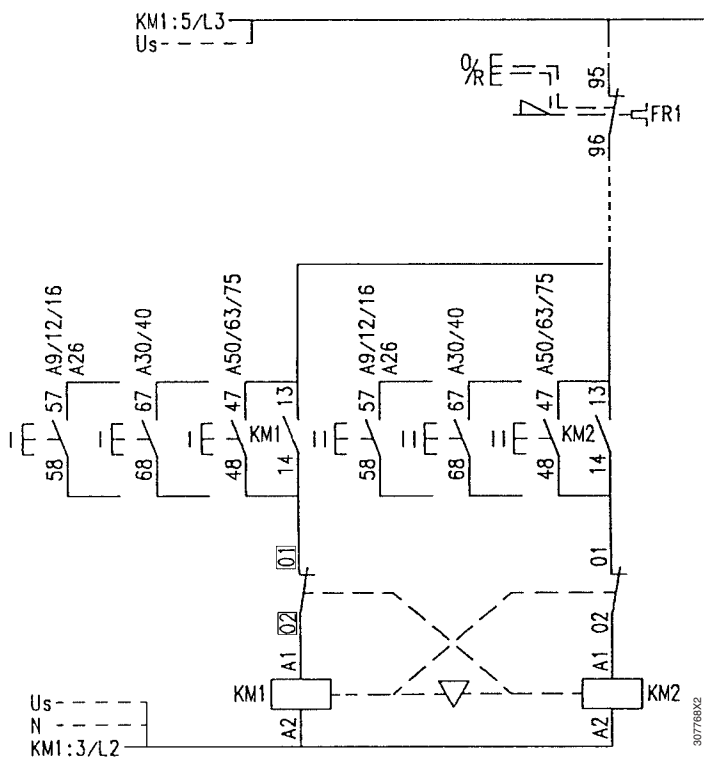
WRA ... and WEA ... Enclosed Reversing Starters Protection by Thermal O/L Relay



Wiring diagrams



Power circuit

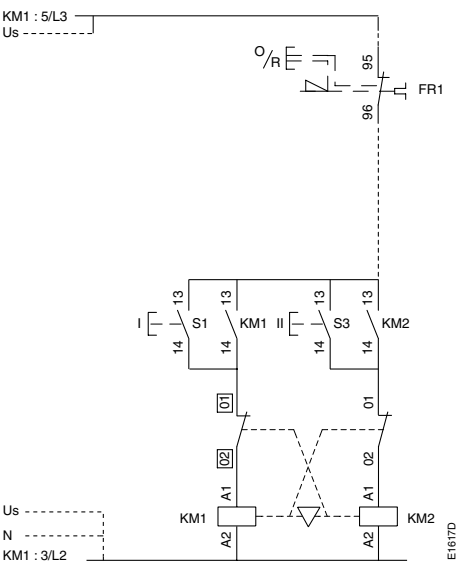


WRA 9-30 ... WRA 40-30 and WEA 50-30 ... WEA 75-30 local control

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



Wiring diagrams

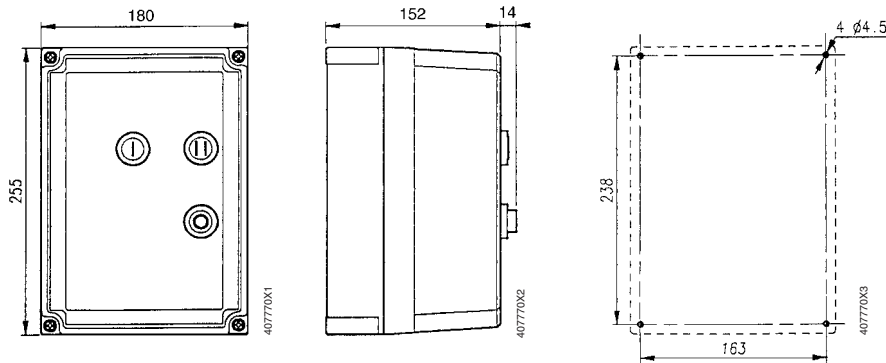


WEA 95-30, WEA 110-30 local control

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

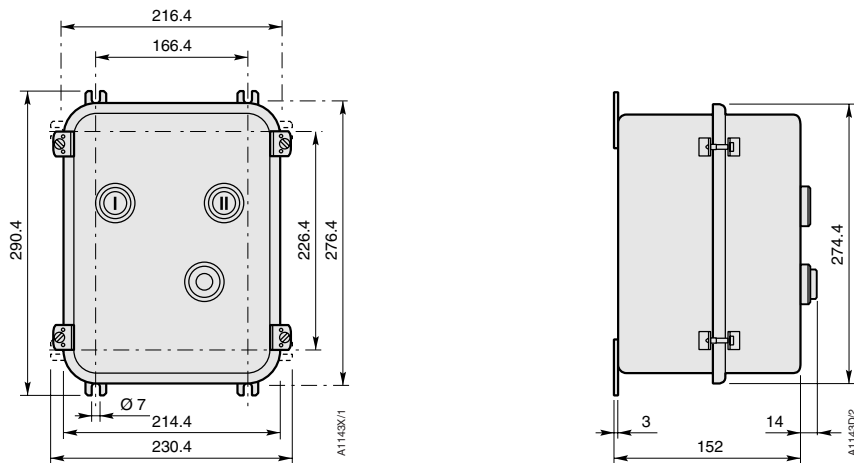


Dimensions (in mm)



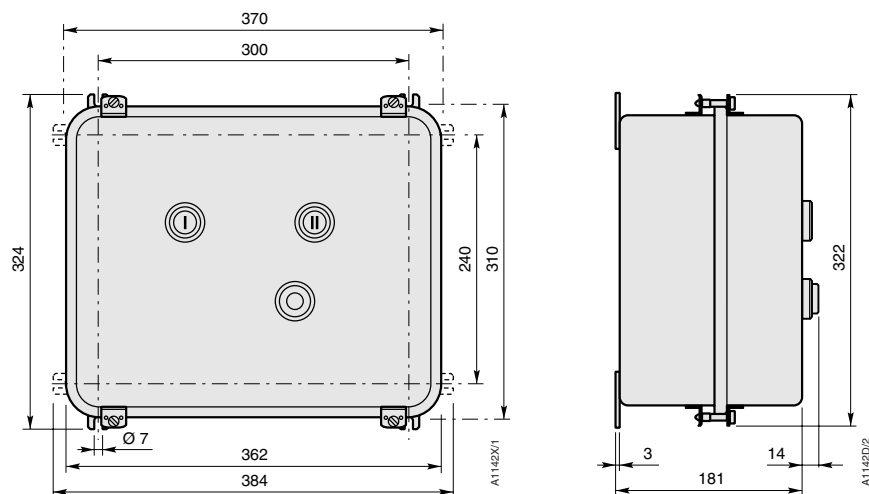
WRA 9-30 ... WRA 40-30

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	



WEA 50-30

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	



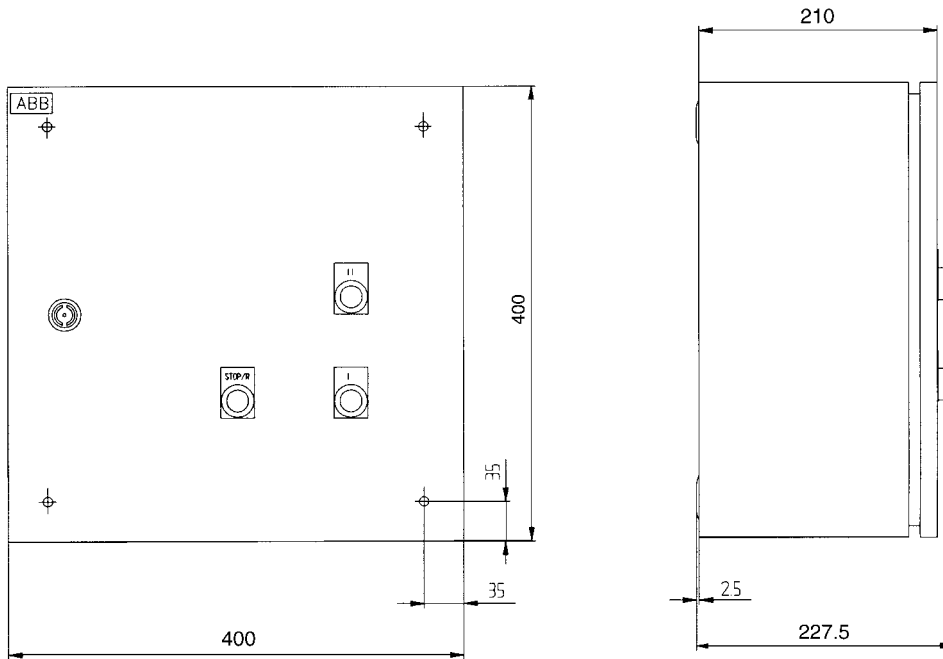
WEA 63-30, WEA 75-30

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	

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



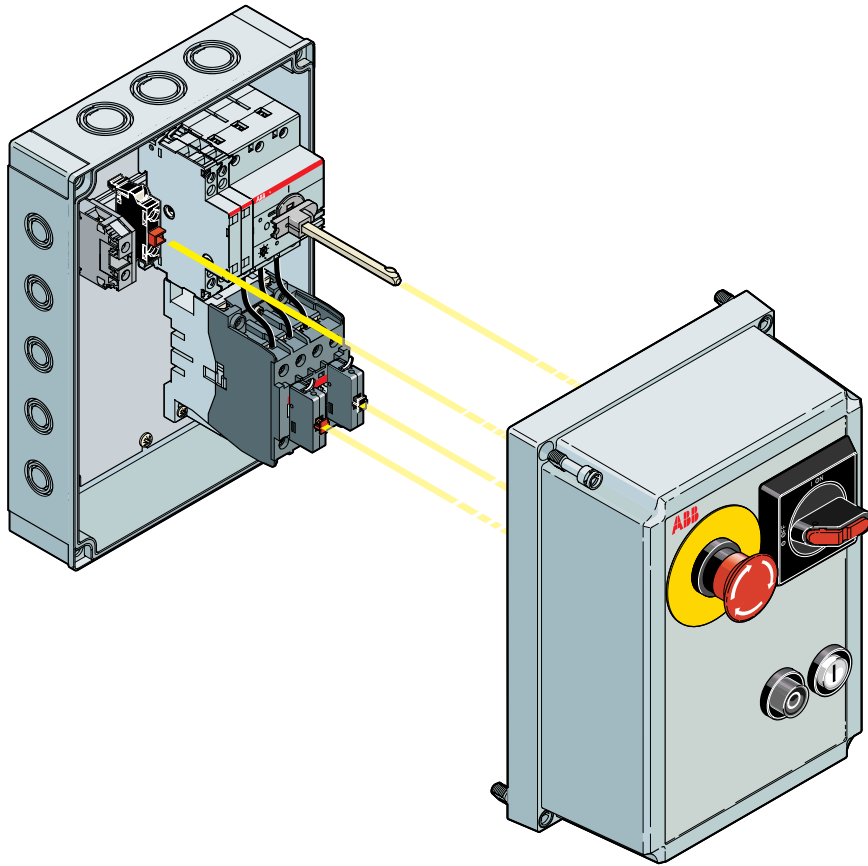
Dimensions (in mm)



WEA 95-30, WEA 110-30

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



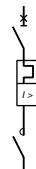
E1368D1

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 $\varnothing$ 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.

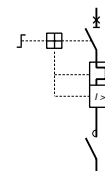
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

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).

DRA ... D

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



DRA ... D ordering details

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 $I_q = 50 \text{ kA}$	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

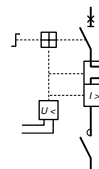
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240 ... 260	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(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

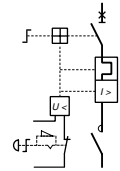
Control voltage code

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	
230 ... 240	240 ... 260	8	phase-to-phase connected
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)

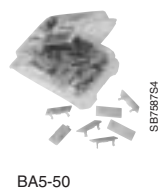
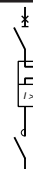
Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

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 V 50 Hz	V 60 Hz	Code 8 []	Control circuit
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	phase-to-phase connected
380 ... 400	400 ... 415	5	
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-10



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
Fault indicating contact	- 1 -	SK-10	1 SAM 101 904 R0001	10	0.031
	- - 1	SK-01	1 SAM 101 904 R0001	10	0.031

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 110312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 110314 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

Enclosure

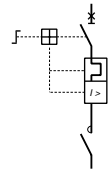
Plastic	Double insulation
Fire resistance	UL 94 V2
Protection	IP 64 (IP 54 for DRA ...+BU version)

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

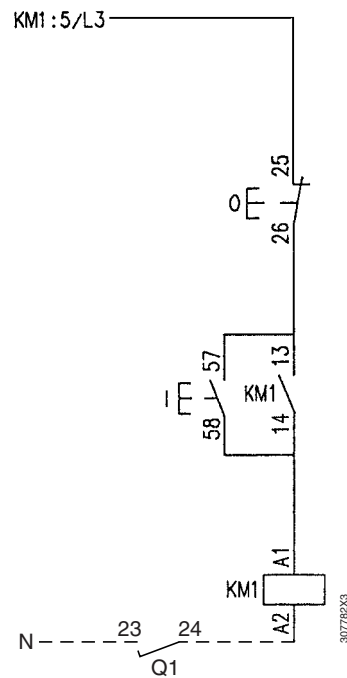
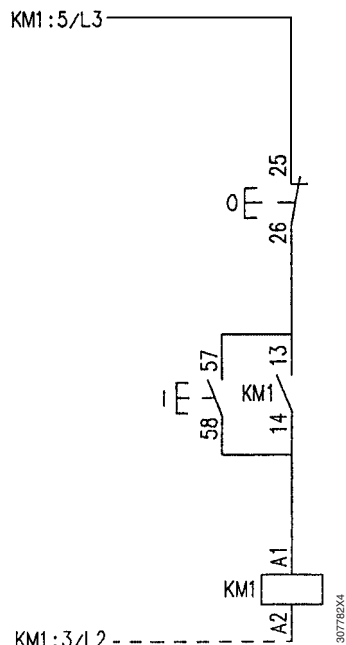
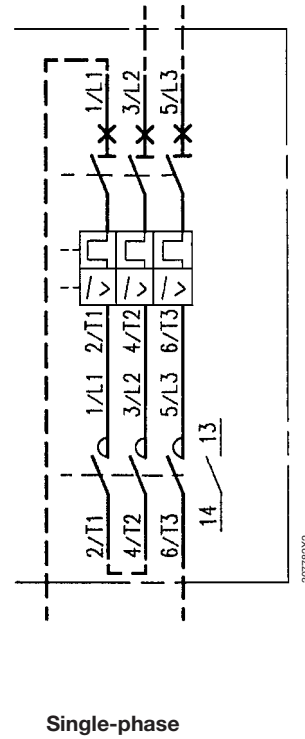
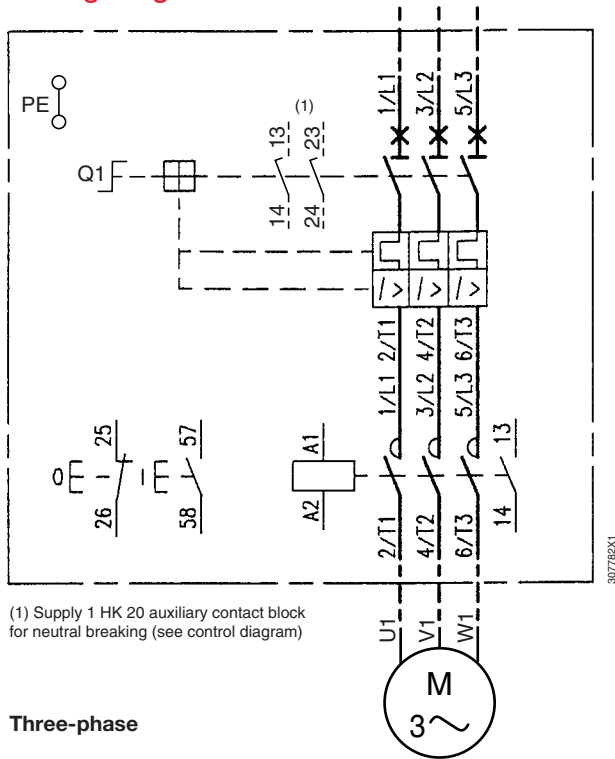
DRA ... D

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter



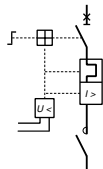
Wiring diagrams



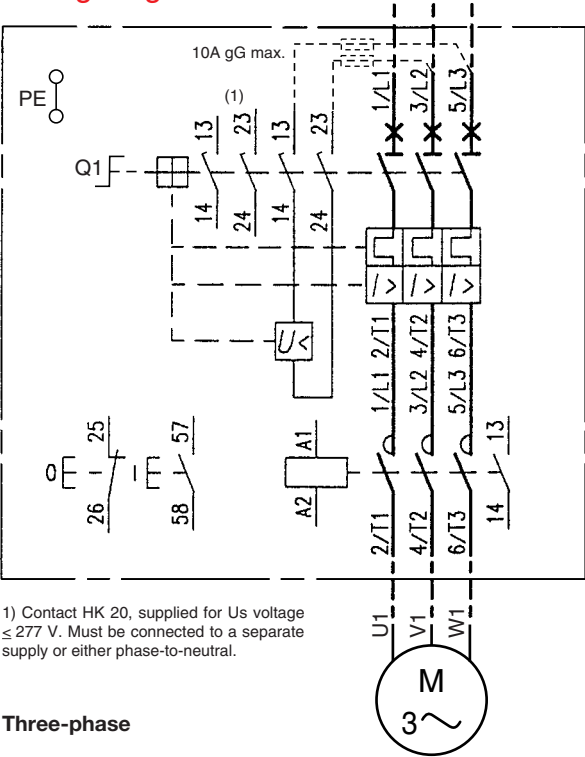
DRA ... DB

Enclosed D.O.L. Starters

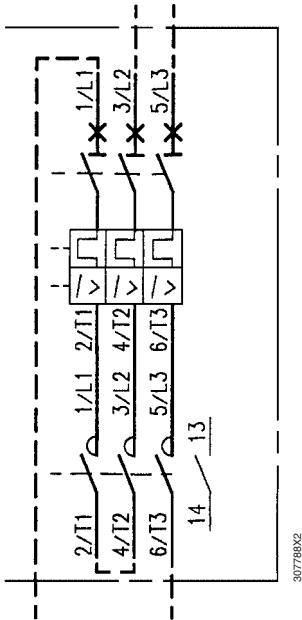
Protection by Associated Manual Motor Starter



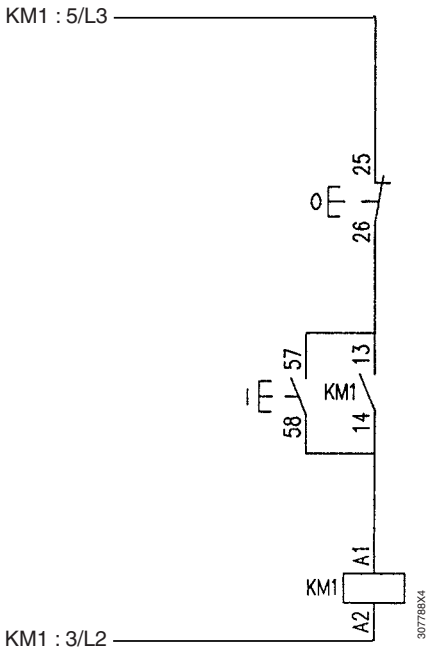
Wiring diagrams



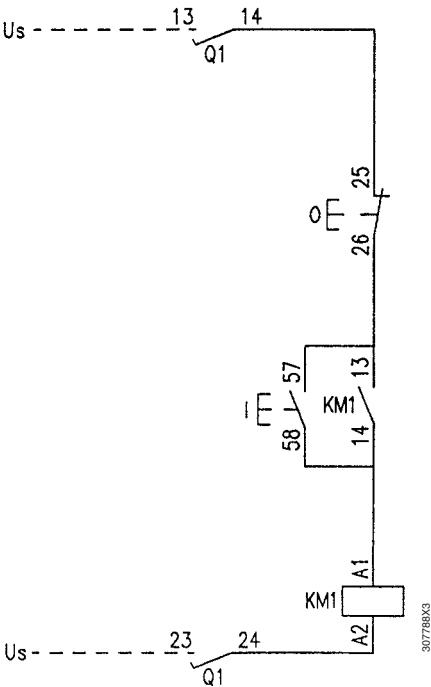
Three-phase



Single-phase



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

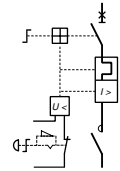


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

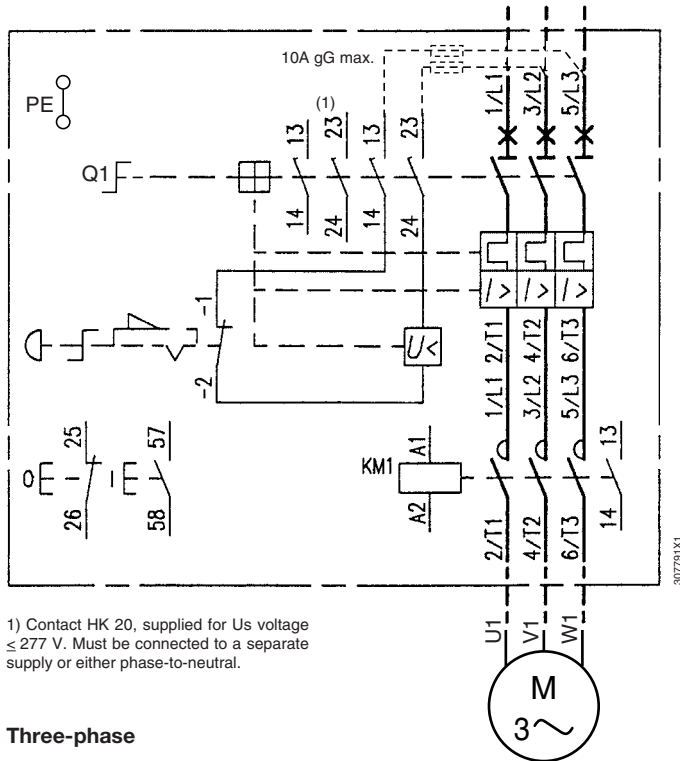
DRA ... DB+BU

Enclosed D.O.L. Starters

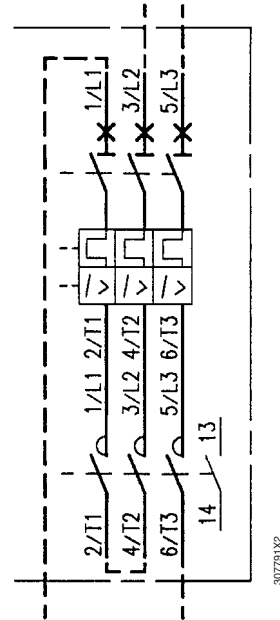
Protection by Associated Manual Motor Starter



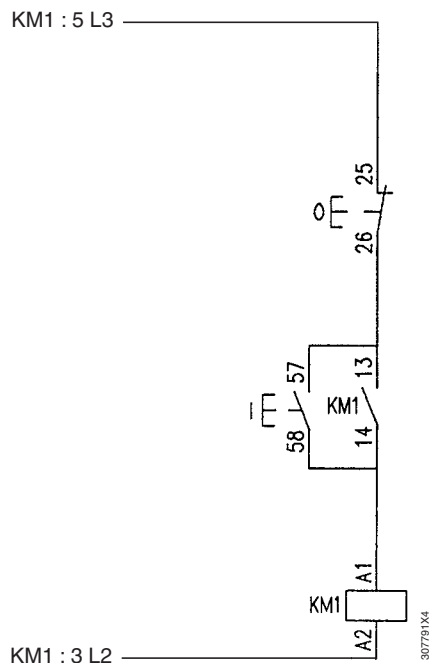
Wiring diagrams



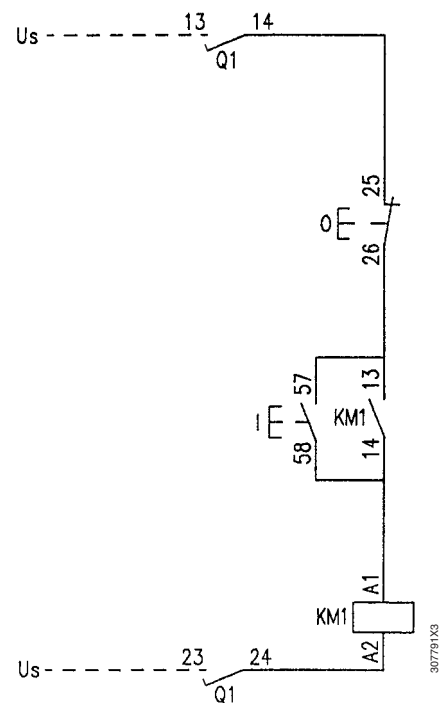
Three-phase



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

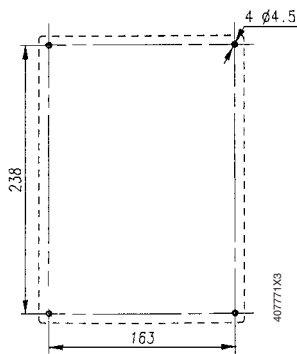
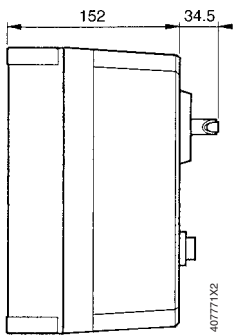
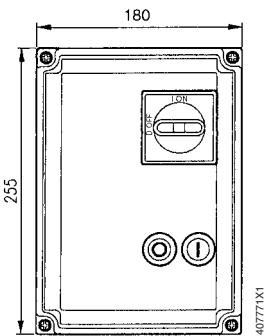
DRA ... D, DRA ... DB, DRA ... DB+BU

Enclosed D.O.L. Starters

Protection by Associated Manual Motor Starter

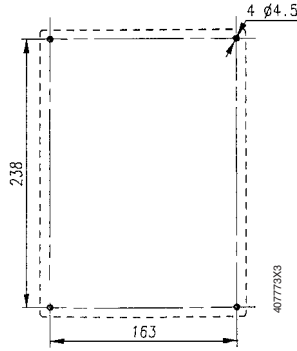
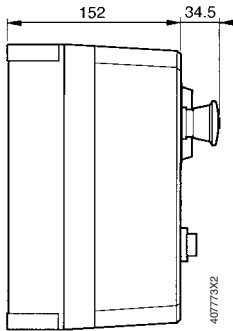
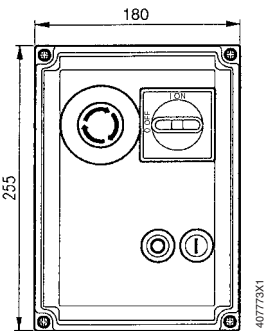


Dimensions (in mm)



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	

DRA ... D and DRA ... DB

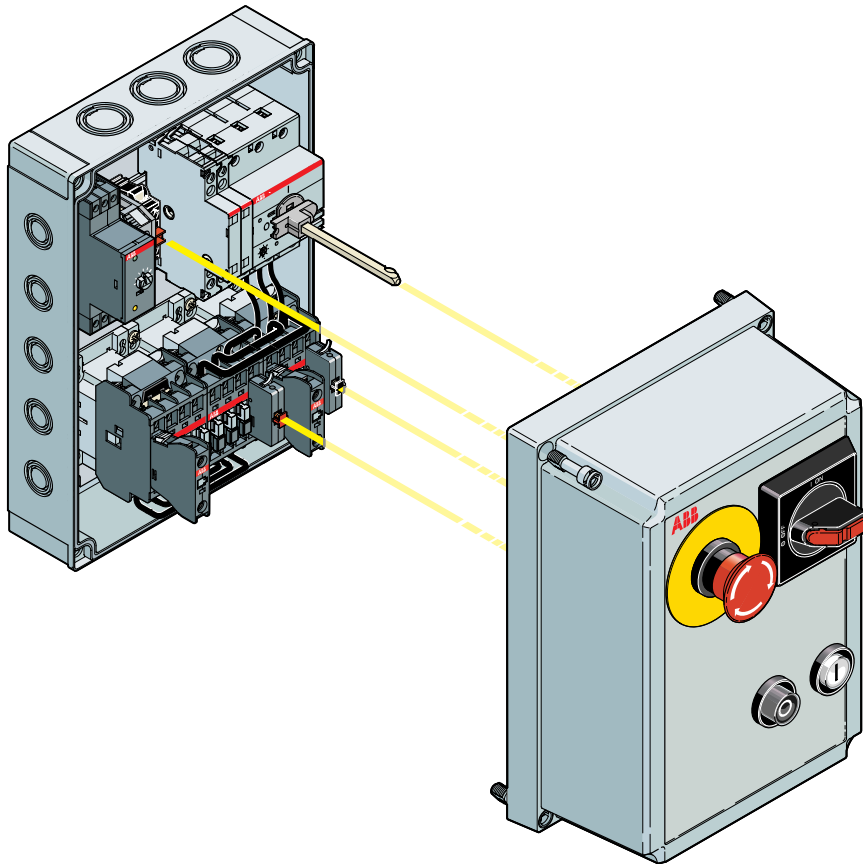
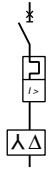


Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x ø 20.5/32.5	3 x ø 20.5/32.5
ø 20.5 for ISO 20 ø 32.5 for ISO 32	

DRA ... DB + BU

Enclosed Star-Delta Starters

Protection by Associated Manual Motor Starter



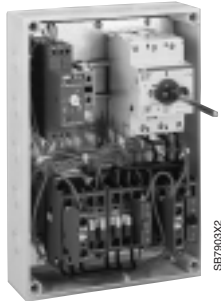
YRA ... DB+BU version

E137801

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.

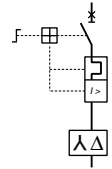
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

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 $I_q = 50 \text{ kA}$	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

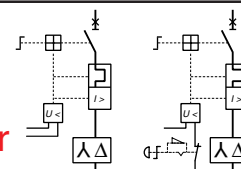
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 □	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(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)

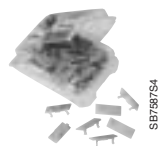
Co-ordination $I_q = 50$ kA and operational voltage ≤ 415 V

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 V 50 Hz	Voltage V 60 Hz	Code 8 ☐	Control circuit
24	24	1	must be connected to a supply separate from the power circuit, or either phase-to-neutral
110	110 ... 120	4	
110 ... 115	115 ... 120	9	
220 ... 230	230 ... 240	0	
230 ... 240	240	8	
380 ... 400	400 ... 415	5	phase-to-phase connected
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-10



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
Fault indicating contact	- 1 -	SK-10	1 SAM 101 904 R0001	10	0.031
	- - 1	SK-01	1 SAM 101 904 R0001	10	0.031

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 110312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 110314 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



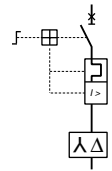
Technical data

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)

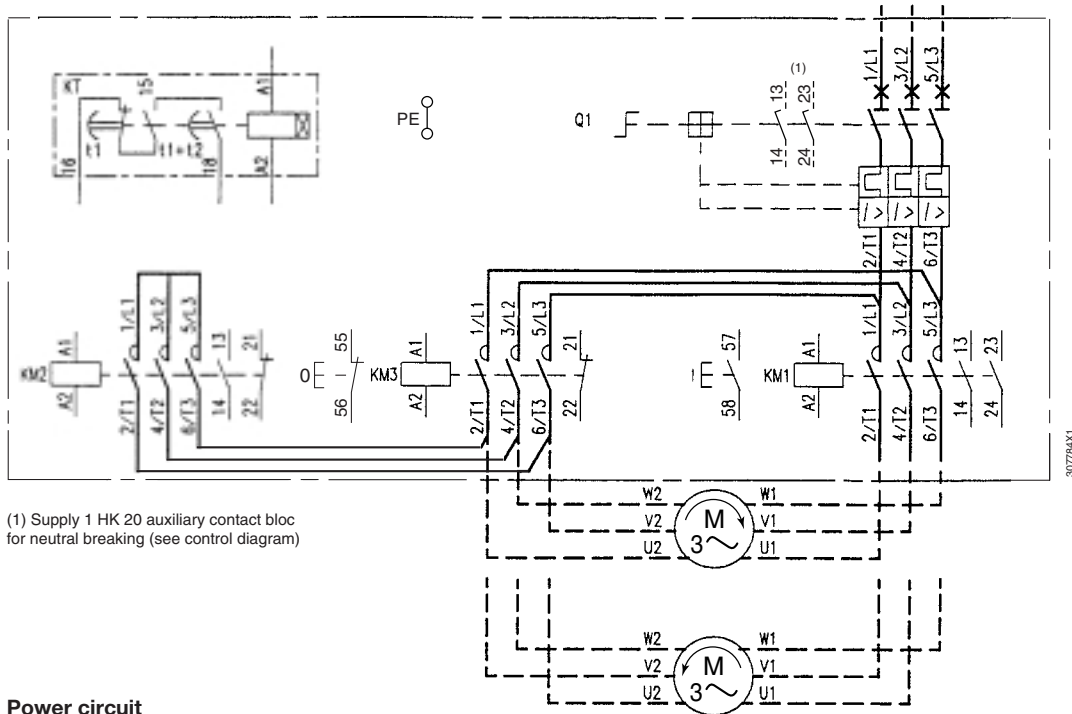
YRA ... D

Enclosed Star-Delta Starters

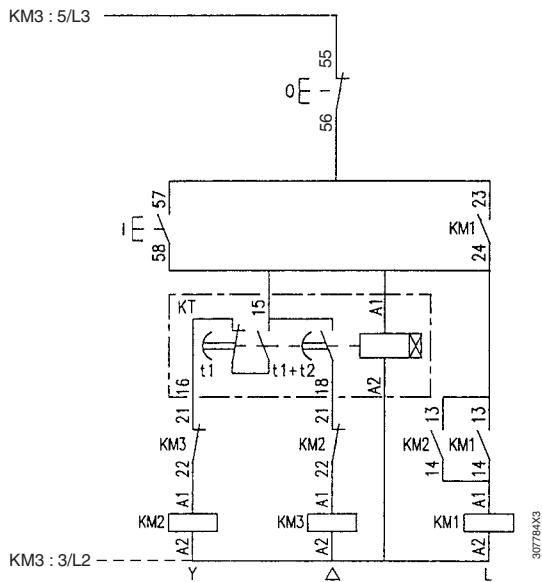
Protection by Associated Manual Motor Starter



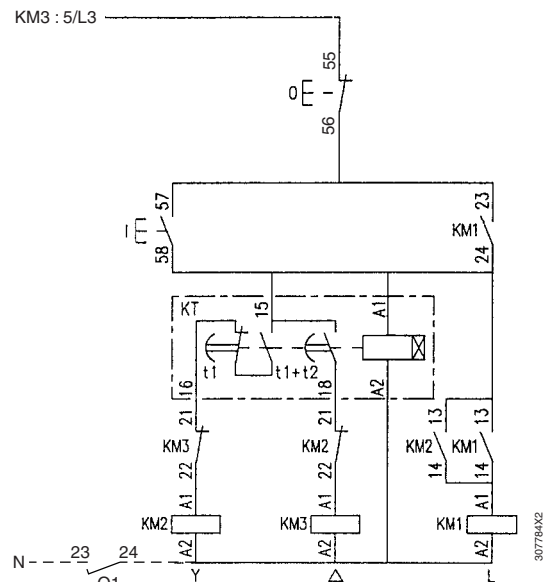
Wiring diagrams



Power circuit



Local control Phase-to-phase connection

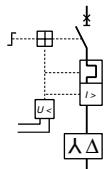


Local control Phase-to-neutral connection

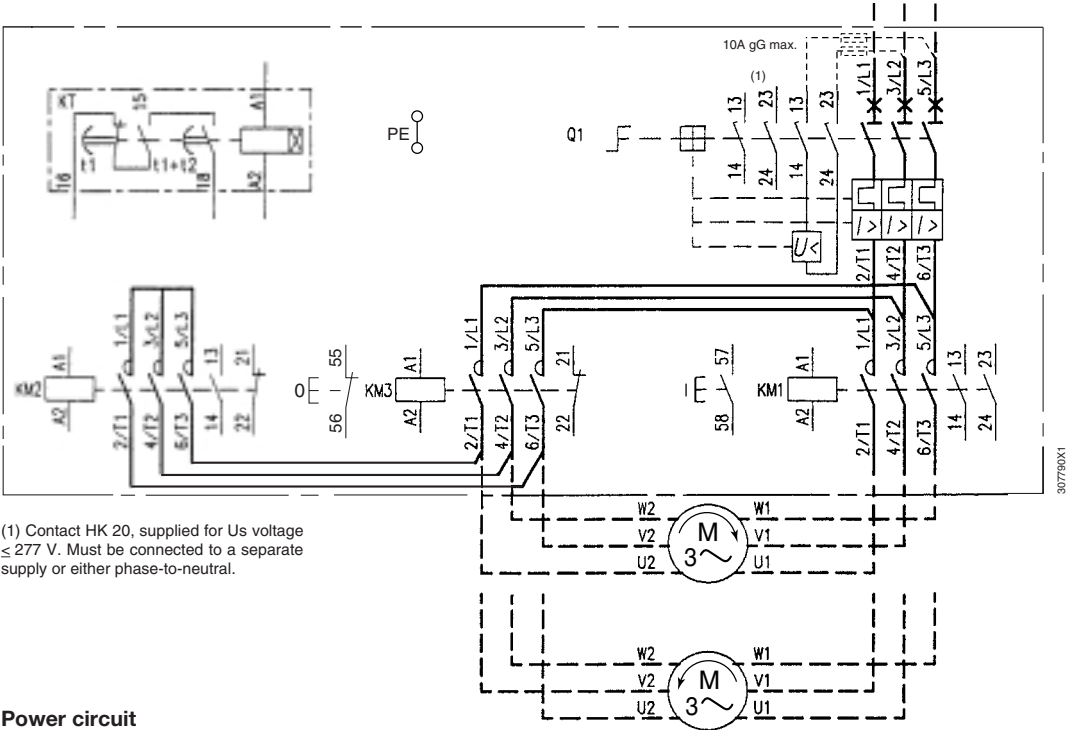
YRA ... DB

Enclosed Star-Delta Starters

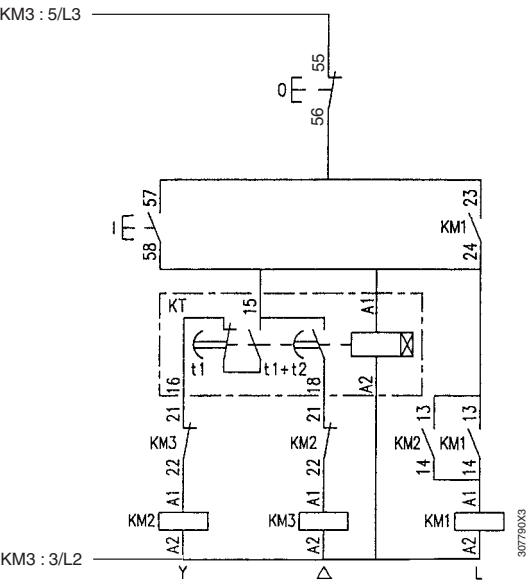
Protection by Associated Manual Motor Starter



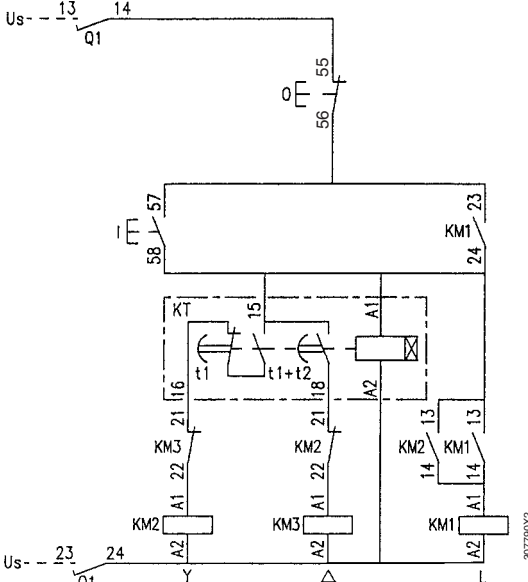
Wiring diagrams



Power circuit



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

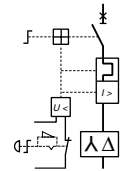


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

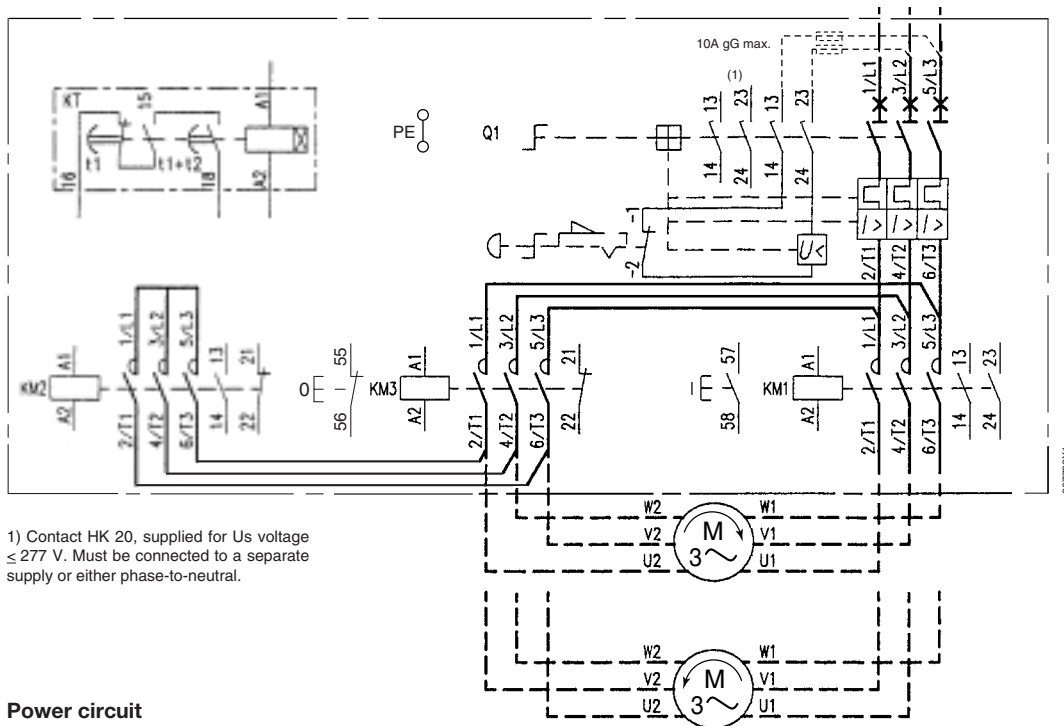
YRA ... DB+BU

Enclosed Star-Delta Starters

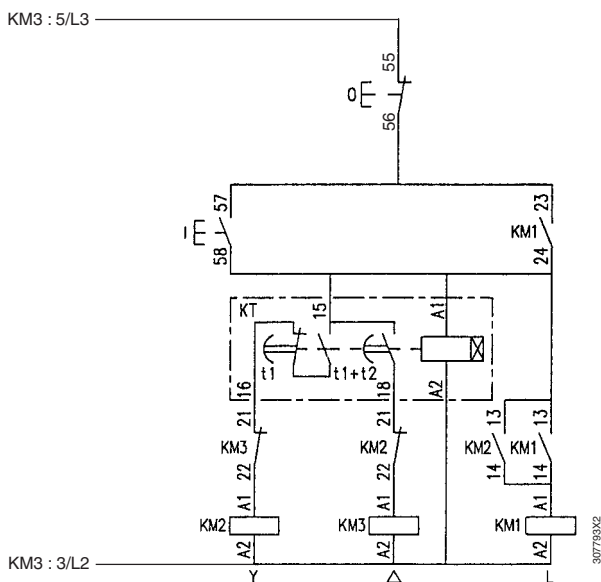
Protection by Associated Manual Motor Starter



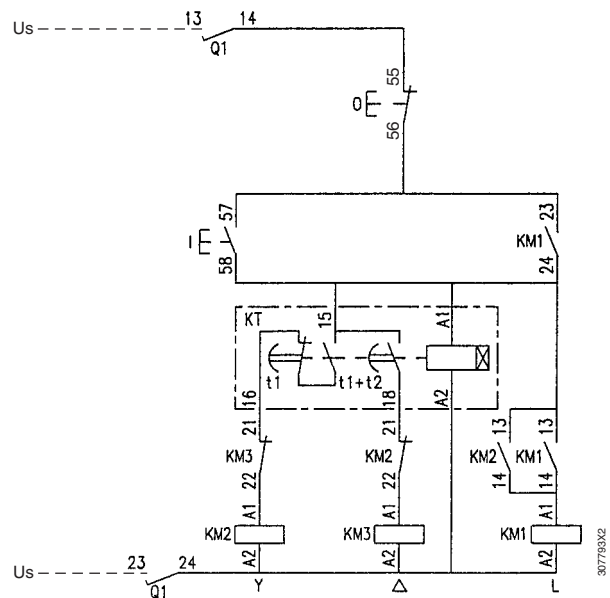
Wiring diagrams



Power circuit

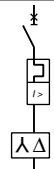


Local control
Phase-to-phase connection
Coil voltage > 277 V

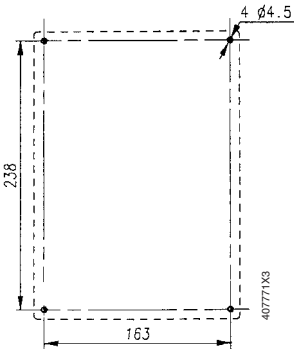
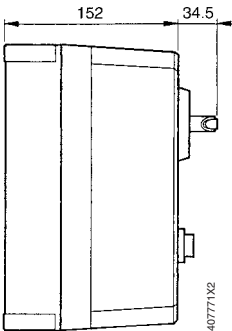
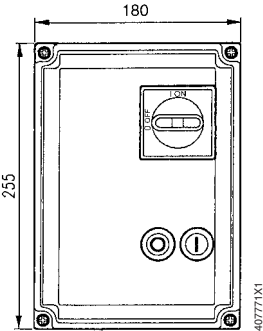


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

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

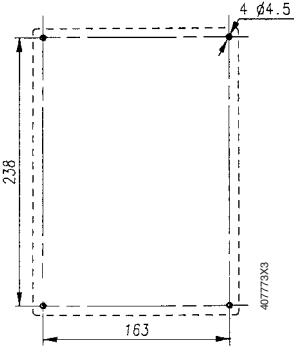
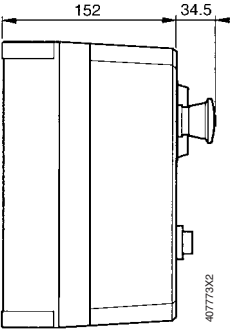
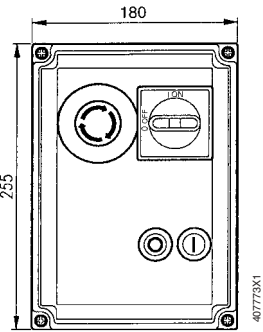


Dimensions (in mm)



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

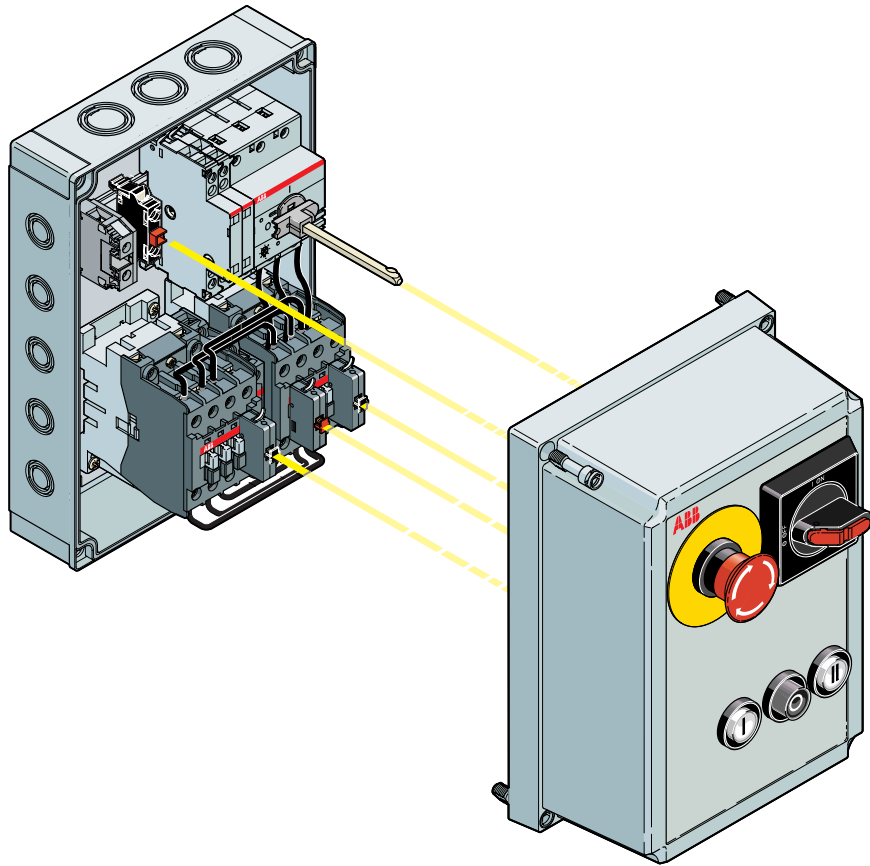


Cable inlets	Cable outlets
Enclosure top	Enclosure bottom
3 x $\varnothing$ 20.5/32.5	3 x $\varnothing$ 20.5/32.5
$\varnothing$ 20.5 for ISO 20 $\varnothing$ 32.5 for ISO 32	

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



SB790AX2

WRA 9-30 D



SB8000S3

WRA 26-30 D



SB8000S3

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.

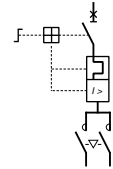
The emergency stop mushroom headed button, and the manual motor starter handle, operate a category 0 stop: "Stopping by immediate power removal to the machine actuators".

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

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V		Co-ordination type $I_q = 50 \text{ kA}$	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

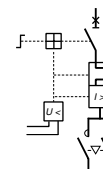
Voltage		Code	Control circuit
V 50 Hz	V 60 Hz	8 ☐	
220 ... 230	230 ... 240	0	must be connected to
230 ... 240	240 ... 260	8	the power circuit
380 ... 400	400 ... 415	5	either phase-to-phase
400 ... 415	415 ... 440	6	or phase-to-neutral (1)

(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 $I_q = 50 \text{ kA}$	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

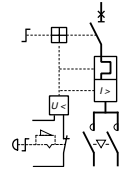
Control voltage code

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	
230 ... 240	240 ... 260	8	phase-to-phase connected
380 ... 400	400 ... 415	5	
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 $I_q = 50 \text{ kA}$ and operational voltage $\leq 415 \text{ V}$

Power range 4-pole motor - 50/60 Hz 380 - 400 - 415 V		Co-ordination type $I_q = 50 \text{ kA}$	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

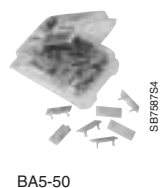
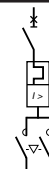
Control voltage code

Voltage V 50 Hz	V 60 Hz	Code 8 ☐	Control circuit
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	

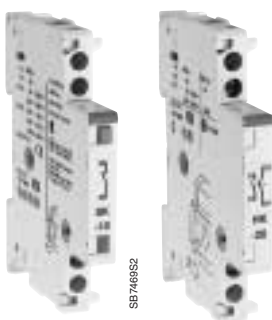
WRA ... D, WRA ... DB, WRA ... DB+BU

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



BA5-50



SK-10

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 2 - - - - 2	HK-11 HK-20 HK-02	1 SAM 101 901 R0001 1 SAM 101 901 R0002 1 SAM 101 901 R0003	10 10 10	0.031 0.031 0.031
Fault indicating contact	- 1 - - - 1	SK-10 SK-01	1 SAM 101 904 R0001 1 SAM 101 904 R0001	10 10	0.031 0.031

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 110312 R1000	2	0.008
ISO 32 cable gland	FP32	1SBN 110314 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

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

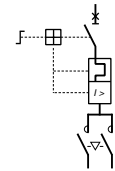
Enclosure

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

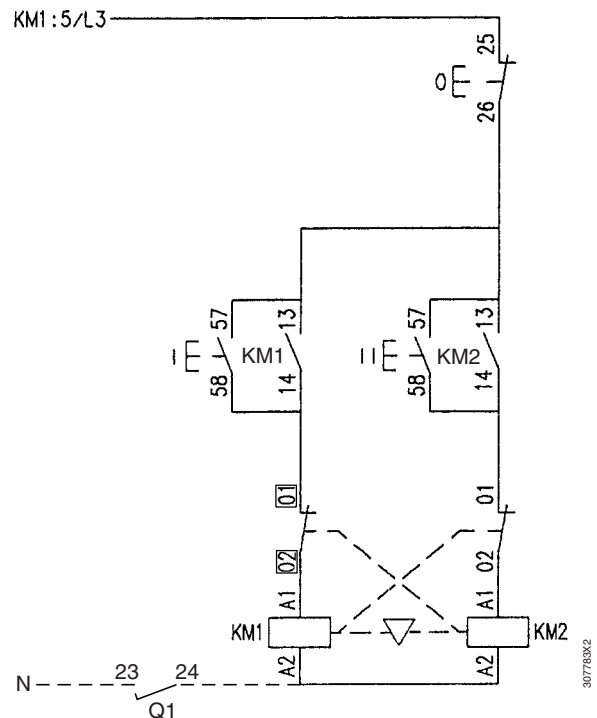
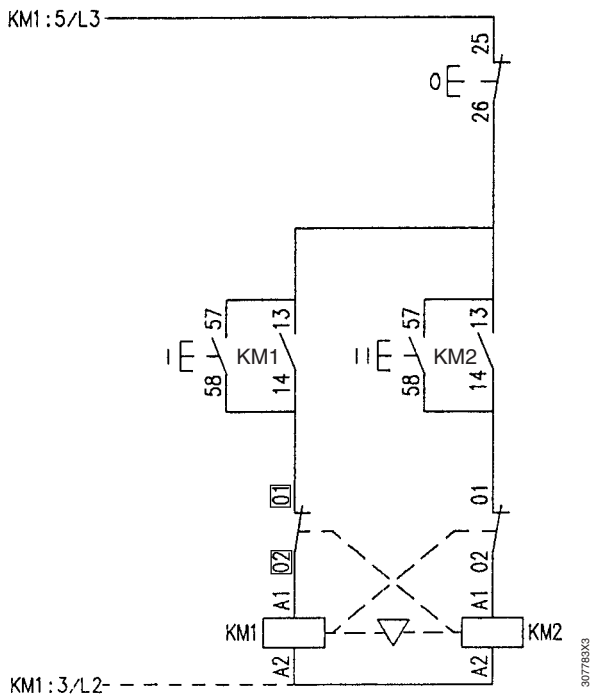
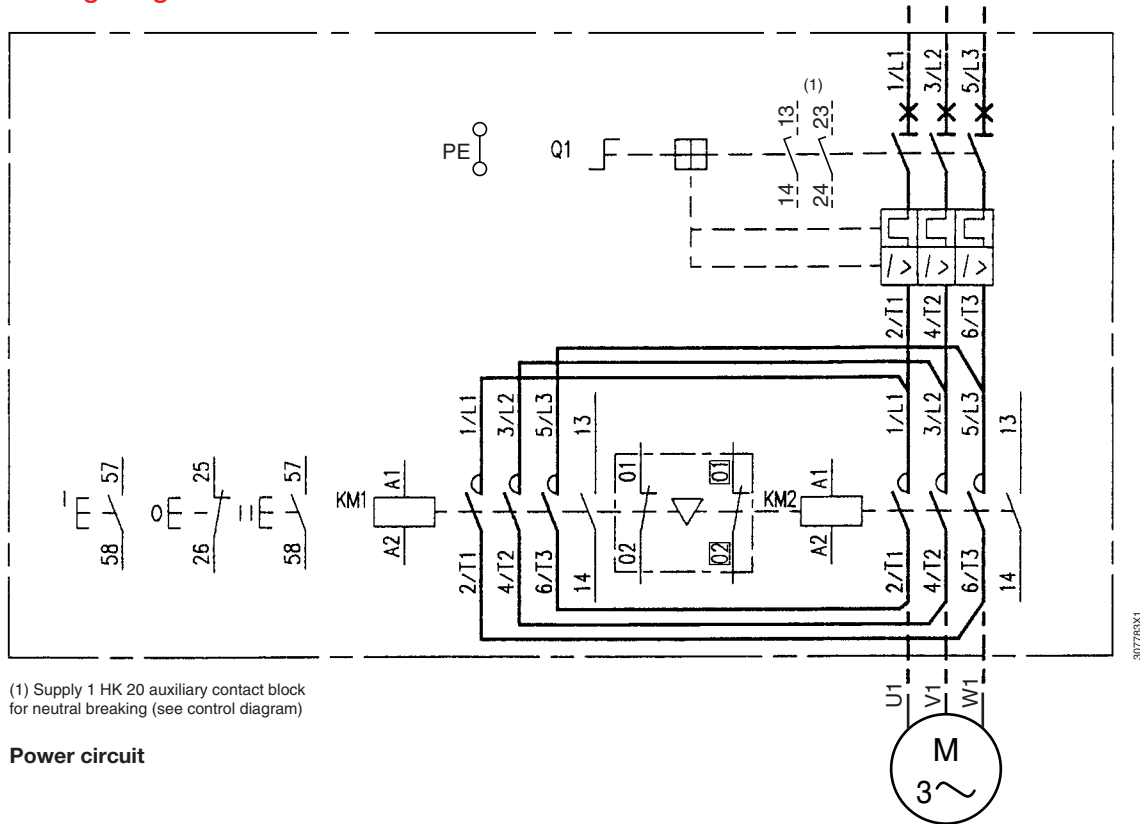
WRA ... D

Enclosed Reversing Starters

Protection by Associated Manual Motor Starter



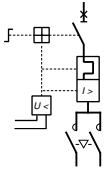
Wiring diagrams



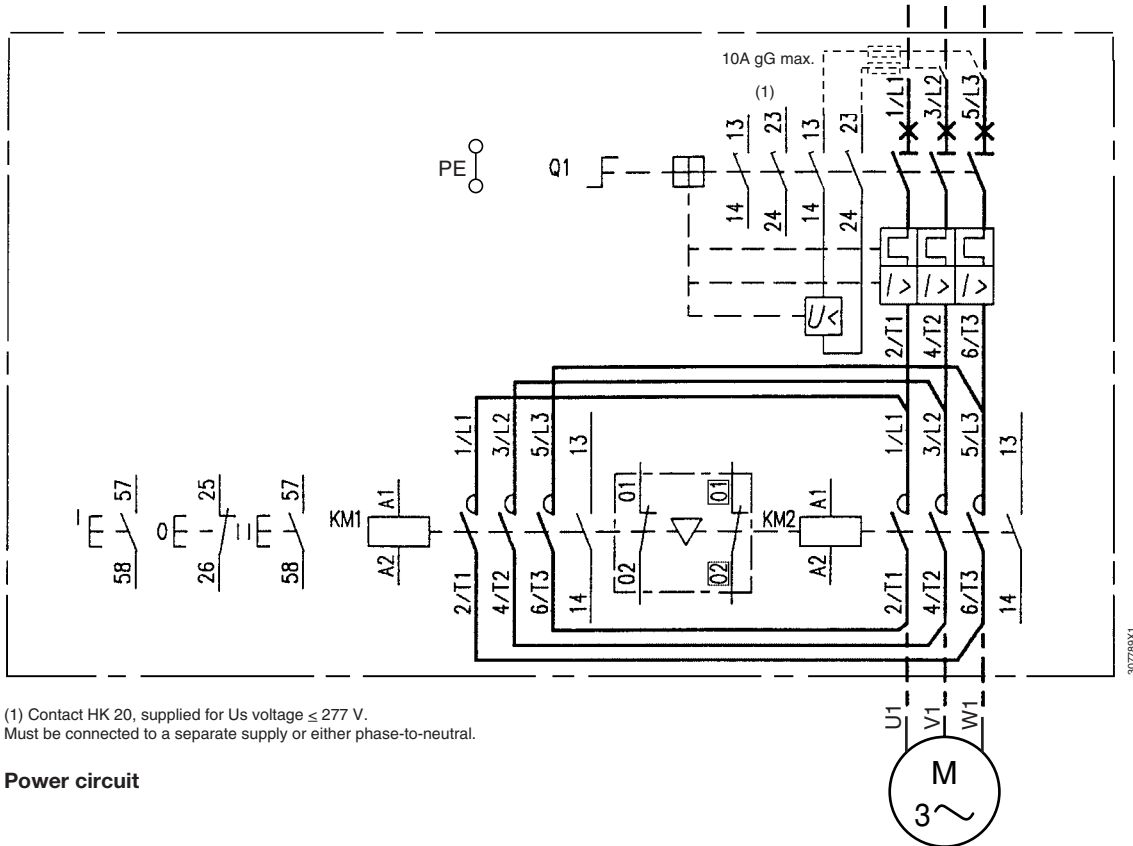
WRA ... DB

Enclosed Reversing Starters

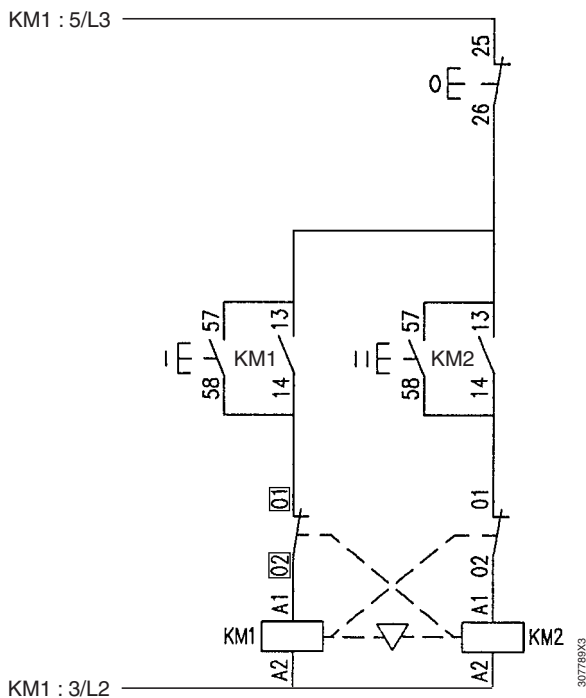
Protection by Associated Manual Motor Starter



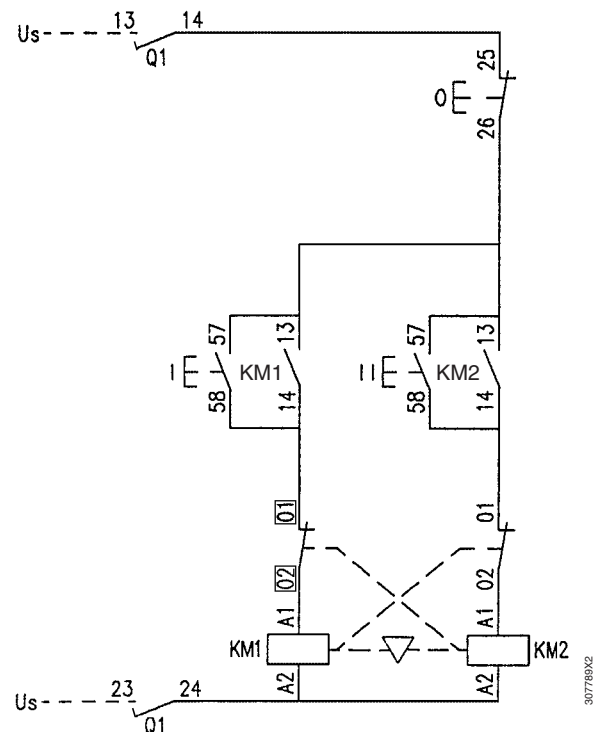
Wiring diagrams



Power circuit



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

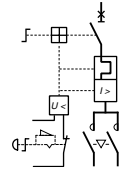


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

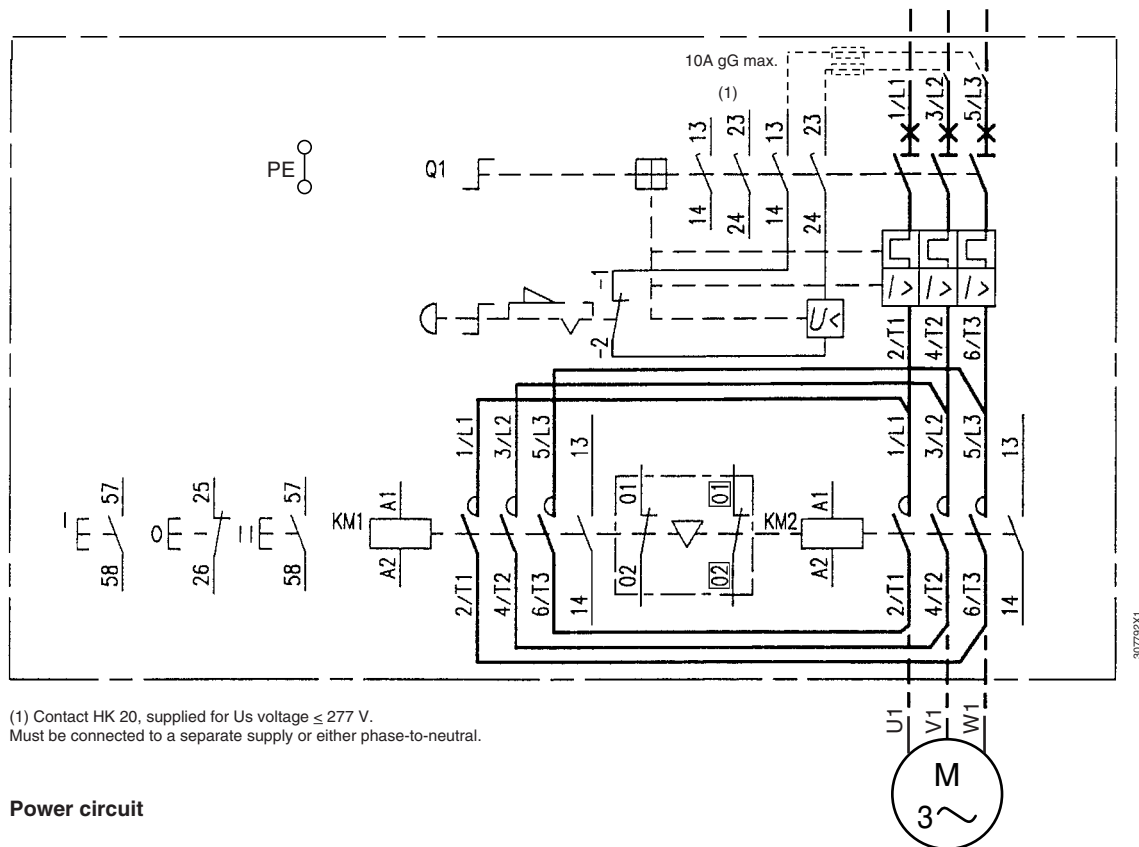
WRA ... DB+BU

Enclosed Reversing Starters

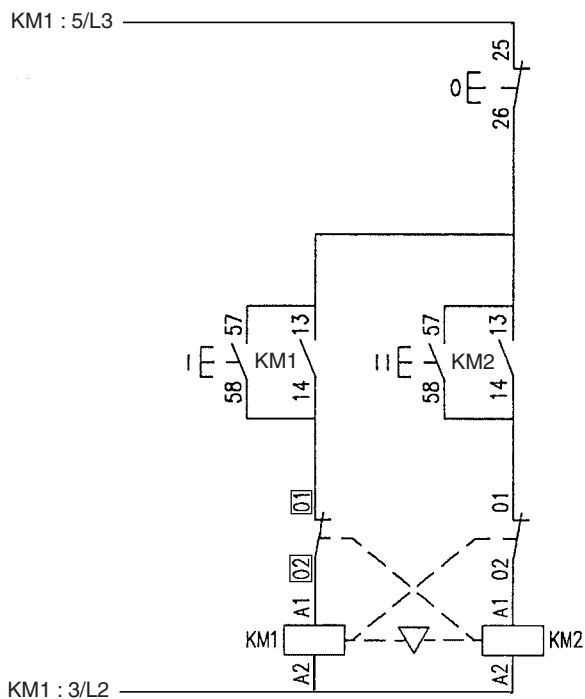
Protection by Associated Manual Motor Starter



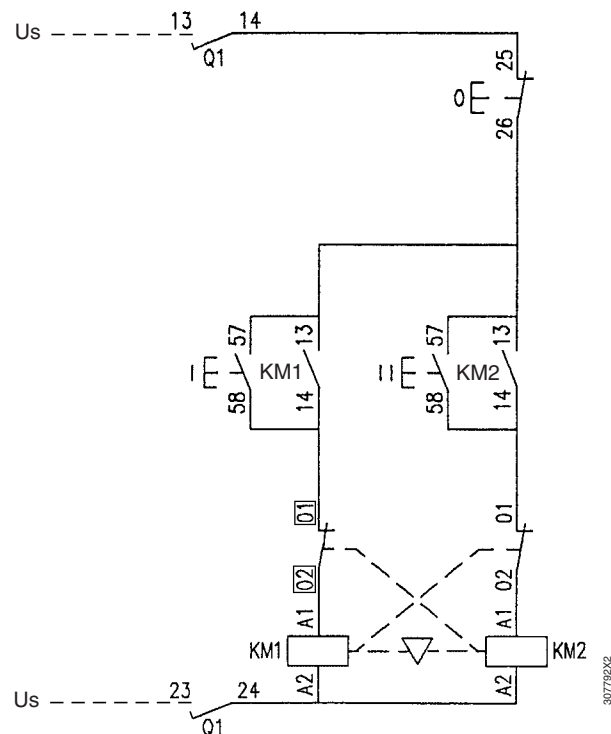
Wiring diagrams



Power circuit



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

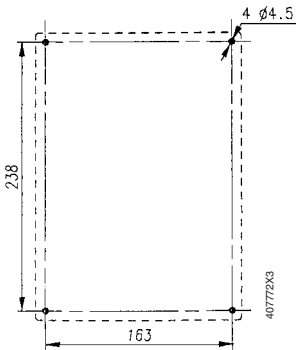
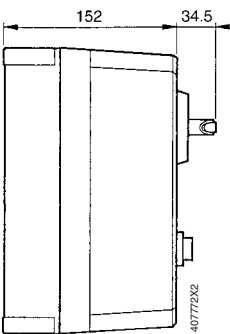
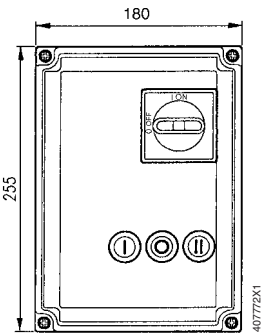


Local control
Phase to neutral connection or separate supply
Coil voltage ≤ 277 V

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

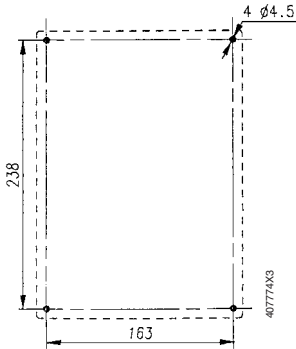
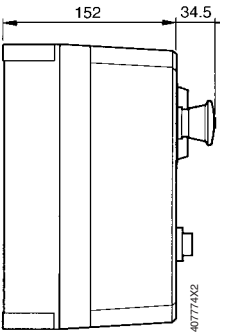
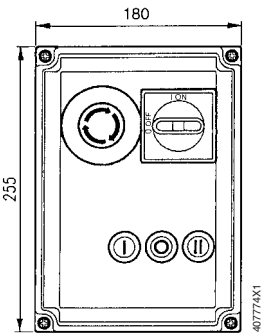


Dimensions (in mm)



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 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. There are no margins, text, or other markings present on the page.

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DRA...-30 D	Enclosed D.O.L. Starters - Protection by Associated Manual Motor Starter	10/2
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