

GA75 ... GAF2050 contactors

Technical data

Main pole - Utilization characteristics according to IEC

Contactor types	AC operated		GA75							
	AC / DC operated		GAF75	GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF250
Standards			IEC 60947-1 / 60947-4-1 and EN 60947-1 / 60947-4-1							
Rated operational voltage U _e max.			1000 V DC							
DC-1 Utilization category, L/R ≤ 1 ms										
For air temperature close to contactor										
I _e / Rated operational current DC-1										
θ ≤ 40 °C		220 V	120 A	-						
		440 V	100 A	-						
		600 V	75 A	-						
		1000 V	35 A	275 A	500 A	700 A	1050 A	1250 A	1650 A	2050 A
θ ≤ 55 °C		220 V	100 A	-						
		440 V	100 A	-						
		600 V	75 A	-						
		1000 V	35 A	250 A	400 A	600 A	875 A	1040 A	1450 A	1750 A
θ ≤ 70 °C		220 V	85 A	-						
		440 V	85 A	-						
		600 V	75 A	-						
		1000 V	35 A	180 A	325 A	480 A	720 A	875 A	1270 A	1500 A
With conductor cross-sectional area			¹⁾	150 mm ²	300 mm ²	2x 240 mm ²	2x 50x8 mm ²	2x 100x5 mm ²	3x 100x5 mm ²	4x 100x5 mm ²
					²⁾					
DC-3 Utilization category, L/R ≤ 2 ms										
I _e / Rated operational current DC-3										
θ ≤ 55 °C		220 V	100 A	-						
		440 V	85 A	-						
DC-5 Utilization category, L/R ≤ 7.5 ms										
I _e / Rated operational current DC-5										
θ ≤ 55 °C		220 V	85 A	-						
		440 V	35 A	-						
Maximum electrical switching frequency			300 cycles/h							

¹⁾ Refer to IEC 60947-1, table 9.

²⁾ For currents above 450 A, use 300 mm² and terminal extension/enlargement pieces (LX300/LW300).

Main pole - Utilization characteristics according to UL / CSA

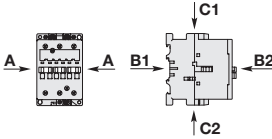
Contactor types	AC operated	GA75							
	AC / DC operated	GAF75	GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF250
Standards		UL 508, CSA C22.2 N°14		UL 60947-4-1, CSA C22.2 N°60947.4-1					
Maximum operational voltage		1000 V DC							
UL / CSA DC general use rating									
θ ≤ 40 °C	440 V	100 A	-						
	600 V	75 A	250 A	400 A					
	1000 V	35 A	3)	400 A	650 A	900 A	1210 A	1650 A	2050 A
Maximum electrical switching frequency		300 cycles/h							

³⁾ On request.

GA75 and GAF75 contactors

Technical data

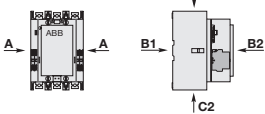
General technical data

Contactor types	AC operated AC/DC operated	GA75 GAF75
Rated insulation voltage Ui		
acc. to IEC 60947-4-1		1000 V
acc. to UL		600 V
Rated impulse withstand voltage Uimp.		8 kV
Ambient air temperature close to contactor		
Operation		-40...+70 °C
Storage		-60...+80 °C
Climatic withstand		acc. to IEC 60068-2-30 and 60068-2-11 - UTE C 63-100 specification II
Maximum operating altitude (without derating)		3000 m
Mechanical durability		
Number of operating cycles		10 millions operating cycles (5 millions for GAE75)
Max. switching frequency		3600 cycles/h
Shock withstand		
acc. to IEC 60068-2-27 and EN 60068-2-27		
Mounting position 1		
		Shock direction
		1/2 sinusoidal shock for 11 ms: no change in contact position, closed or open position
		A 20 g
		B1 10 g closed position / 5 g open position
		B2 15 g
		C1 20 g
		C2 20 g

GAF185 ... GAF2050 contactors

Technical data

General technical data

Contactor types	AC / DC operated	GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF2050
Rated insulation voltage Ui								
acc. to IEC 60947-4-1		1000 V						
acc. to UL		600 V						
Rated impulse withstand voltage Uimp.		8 kV						
Ambient air temperature close to contactor								
Operation		-40 to +70 °C						
Storage		-40 to +70 °C						
Climatic withstand		acc. to IEC 60068-2-30						
Maximum operating altitude (without derating)		3000 m						
Mechanical durability								
Number of operating cycles		5 millions operating cycles						0.5 millions operating cycles
Max. switching frequency		300 cycles/h						60 cycles/h
Shock withstand								
acc. to IEC 60068-2-27 and EN 60068-2-27								
Mounting position 1								
		Shock direction	1/2 sinusoidal shock for 30 ms: no change in contact position, closed or open position					
		A	5 g					
		B1	5 g					-
		B2	5 g					-
		C1	5 g					-
		C2	5 g					-

GA75 and GAF75 contactors

Technical data

Magnet system characteristics

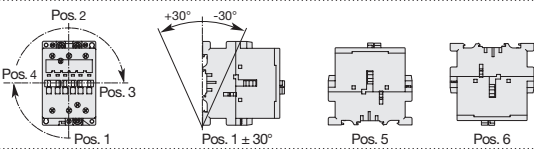
Contactor types	AC operated	GA75
Coil operating limits	AC supply	At $\theta \leq 55^\circ\text{C}$ $0.85 \dots 1.1 \times U_c$
acc. to IEC 60947-4-1		Please also refer to "Mounting characteristics and conditions for use"
AC control voltage		
Rated control circuit voltage U_c	at 50 Hz	24...690 V
	at 60 Hz	24...690 V
Coil consumption	Average pull-in value	50 Hz 180 VA
	60 Hz	210 VA
	50/60 Hz ¹⁾	190 VA / 180 VA
	Average holding value	50 Hz 18 VA / 5.5 W
	60 Hz	18 VA / 5.5 W
	50/60 Hz ¹⁾	18 VA / 5.5 W
Drop-out voltage		Approx. 40...65 % of U_c
Operating time		
Between coil energization and:	N.O. contact closing	8...27 ms
	N.C. contact opening	7...22 ms
Between coil de-energization and:	N.O. contact opening	4...11 ms
	N.C. contact closing	7...14 ms

¹⁾ 50/60 Hz coils: see "Voltage code table".

Magnet system characteristics

Contactor types	AC/DC operated	GAF75
Coil operating limits	AC/DC supply	At $\theta \leq 70^\circ\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$
acc. to IEC 60947-4-1		Please also refer to "Mounting characteristics and conditions for use"
AC/DC control voltage		
Rated control circuit voltage U_c		20...250 V AC/DC
Coil consumption	Average pull-in value	210 VA/190 W
	Average holding value	7.5 VA/2.8 W
Drop-out voltage		55 % of $U_c \text{ min}$
Coil time constant		
Open	L/R	3 ms
Closed	L/R	15 ms
Operating time		
Between coil energization and:	N.O. contact closing	30...100 ms
	N.C. contact opening	27...95 ms
Between coil de-energization and:	N.O. contact opening	30...110 ms
	N.C. contact closing	35...115 ms

Mounting characteristics and conditions for use

Contactor types	AC operated	GA75
	AC/DC operated	GAF75
Mounting positions		
Control voltage / Ambient temperature		
Mounting positions 1, 1±30°, 2, 3, 4, 5	at $\theta \leq 70^\circ\text{C}$	$0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$ (max 55°C for GA75)
6	at $\theta \leq 70^\circ\text{C}$	Unauthorized
Mounting distances		The contactors can be assembled side by side
Fixing		
On rail according to IEC 60715, EN 60715		35 x 15 mm or 75 x 25 mm
By screws (not supplied)		2 x M6 screws placed diagonally

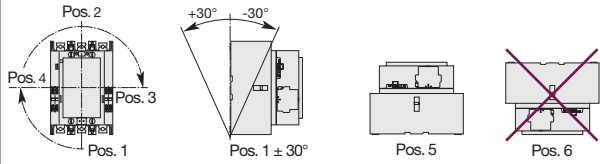
GAF185 ... GAF2050 contactors

Technical data

Magnet system characteristics

Contactor types	AC / DC operated	GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF2050
Coil operating limits	AC or DC supply	At $\theta \leq 70^{\circ}\text{C}$ $0.85 \times U_c \text{ min} \dots 1.1 \times U_c \text{ max}$. Please also refer to "Mounting characteristics and conditions for use"						
acc. to IEC 60947-4-1								
AC control voltage 50/60 Hz								
Rated control circuit voltage U_c		48...250 V AC		48...500 V AC		100...250 V AC		
Coil consumption	Average pull-in value	430 VA	470 VA	890 VA	850 VA	1900 VA		
	Average holding value	12 VA / 3.5 W	10 VA / 2.5 W	12 VA / 4 W	12 VA / 4.5 W	48 VA / 17 W		
DC control voltage								
Rated control circuit voltage U_c		20...250 V DC		24...500 V DC		100...250 V DC		
Coil consumption	Average pull-in value	500 W	520 W	990 W	950 W	1700 W		
	Average holding value	2 W		4 W	4.5 W	16 W		
Drop-out voltage		55 % of $U_c \text{ min}$.						
Dips withstand								
-20 °C ≤ θ ≤ +60 °C		≥ 20 ms						
Operating time								
Coil supply between A1 - A2								
Between coil energization and:	N.O. contact closing	30...115 ms		50...120 ms		50...80 ms		
	N.C. contact opening	30...115 ms		50...120 ms		50...80 ms		
Between coil de-energization and:	N.O. contact opening	25...80 ms		33...70 ms		35...55 ms		
	N.C. contact closing	25...80 ms		33...70 ms		35...55 ms		
Control input for PLC's								
Between coil energization and:	N.O. contact closing	-		40...60 ms	40...90 ms	40...65 ms		
	N.C. contact opening	-		40...60 ms	40...90 ms	40...65 ms		
Between coil de-energization and:	N.O. contact opening	-		10...30 ms		10...30 ms		
	N.C. contact closing	-		10...30 ms		10...30 ms		

Mounting characteristics and conditions for use

Contractor types	AC / DC operated		GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF2050
Mounting positions									
Control voltage / Ambient temperature									
Mounting positions	1, 1±30°, 2, 3, 4, 5	at θ ≤ 70 °C	0.85 x Uc min...1.1 x Uc max.						
	6		Unauthorized						
Mounting distances			The contactors can be assembled side by side						
Fixing									
On rail according to IEC 60715, EN 60715			–						
By screws (not supplied)			4 x M5		4 x M6		4 x M8		

GA75 and GAF75 contactors

Technical data

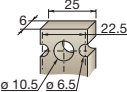
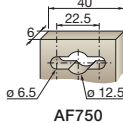
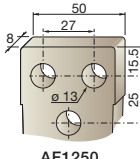
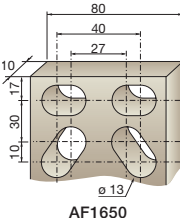
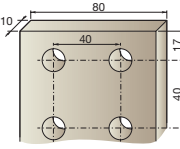
Connecting characteristics

Contactor types	AC operated	GA75
	AC/DC operated	GAF75
Main terminals	 Screw terminals with single connector (13 x 10 mm)	
Connection capacity (min. ... max.)		
Main conductors (poles)		
 Rigid	Solid ($\leq 4 \text{ mm}^2$)	} 1 x 6...50 mm ²
 Stranded ($\geq 6 \text{ mm}^2$)		
 Flexible with ferrule		1 x 6...35 mm ²
 Flexible with ferrule		2 x 6...16 mm ²
 Bars or lugs	L $\leq$	–
	L $>$	–
Connection capacity acc. to UL/CSA	1 or 2 x	AWG 8...1
Tightening torque	Recommended	4.00 Nm / 35 lb.in
	Max.	4.50 Nm
Auxiliary conductors		
(coil terminals)		
 Rigid solid	1 x	1...4 mm ²
 Rigid solid	2 x	1...4 mm ²
 Flexible with ferrule	1 x	1...2.5 mm ²
 Flexible with ferrule	2 x	0.75...2.5 mm ²
 Lugs	L $\leq$	8 mm
	L $>$	3.7 mm
Connection capacity acc. to UL / CSA	1 or 2 x	AWG 18...14
Tightening torque		
Coil terminals	Recommended	1.00 Nm / 9 lb.in
	Max.	1.20 Nm
Degree of protection		
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529		
Main terminals		IP10
Coil terminals		IP20
Screw terminals		
Main terminals		Delivered in open position, screws of unused terminals must be tightened
		M6
	Screwdriver type	Flat Ø 6.5 / Pozidriv 2
Coil terminals		M3.5
	Screwdriver type	Flat Ø 5.5 / Pozidriv 2

GAF185 ... GAF2050 contactors

Technical data

Connecting characteristics

Contactor types	AC / DC operated	GAF185	GAF300	GAF460	GAF750	GAF1250	GAF1650	GAF2050
Main terminals Flat type								
								
Connection capacity (min. ... max.)								
Main conductors (poles)								
 Rigid with connector	Single for Cu cable	6...185 mm ²	16...240 mm ²	240 mm ²	300 mm ²	—	—	—
	Single for Al/Cu cable	25...150 mm ²	120...240 mm ²	240 mm ²	300 mm ²	—	—	—
	Double for Al/Cu cable	—	2 x 95...120 mm ²	2 x 240 mm ²	3 x 185 mm ²	—	—	—
 Bars or lugs	L ≤	24 mm	32 mm	47 mm	52 mm	100 mm	100 mm	100 mm
	Ø >	8 mm	10 mm	10 mm	12 mm	12 mm	12 mm	12 mm
Connection capacity acc. to UL/CSA	1 or 2 x	6 - 250 MCM	4 - 500 MCM ¹⁾	2//250 - 500 MCM	3// 2/0 - 500 MCM	1/0 - 750 MCM	1/0 - 750 MCM	1/0 - 750 MCM
Tightening torque	Recommended	18 Nm / 160 lb.in	28 Nm / 247 lb.in	35 Nm / 310 lb.in	45 Nm / 398 lb.in	45 Nm / 398 lb.in	45 Nm / 398 lb.in	45 Nm / 398 lb.in
	Max.	20 Nm	30 Nm	40 Nm	49 Nm	49 Nm	49 Nm	49 Nm
Auxiliary conductors (coil terminals)								
 Rigid solid	1 x	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²
	2 x	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²	1...4 mm ²
 Flexible with ferrule	1 x	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²
	2 x	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²	0.75...2.5 mm ²
 Lugs	L ≤	8 mm	8 mm	8 mm	8 mm	8 mm	8 mm	8 mm
	L >	3.7 mm	3.7 mm	3.7 mm	3.7 mm	3.7 mm	3.7 mm	3.7 mm
Connection capacity acc. to UL/CSA	1 or 2 x	AWG 18...14	AWG 18...14	AWG 18...14	AWG 18...14	AWG 18...14	AWG 18...14	AWG 18...14
Tightening torque	Recommended	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in	1.00 Nm / 9 lb.in
	Max.	1.20 Nm	1.20 Nm	1.20 Nm	1.20 Nm	1.20 Nm	1.20 Nm	1.20 Nm
Degree of protection								
acc. to IEC 60947-1 / EN 60947-1 and IEC 60529 / EN 60529								
Main terminals		IP00	IP00	IP00	IP00	IP00	IP00	IP00
Coil terminals		IP20	IP20	IP20	IP20	IP20	IP20	IP20
Screw terminals								
Main terminals		M8	M10	M10	M12	M12	M12	M12
		Screws and bolts	Screws and bolts	Screws and bolts	Screws and bolts	Screws and bolts	Screws and bolts	Screws and bolts
Coil terminals (delivered in open position)		M3.5	M3.5	M3.5	M3.5	M3.5	M3.5	M3.5
Screwdriver type		Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2	Flat Ø 5.5 mm / Pozidriv 2

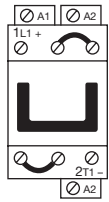
¹⁾ With LW110 enlargement piece: see "Accessories".

GA75 ... GAF2050 contactors

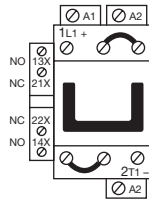
Terminal marking and positioning

GA(F)75 contactors - AC operated, AC/DC operated

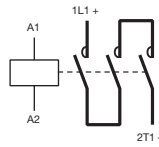
Standard devices without addition of auxiliary contacts



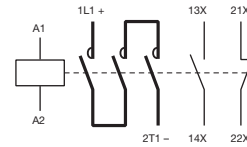
GA(F)75-10-00



GA(F)75-10-11

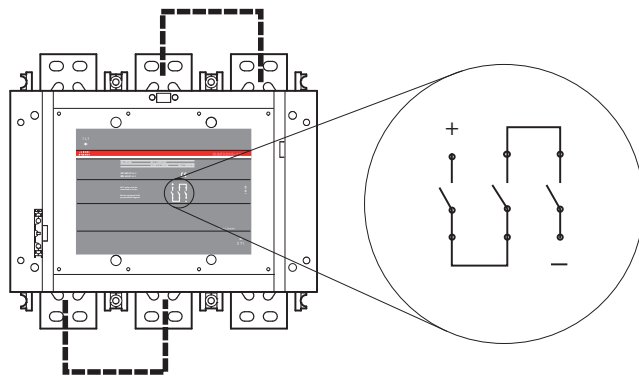


GA(F)75-10-00



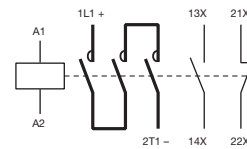
GA(F)75-10-11

GAF185 ... GAF2050 contactors - AC / DC operated



Connection bars are sold separately

GAF185 ... GAF2050-10-11

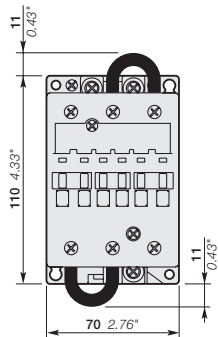


GAF185 ... GAF2050-10-11

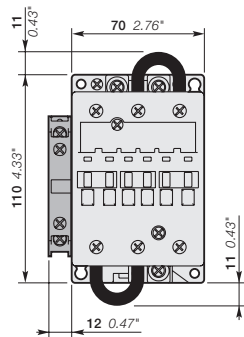
GA(F)75 1-pole contactor

Main dimensions mm, inches

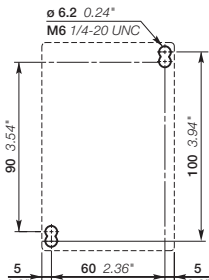
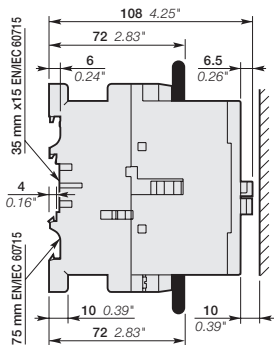
4



GA(F)75-10-00



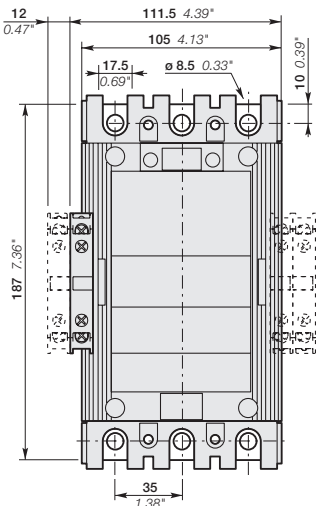
GA(F)75-10-11



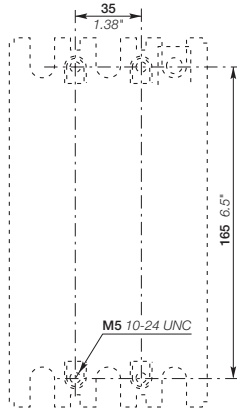
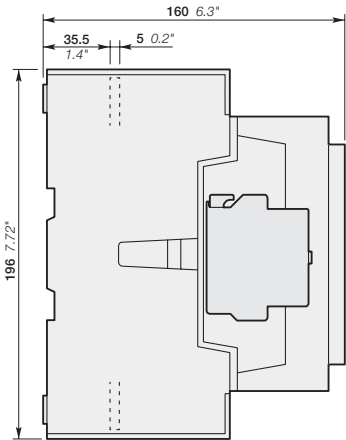
GA(F)75

GAF185, GAF300 3-pole contactor

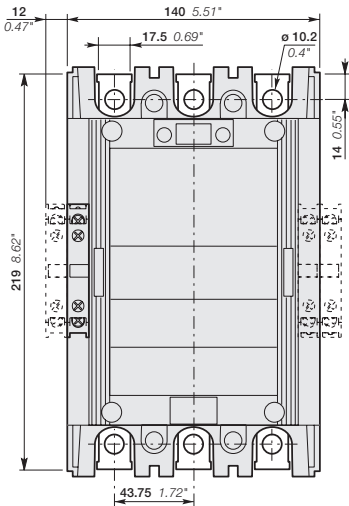
Main dimensions mm, inches



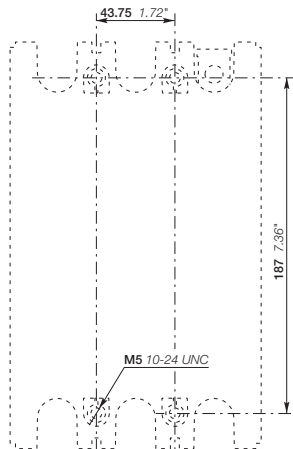
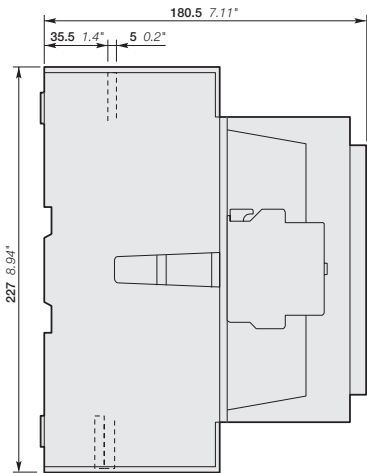
GAF185-30-11



GAF185-30-11



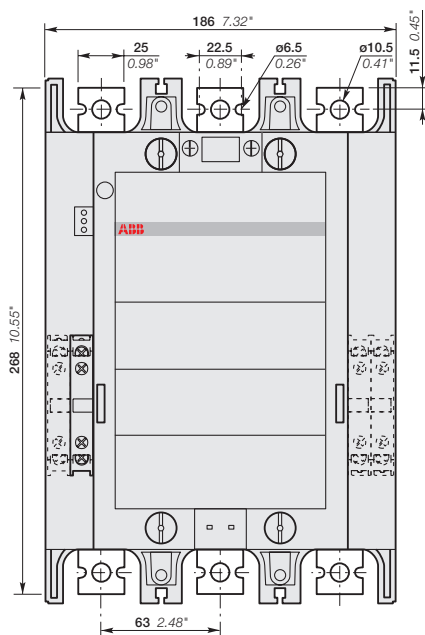
GAF300-30-11



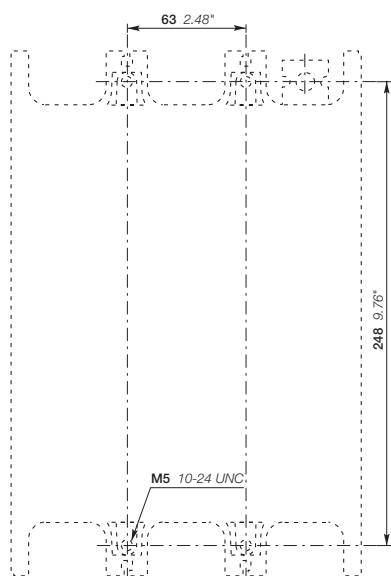
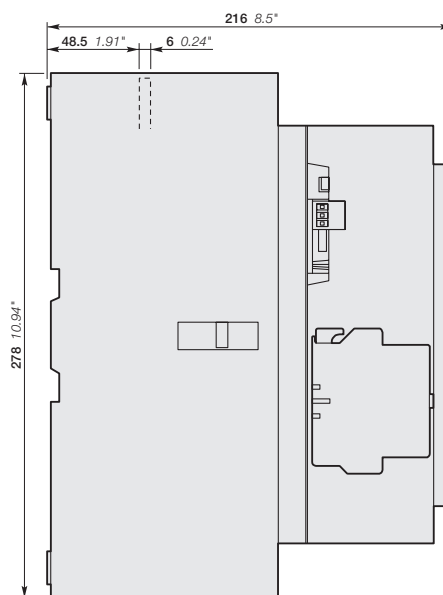
GAF300-30-11

GAF460 3-pole contactor

Main dimensions mm, inches



GAF460-30-11



4

242 9.53"

48.5 1.91"

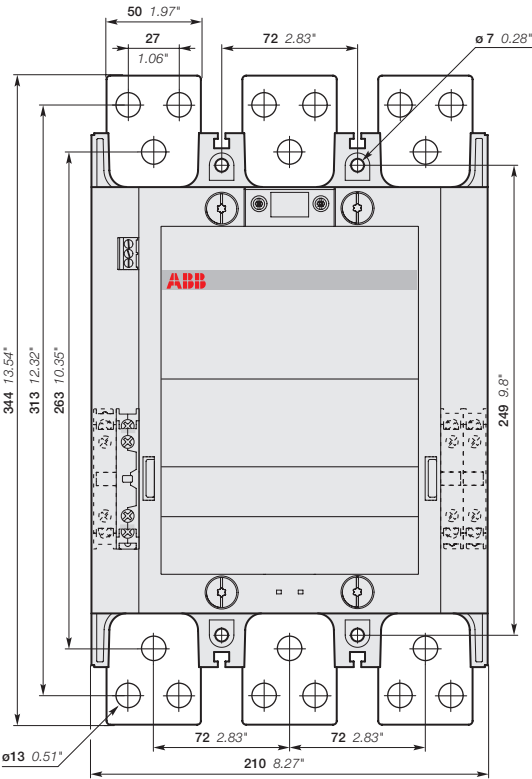
6 0.24"

283 11.14"

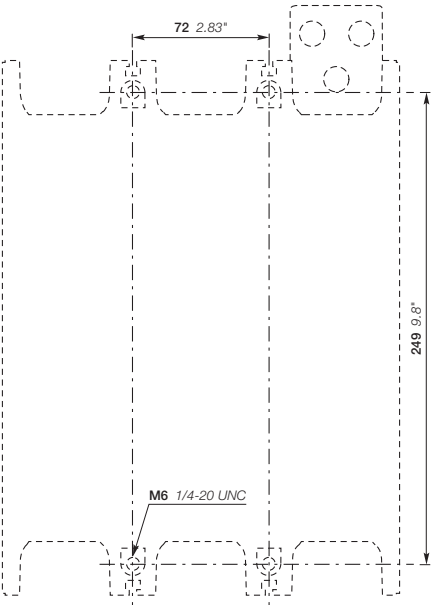
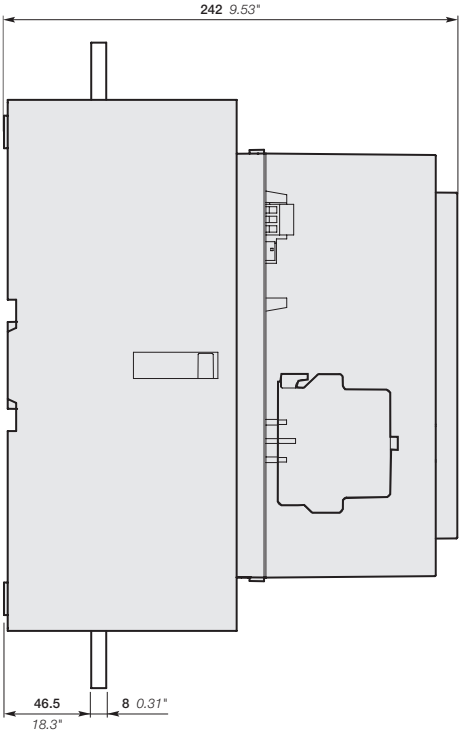


GAF1250 3-pole contactor

Main dimensions mm, inches

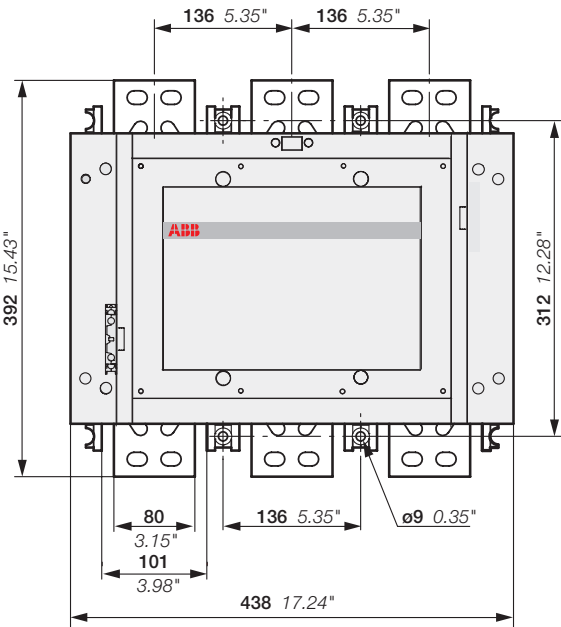
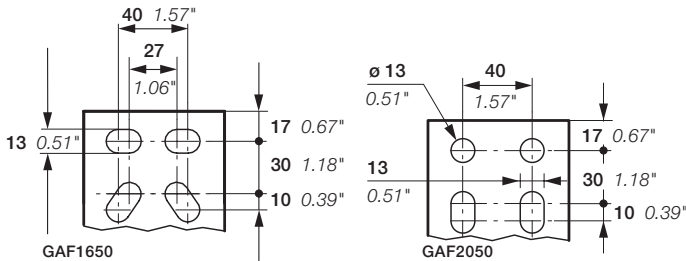


GAF1250-30-11



GAF1650, GAF2050 3-pole contactor

Main dimensions mm, inches



GAF1650, GAF2050-30-11

