

**US Panorama** 

## Motor protection and control Manual motor starters, contactors and overload relays



## Mini contactors

#### 3-pole or 4-pole

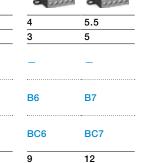


Type

Type

Type

Α



16 (400 V) 12 (300 V) **20** (400 V)

16

	AC-1 Rated operational current	$\theta \leq$ 40 °C, 690 V	Α
UL/CSA	General use rating	600 V	Α
NEMA	NEMA Size		

AC-3 Rated operational current  $\theta \le 60$  °C (2), 400 V

AC-3 Rated operational power  $\theta \le 60 \, ^{\circ}\text{C}$  (2), 400 V kW

#### Main accessories

UL/CSA 3-phase motor rating

AC / DC Control supply

**AC Control supply** 

**DC** Control supply

IEC

Auxiliary contact blocks	Front mounting	CAF6
	Side mounting	CA6
Timers	Electronic	
Interlocking units (4)	Mechanical	
	Mechanical / Electrical	
Connection sets	For reversing contactors	BSM6-30
Surge suppressors	Varistor (AC / DC)	RV-BC6
	RC type (AC)	***************************************
	Transil diode (DC)	RD7

<sup>(4)</sup> See available reversing contactors VB6, VB7 and VAS09 ... VAS16.

#### Overload relays

Thermal relays
Electronic relays



Class 10 (Class 10A for TF140, TA200DU) Class 10E, 20E, 30E T16 (0.10...16 A)
E16DU (0.10...18.9 A)

MS116 (0.10...32 A)

MS132 (0.10...32 A) SCCR up to 65 kA

MO132 (0.16...32A) SCCR up to 65 kA

BEA7/132

#### Manual motor starters



Accessories

Thermal / magnetic protection Class 10

Magnetic only types

For contactor mounting

## 3-pole contactors, for motor con





4	5.5	7.5	11	15	18.5
5	7.5	10	15	20	20
AF09	AF12	AF16	AF26	AF30	AF38
AF09	AF12	AF16	AF26	AF30	AF38
AF09	AF12	AF16	AF26	AF30	AF38
9	12	18	26	32	38
25	28	30	45	50	50
25	28	30	45	50	50
00	0	_	1	_	_

CA4-10 (1 x N.O.)	
CA4-01 (1 x N.C.)	
CAL4-11 (1 x N.O. + 1 x N.C.)	•
TEF4-ON	•
TEF4-OFF	
VM4	
VEM4	
BER16-4	BER38-4
Built-in surge protection	
5 1	

<b>TF42</b> (0.1038 A)	
<b>EF19</b> (0.1019 A)	<b>EF19</b> (0.1019 A) <b>EF45</b> (945 A)

MS116 (0.1032 A) SCCR up to 30 kA	MS450 ( SCCR up to 6
MS132 (0.1032 A) SCCR up to 65 kA	······································
MO132 (0.1632 A) SCCR up to 65 kA	
BFA16-4	RFA38-4

<sup>(1) 1000</sup> V IEC ratings available for AF146 ... AF2650 contactors. (2)  $\theta \le 55$  °C for mini contactors and AF400 ... AF2650 contactors. (3) Higher ratings are achieved through the use of LX... terminal extensions. See catalog 15XU100109C0201 for more information.

## control and power switching











18.5	22	30	37	45	55	75	75	90	110	132	160	200
30	40	50	60	60	75	100	100	125	150	200	250	300
AF40	AF52	AF65	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
AF40	AF52	AF65	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
AF40	AF52	AF65	AF80	AF96	AF116	AF140	AF146	AF190	AF205	AF265	AF305	AF370
40	53	65	80	96	116	140	146	190	205	265	305	370
70	100	105	125	130	160	200	225	275	350	400	500	600
60	80	90	105	115	160	200	200	230 (3)	250 (3)	300 (3)	350 (3)	400 (3)
2	_	_	3	_	_	4	_	_	_	5	_	_
	AF40  AF40  AF40  40  70  60	30 40  AF40 AF52  AF40 AF52  AF40 AF52  40 53 70 100 60 80	30     40     50       AF40     AF52     AF65       AF40     AF52     AF65       AF40     AF52     AF65       40     53     65       70     100     105       60     80     90	30     40     50     60       AF40     AF52     AF65     AF80       AF40     AF52     AF65     AF80       AF40     AF52     AF65     AF80       40     53     65     80       70     100     105     125       60     80     90     105	30     40     50     60     60       AF40     AF52     AF65     AF80     AF96       AF40     AF52     AF65     AF80     AF96       AF40     AF52     AF65     AF80     AF96       40     53     65     80     96       70     100     105     125     130       60     80     90     105     115	30       40       50       60       60       75         AF40       AF52       AF65       AF80       AF96       AF116         AF40       AF52       AF65       AF80       AF96       AF116         AF40       AF52       AF65       AF80       AF96       AF116         40       53       65       80       96       116         70       100       105       125       130       160         60       80       90       105       115       160	30       40       50       60       60       75       100         AF40       AF52       AF65       AF80       AF96       AF116       AF140         AF40       AF52       AF65       AF80       AF96       AF116       AF140         AF40       AF52       AF65       AF80       AF96       AF116       AF140         40       53       65       80       96       116       140         70       100       105       125       130       160       200         60       80       90       105       115       160       200	30       40       50       60       60       75       100       100         AF40       AF52       AF65       AF80       AF96       AF116       AF140       AF146         AF40       AF52       AF65       AF80       AF96       AF116       AF140       AF146         AF40       AF52       AF65       AF80       AF96       AF116       AF140       AF146         40       53       65       80       96       116       140       146         70       100       105       125       130       160       200       225         60       80       90       105       115       160       200       200	30         40         50         60         60         75         100         100         125           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190           40         53         65         80         96         116         140         146         190           70         100         105         125         130         160         200         225         275           60         80         90         105         115         160         200         200         230 (3)	30         40         50         60         60         75         100         100         125         150           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205           40         53         65         80         96         116         140         146         190         205           70         100         105         125         130         160         200         225         275         350           60         80         90         105         115         160         200         200         230 (3)         250 (3)	30         40         50         60         60         75         100         100         125         150         200           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265           40         53         65         80         96         116         140         146         190         205         265           70         100         105         125         130         160         200         225         275         350         400           60         80         90         105         115         160         200         200         230 (3)         250 (3)         300 (3)	30         40         50         60         60         75         100         100         125         150         200         250           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265         AF305           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265         AF305           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265         AF305           AF40         AF52         AF65         AF80         AF96         AF116         AF140         AF146         AF190         AF205         AF265         AF305           40         53         65         80         96         116         140         146         190         205         265         305           70         100         105         125         130         160         200         225         275         350         400         500           60         80         90         10

			CAL19		
***************************************	VM96-4		VM19 (for same size contactors)		
		·····			
	BER65-4	BER96-4	BER140-4	BER205-4	BER370-4

	TF65 (2267 A)	TF96 (4096 A)	TF140DU (66142 A)	TA200DU (66200 A)	
			θ ≤ 55 °C	θ ≤ 55 °C	
***************************************	EF65 (2570 A)	EF96 (36100 A)	EF146 (54150 A)	EF205 (63210 A)	EF370 (115380 A)

#### Short-circuit protection devices

MS450 (2850 A) SCCR up to 65 kA				
MS495 (45100 A) SCCR up to 65 kA				
00 A)				
0 A)	MO495 (63100 A) SCCR up to 65 kA			
	SCCR up to 65 kA	SCCR up to 65 kA  00 A)  MO495 (63100 A)		













250	315	400	_	475	560	_	_
400	500	600	_	800	900	_	_
AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
AF460	AF580	AF750	AF1250	AF1350	AF1650	AF2050	AF2650
460	580	750	_	860	1050	_	_
700	800	1050	1260	1350	1650	2050	2650
650	750	900	1210	1350	1650	2100	2700
6		7	_	_	8	_	_
	400 AF460 AF460 AF460 460 700 650	400 500  AF460 AF580  AF460 AF580  AF460 AF580  460 580 700 800 650 750	400     500     600       AF460     AF580     AF750       AF460     AF580     AF750       AF460     AF580     AF750       460     580     750       700     800     1050       650     750     900	400     500     600     —       AF460     AF580     AF750     AF1250       AF460     AF580     AF750     AF1250       AF460     AF580     AF750     AF1250       460     580     750     —       700     800     1050     1260       650     750     900     1210	400       500       600       —       800         AF460       AF580       AF750       AF1250       AF1350         AF460       AF580       AF750       AF1250       AF1350         AF460       AF580       AF750       AF1250       AF1350         460       580       750       —       860         700       800       1050       1260       1350         650       750       900       1210       1350	400       500       600       —       800       900         AF460       AF580       AF750       AF1250       AF1350       AF1650         AF460       AF580       AF750       AF1250       AF1350       AF1650         AF460       AF580       AF750       AF1250       AF1350       AF1650         460       580       750       —       860       1050         700       800       1050       1260       1350       1650         650       750       900       1210       1350       1650	400       500       600       —       800       900       —         AF460       AF580       AF750       AF1250       AF1350       AF1650       AF2050         AF460       AF580       AF750       AF1250       AF1350       AF1650       AF2050         AF460       AF580       AF750       AF1250       AF1350       AF1650       AF2050         460       580       750       —       860       1050       —         700       800       1050       1260       1350       1650       2050         650       750       900       1210       1350       1650       2100

CAL18		
VM750H VM750V		VM1650H
BEM460-30	BEM750-30	

E500DU (150500 A)	E800DU (250800 A)	E1250DU (3751250 A)



## 4-pole contactors

IEC	AC-1 Rated operational current	θ ≤ 40 °C
UL/CSA	General use rating	600 V
AC Contro	l supply	中

DC Control supply



AC / DC Control supply



## Mini control relays

EC	AC-15 Rated operational current	400 V
JL/CSA	Pilot duty	

**AC Control supply** 



**DC** Control supply



AC / DC Control supply



## R contactors

**DC** Circuit switching



DC-1 Rated current up to 500 DC-3/DC-5 Rated current up 1500 V with poles in series

IOR.. 63-..-CC to IOR.. 5100

## Specific contactors

#### Capacitor switching



12.5 to 80 kvar UA16 to UA110 types UA16..RA to UA110..RA types

## 4-pole contactors





rent	$\theta \leq$ 40 °C, 690 V	Α
	600 V	Α
	4	Туре
	#	Туре
		Туре

25 30		45	55	55	
25	30	45	55		
AF09	AF16	AF26	AF38		
AF09	AF16	AF26	AF38		
AF09	AF16	AF26	AF38	············	

## Mini control relays





rent	400 V	Α	3			3		
			A 600			A 600, Q 600		
			2 2	3 1	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	2 2	) <u>                                    </u>	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
	中		K6-22Z	K6-31Z	K6-40E	NF22E	NF31E	NF40E
	中	Type	KC6-22Z	KC6-31Z	KC6-40E	NF22E	NF31E	NF40E
	孛	Туре	_	_	_	NF22E	NF31E	NF40E

## R contactors

ed current up to 5000 A 5 Rated current up to 2000 A th poles in series

.-CC to IOR.. 5100-..-CC



AC-1 Rated current up to 5000 A AC-3 Rated power up to 1500 kW (1520 A - 440 V)

IOR.. 63-..-MT to IOR.. 5100-..-MT

#### Special versions



AC / DC Coupling: LOR.. contactors Slip ring motor control: FOR .. contactors Field discharge: AM(F)-CC-JORE contactors AC / DC Switching (N.C./N.O. main poles): NOR & JOR contactors

Latching contactors for energy saving and safety requirements: AMA or AME contactors

## Specific contactors

	DC Circuit switching				
A types	100 A, 440 V, DC-1 GA75, GAE75 types	275 to 2050 A, 1000 V, DC-1 <b>GAF185</b> to <b>GAF2050</b> types			



# MacGregor. Keeping turnarounds brief.

Until the AF range was installed, voltage sags were affecting MacGregor's deck cranes. Conventional contactors welded shut, leading to several stoppages a week. No longer. Known for superior quality and an ability to operate in the most hostile environments, MacGregor deck cranes enjoy a global reputation for reliability. A small but vital component, the AF contactor helps maintain this reputation.

To keep things moving, you need Control. Connect to Control.

Explore all our case studies at www.abb.com/connecttocontrol

SSAB Making certainty standard

Gamesa

LKAB Taming the wind Providing fresh air

# ABB sets a new standard in motor control and power switching

Featuring AF technology as standard, the latest range of ABB's contactors establishes a new industry benchmark. The electronically controlled coil offers multiple benefits over conventional alternatives, and together with ABB's wide product offering – an optimal configuration, every time.



## Access Global Support

The contactor and motor protection range from ABB is compatible with all major national and international standards and is available worldwide via a global distribution network. One contactor coil now handles 100 V – 250 V, AC/DC for use in Europe or Asia as well as North America.



#### **Optimize logistics**

With its contactor and motor protection range, ABB has managed to reduce the number of contactor coils to just four. The total number of product variants has been reduced by up to 90%. This simplifies the customers' logistics and cuts administration costs.



#### Simplify design

By reducing contactor coil energy consumption by up to 80%, panels can be built smaller and transformers more compact. All the features of the AF technology, along with access to drawings and coordination tables online, simplifies your design and assembly process.



#### Secure uptime

Time to prevent stoppages caused by voltage fluctuations. The AF contactor ensures distinct operation in unstable networks and signifies a major advance in motor control and power switching. Voltage sags, dips and surges pose no threat. The AF contactor secures your uptime.

### Contact us

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You can find the address of your local sales organization on the ABB home page



www.abb.com/connecttocontrol



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