

## Product description

The AS168X is a thermal magnetic high performance CBE to IEC 934 and a «supplementary protector» to UL 1077. It is capable of drastically limiting the «let-through energy» in case of short circuit interruptions. The series is available in units from one to four poles for use in AC and DC circuits. Multipole devices are connected internally and at the handle for simultaneous operation. This applies also to combinations with the switched neutral pole. Well designed screw type terminals at line and load side are provided for safe and easy connection to line and load. They accept #16 to 4 AWG / 1,5 to 25 mm<sup>2</sup>.

The AS168X is suitable as supplementary protector under UL 1077 / EN 60934 or as Manual Motor Controller according UL 508 / CSA 22.2 14. Thus the Breaker has a high versatility and is suitable for many functions:

- Motor overload protection (thermal and magnetic)
- Motor starting across-the-line (direct-on-line)
- Motor starting with motor disconnect (cos phi 0,4 – 0,5)
- Motor group installation (short capacity 5 kA)
- Control circuits

## Accessories

- Auxiliary contact module  
Each auxiliary contact module contains one contact, either normally open or normally closed.
- Signal contact module  
Signal contact modules are linked internally with the protected poles but not linked at the handles.  
Contacts are actuated by a fault condition at the protected poles, not by the manual operation of the CBE.
- Relay trip module  
The relay trip module can be used for remote tripping of the adjacent poles by applying a voltage to the module's terminal.
- Switched neutral pole (factory assembled)  
This module allows to automatically open the neutral line when the protected poles have been tripped.

## Features

- Excellent short circuit performance (up to 10 kA)
- High limits of discrimination (due to energy limitation)
- Wide choice of characteristics (Adaptability)
- Availability of AC and DC in the same frame size
- Compact, «finger safe» design
- Ease installation (on DIN rail)

## Applications

- Industrial machines
- Automation
- Aircondition, ventilation
- Transformers
- Power supplies
- Telecom systems
- Computer systems
- Test systems
- Medical equipments

Technical data (continued)

Add-on modules

	Rated voltage $U_e$	Rated current $I_n$
<b>Auxiliary contact H1 &amp; H2 and Signal contact S1 &amp; S2</b>	AC 277 V DC 125 V DC 50 V	6 A 1 A 6 A
<b>Functional auxiliary contact module</b>	Type H1 (assumes the same contact position) Type H2 (assumes the opposite position)  T	Actuation of the contact is determined by the condition of the handle position of the adjacent poles.
<b>Functional signal contact</b>	Type S1 (assumes the same contact position) Type S2 (assumes the opposite position)	The signal contact operates due to a thermal magnetic tripping and must be reset by hand.
<b>Relay trip module</b>	Type            Voltage range AC/DC A1            5 – 12 V A2            10 – 24 V A3            20 – 48 V A4            40 – 110 V A5            90 – 240 V	Impedance at 50 Hz 1.1 $\Omega$ 4.7 $\Omega$ 16 $\Omega$ 63 $\Omega$ 395 $\Omega$
<b>Function of relay trip module</b>		When voltage is applied across the terminals, remote tripping takes place by a self interrupting magnetic system. Trip delay time 8 - 16 ms.

General data

<b>Dielectric strength</b>		AC 2000 V
<b>Vibration resistance</b>	IEC 60068-2-6, Test Fc	0,75 mm amplitude, 10 – 57 Hz
<b>Shock resistance</b>	IEC 60068-2-27, Test Ea	25 g
<b>Protection against electric shock</b>	Finger safe per IEC 529	IP20
<b>Permissible ambient temperature</b>		-20°C to +60°C
<b>Weight</b>	1 pole Switched neutral Auxiliary contact Signal contact Relay trip module	ca. 130 g ca. 130 g ca. 100 g ca. 100 g ca. 120 g

## Approvals

### AC versions

Poles	Characteristic/ Volt AC	 VDE EN 60934			 UL UL 1077 CSA 22.2 235			 UL UL 508 ** CSA 22.2 14	
		Volt DC	Icn [A]	Volt AC	Volt DC	Icn [A]	Volt AC	Icn [A]	
1	F / G / H 45 - 52	420/240	65	4500	277	65	5000	277	5000
	F / G 0.5 - 25	420/240	65	4500	277 240	65	5000 10000	277	5000
	H 0.5 - 40	420/240	65	4500	277	65	5000	277	5000
	F / G 27 - 40	420/240	65	4500	277 240	65	5000 10000	277	5000
2	F / G / H 45 - 52	420	65	4500	480	65	5000	480	5000
	F / G 0.5 - 25	420	65	4500	480	65	10000	480	5000
	H 0.5 - 40	420	65	4500	480	65	5000	480	5000
	F / G 27 - 40	420	65	4500	480	65	10000	480	5000
3	F / G / H 45 - 52	420	65	4500	480Y/277	65	5000	480	5000
	F / G 0.5 - 25	420	65	4500	480Y/277	65	10000	480	5000
	H 0.5 - 40	420	65	4500	480Y/277	65	5000	480	5000
	F / G 27 - 40	420	65	4500	480Y/277	65	10000	480	5000
4	F / G / H 0.5 - 52	420/240	65	4500	480Y/277	65	5000	480Y/277	5000

### DC versions

Poles	Characteristic/ Volt DC	 VDE EN 60934		 UL UL 1077 CSA 22.2 235	
		Volt DC	Icn [A]	Volt DC	Icn [A]
1	DF / DG 0.5 - 50	120	4500	180	2000
	DH 6 - 50	120	4500	180	2000
2	DF / DG 0.5 - 50	240	4500	360	2000
	DH 6 - 50	240	4500	360	2000
3	DF / DG 0.5 - 40	360	4500	360	10000
	DF / DG 45 - 50	360	4500	360	5000
	DH 6 - 50	360	4500	360	5000
4	DF / DG 0.5 - 40	360	4500	360	10000
	DF / DG 45 - 50	360	4500	360	5000
	DH 6 - 50	360	4500	360	5000

\*\* Rated currents 32-52 A approval pending

Conversion table Ampere rating – Horsepower rating

Voltage Rating:        One pole:        AC 277 V, 1 phase  
                                  Two pole:        AC 480Y/277 V, 1 phase  
                                  Three pole:      AC 480Y/277 V, 3 phase

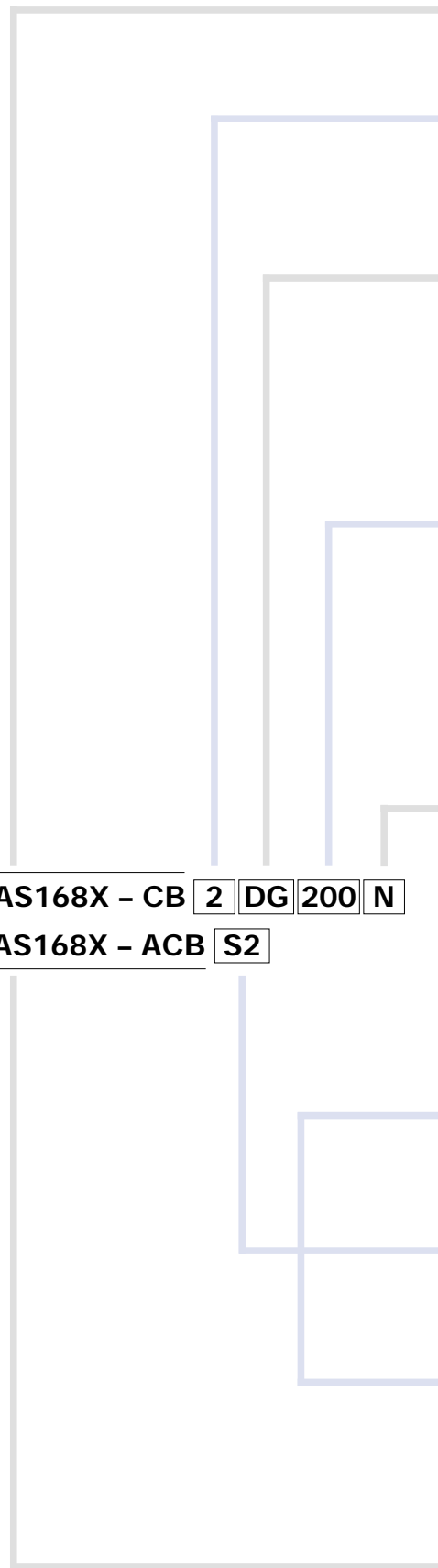
HP-Rating: 1 phase (1 pole & 2 pole):

AS168X-CB	MOTOR NAMEPLATE		HORSEPOWER (FLA & LRC RATINGS APPLY WHERE NO HP RATING IS GIVEN)							
			NOMINAL CIRCUIT VOLTAGE, Vac							
			110-120	200	208	220-240	265	277	380-415	440-480
<b>Rated Current (See Note #1)</b>	<b>FLA Rating</b>	<b>Starting/ LRC Rating</b>						<b>1 pole</b>		<b>2 pole</b>
<b>0.5A</b>	0.5A	3°								
<b>1A</b>	1A	6°							1/10	
<b>1.5A</b>	1.5A	9°				1/10	1/10	<b>1/10</b>	1/6	
<b>2A</b>	2A	12A				1/8	1/6	<b>1/6</b>	1/4	
<b>3A</b>	3A	18A	1/10	1/6	1/6	1/4	1/4	<b>1/3</b>	1/3	<b>1/2</b>
<b>4A</b>	4A	24A	1/8	1/4	1/3	1/3	1/3	<b>1/3</b>	1/2	<b>1</b>
<b>5A</b>	5A	30A	1/6	1/3	1/3	1/2	1/2	<b>1/2</b>	3/4	<b>1 1/2</b>
<b>6A</b>	6A	36A	1/4	1/2	1/2	1/2	3/4	<b>3/4</b>	1	<b>2</b>
<b>7A</b>	7A	42A	1/4	1/2	1/2	3/4	1	<b>1</b>	1 1/2	<b>2</b>
<b>8A</b>	8A	48A	1/3	3/4	3/4	1	1	<b>1</b>	2	<b>2</b>
<b>9A</b>	9A	54A	1/3	3/4	1	1	1	<b>1 1/2</b>	2	<b>3</b>
<b>10A</b>	10A	60A	1/2	1	1	1 1/2	1 1/2	<b>2</b>	2	<b>3</b>
<b>12A</b>	12A	72A	1/2	1 1/2	1 1/2	2	2	<b>2</b>	3	<b>3</b>
<b>13A</b>	13A	78A	1/2	1 1/2	1 1/2	2	2	<b>2</b>	3	<b>3</b>
<b>15A</b>	15A	90A	3/4	2	2	2	3	<b>3</b>	3	<b>5</b>
<b>16A</b>	16A	96A	1	2	2	2	3	<b>3</b>	3	<b>5</b>
<b>18A</b>	18A	108A	1	2	2	3	3	<b>3</b>	5	<b>5</b>
<b>20A</b>	20A	120A	1 1/2	3	3	3	3	<b>3</b>	5	<b>5</b>
<b>23A</b>	23A	138A	1 1/2	3	3	3	3	<b>3</b>	5	<b>7 1/2</b>
<b>25A</b>	25A	150A	2	3	3	3	5	<b>5</b>	5	<b>7 1/2</b>
<b>27A</b>	27A	162A	2	3	3	3	5	<b>5</b>	7 1/2	<b>10</b>
<b>30A</b>	30A	180A	2	3	3	5	5	<b>5</b>	7 1/2	<b>10</b>

HP-Rating: 3 phase (3 pole):

AS168X-CB	MOTOR NAMEPLATE		HORSEPOWER (FLA & LRC RATINGS APPLY WHERE NO HP RATING IS GIVEN)					
			NOMINAL CIRCUIT VOLTAGE, VAC					
			110-120	200	208	220-240	380-415	440-480
<b>Rated Current (See Note #1)</b>	<b>FLA Rating</b>	<b>Starting/ LRC Rating</b>						<b>3 pole</b>
<b>0.5A</b>	0.5A							
<b>1A</b>	1A							
<b>1.5A</b>	1.5A	10A					1/2	<b>1/2</b>
<b>2A</b>	2A	12.5A					3/4	<b>3/4</b>
<b>3A</b>	3A	20A		1/2	1/2	1/2	1	<b>1 1/2</b>
<b>4A</b>	4A	25A		3/4	3/4	3/4	1 1/2	<b>2</b>
<b>5A</b>	5A	32A	1/2	1	1	1	2	<b>3</b>
<b>6A</b>	6A	32A	1/2	1	1	1 1/2	2	<b>3</b>
<b>7A</b>	7A	32A	3/4	1 1/2	1 1/2	2	3	<b>3</b>
<b>8A</b>	8A	46A	3/4	2	2	2	3	<b>5</b>
<b>9A</b>	9A	46A	1	2	2	2	3	<b>5</b>
<b>10A</b>	10A	46A	1	2	2	3	5	<b>5</b>
<b>12A</b>	12A	63.5A	1 1/2	3	3	3	5	<b>7 1/2</b>
<b>13A</b>	13A	63.5A	1 1/2	3	3	3	5	<b>7 1/2</b>
<b>15A</b>	15A	81A	2	3	3	3	7 1/2	<b>10</b>
<b>16A</b>	16A	81A	2	3	3	5	7 1/2	<b>10</b>
<b>18A</b>	18A	81A	2	5	5	5	10	<b>10</b>
<b>20A</b>	20A	81A	3	5	5	5	10	<b>10</b>
<b>23A</b>	23A	116A	3	5	5	7 1/2	10	<b>15</b>
<b>25A</b>	25A	116A	3	5	7 1/2	7 1/2	10	<b>15</b>
<b>27A</b>	27A	145A	3	7 1/2	7 1/2	7 1/2	15	<b>20</b>
<b>30A</b>	30A	145A	3	7 1/2	7 1/2	10	15	<b>20</b>

Note #1: For AC motor circuit nameplate FLA loads, AC general-use loads, AC resistance loads

**Order code**

**Basic type**

Thermal magnetic high performance circuit breaker

**Number of poles**

- 1
- 2
- 3
- 4

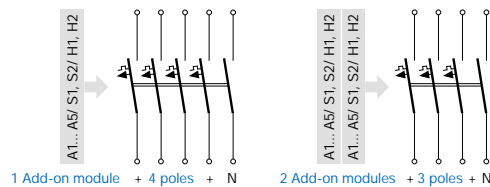
**Tripping characteristics**

	Thermal	Magnetic	Deliverable currents
F	1.0–1.25 xI <sub>n</sub>	3 – 5 xI <sub>n</sub>	0,5 – 52 A
G	1.0–1.25 xI <sub>n</sub>	6 – 10 xI <sub>n</sub>	0,5 – 52 A
H	1.0–1.25 xI <sub>n</sub>	12 – 20 xI <sub>n</sub>	0,5 – 52 A
DF	1.05–1.35 xI <sub>n</sub>	4,5 – 8 xI <sub>n</sub>	0,5 – 50 A
DG	1.05–1.35 xI <sub>n</sub>	9 – 16 xI <sub>n</sub>	0,5 – 50 A
DH	1.05–1.35 xI <sub>n</sub>	18 – 32 xI <sub>n</sub>	6,0 – 50 A

**Rated current**

Code	I <sub>n</sub> (A)	Code	I <sub>n</sub> (A)	Code	I <sub>n</sub> (A)	Code	I <sub>n</sub> (A)
005	0.5	060	6.0	160	16.0	320	32.0
010	1.0	070	7.0	180	18.0	350	35.0
015	1.5	080	8.0	200	20.0	400	40.0
020	2.0	090	9.0	230	23.0	450	45.0
030	3.0	100	10.0	250	25.0	500	50.0
040	4.0	120	12.0	270	27.0	520	52.0*
050	5.0	150	15.0	300	30.0		

\* AC version only /

**Switched neutral pole**
**AS168X - CB** 2 DG 200 N  
**AS168X - ACB** S2
**Maximum combination**

**Auxiliary contact**

- H1 Assumes the same contact position as the protected poles
- H2 Assumes the opposite contact position as the protected poles

**Signal contact**

- S1 Assumes the same contact position as the protected poles
- S2 Assumes the opposite contact position as the protected poles

**Relay trip module /**

- A1 AC/DC 5 – 12 V
- A2 AC/DC 10 – 24 V
- A3 AC/DC 20 – 48 V
- A4 AC/DC 40 – 110 V
- A5 AC/DC 90 – 240 V

**Accessories**

Must be ordered separately