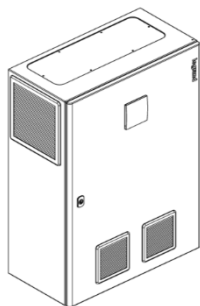


ALPIMATIC – Automatic capacitor bank – Cabinet version

Cat. No(s): MH012A40G3DH-MH017A40G3DH-
MH025A40G3DH-MH030A40G3DH-MH043A40G3DH-
MH050A40G3DH-MH060A40G3DH-MH075A40G3DH/G4DH-
MH087A40G3DH/G4DH-MH100A40G3DH/G4DH-
MH125A40G3DH-MH137A40G4DB-MH150A40G3DB/G4DB



Content	Page
1. Presentation	1
2. Range	1
3. Dimensions and weight	2
4. Overview	2
5. Electrical characteristics	2
6. Connection	3
7. Conformity	3
8. Equipments and accessories	3
9. Maintenance	3

1. PRÉSENTATION

H type ALPIMATIC capacitor banks in a cabinet are ready-to-use assemblies for performing automatic compensation. They consist of several physical steps equipped with CTX³ electromechanical contactors with damping resistors suitable for capacitive currents.

The contactors in each step are controlled by an Alptec power factor controller with a simple commissioning procedure.

1.1 Capacitor bank characteristics

Model:	ALPIMATIC
Type:	H
Rated power:	See section 2.2
Rated voltage:	400V – 50Hz
Loss factor:	≈ 2W / kVAr
Maximum temperature inside the capacitor bank:	+45°C Average over 24H: +40°C
Protection class:	IP 31
Protection against indirect contact	IP xxB
Mechanical impact resistance:	IK 10
Color:	RAL 7035
Weight:	See section 3.1
Height (mm):	700 / 800 / 1000
Width (mm):	500 / 600 / 800
Depth (mm):	300

1.2 Installation site characteristics

Following the recommendations below will ensure the capacitor bank works correctly wherever it is sited:

- Min./max. temperature: -5°C to +40°C
- Average temperature over 24 hrs: +35°C
- Max. altitude: ≤ 2000 m
- Environment:
 - Maximum humidity rate ≤ 80%
 - Dry and free from dust
 - Non-corrosive
- The ventilation louvres must be placed at least 200 mm away from any obstacle (wall, ceiling, electrical cabinet, etc)
- The air intakes and outlets must not be blocked

For more details concerning commissioning and maintenance, see the installation manual for ALPIMATIC automatic capacitor banks.

2. RANGE

2.1 Reference

MH 125 A40 G3 D H
① ② ③ ④ ⑤ ⑥

- ① H type ALPIMATIC capacitor bank
- ② Capacitor bank power in kVAr
- ③ A40: 50 Hz – 400V
- ④ G3: 3 physical steps
G4: 4 physical steps
- ⑤ D: Built-in circuit breaker
- ⑥ H: Connection from the top
B: Connection from the bottom

2.2 Steps distribution

Ref.	Rated power for 400V AC – 50Hz (kVAr)	Steps (kVAr)
MH012A40G3DH	12.5	2.5 + 5 + 5
MH017A40G3DH	17.5	2.5 + 5 + 10
MH025A40G3DH	25	5 + 10 + 10
MH030A40G3DH	30	5 + 10 + 15
MH043A40G3DH	43.75	6.25 + 12.5 + 25
MH050A40G3DH	50	10 + 20 + 20
MH060A40G3DH	60	10 + 20 + 30
MH075A40G3DH	75	25 + 25 + 25
MH075A40G4DH		12.5 + 12.5 + 25 + 25
MH087A40G3DH	87.5	12.5 + 25 + 50
MH087A40G4DH		12.5 + 25 + 25 + 25
MH100A40G3DH	100	25 + 25 + 50
MH100A40G4DH		12.5 + 12.5 + 25 + 50
MH125A40G3DH	125	25 + 50 + 50
MH137A40G4DB	137.5	12.5 + 25 + 50 + 50
MH150A40G3DB	150	50 + 50 + 50
MH150A40G4DB		25 + 25 + 50 + 50

ALPIMATIC – Automatic capacitor bank – Cabinet version

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MH025A40G3DH-MH030A40G3DH-MH043A40G3DH-
MH050A40G3DH-MH060A40G3DH-MH075A40G3DH/G4DH-
MH087A40G3DH/G4DH-MH100A40G3DH/G4DH-
MH125A40G3DH-MH137A40G4DB-MH150A40G3DB/G4DB

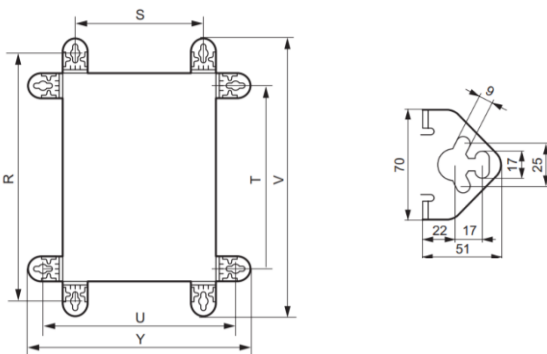
3. DIMENSIONS AND WEIGHT

3.1 H type capacitor bank

Ref.	Height	Width	Depth	Max weight (kg)	Cabinet	Connection
MH012A40G3DH	700	500	300	35	AT1	Top
MH017A40G3DH						
MH025A40G3DH						
MH030A40G3DH						
MH043A40G3DH						
MH050A40G3DH						
MH060A40G3DH	800	600		40	AT2	
MH075A40G3DH						
MH075A40G4DH						
MH087A40G3DH						
MH087A40G4DH						
MH100A40G3DH						
MH100A40G4DH	1000	800	52	AT3		
MH125A40G3DH						
MH137A40G4DB						
MH150A40G3DB						
MH150A40G4DB				80	AT4	Bottom

3.2 Wall mounting

Capacitor bank are delivered with wall mounting brackets
Ref. 0 364 04

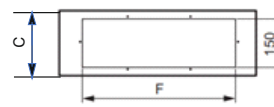


Cabinet	Vertical brackets		Horizontal brackets		Overall	
	R	S	T	U	V	Y
AT1	775	450	650	575	802	602
AT2						
AT3	875	550	750	675	902	702
AT4	1075	750	950	875	1102	902

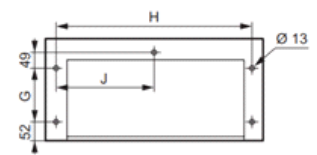
3.3 Floor fixation base

ALPIMATIC capacitor bank with AT4 cabinet with bottom connection, can be optionally equipped with a factory-mounted floor mounting base.

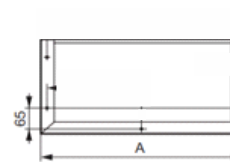
Front view - Front hatch passage



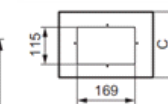
Bottom view - Floor Fixing



Top view – Cabinet fixing



Side hatch passage



Ref.	Cabinet L x P (mm)	A	B	C	F	G	H	J
0 363 01	800 x 300	800	280	200	469	150	742	371

4. OVERVIEW

Each capacitor bank comprises:

- **Several physical steps consisting of:**
 - 1 ALPIVAR 3 capacitor:
 - Totally dry unit (with no impregnation oil)
 - Double-insulated cabinet, class 2
 - Internal electrical protection by self-healing film, electrical fuses and pressure monitoring devices
 - With discharge resistors (discharge time < 3 min)
 - Conforming to standard IEC 60831-1 and 2
 - 1 CTX³ electromechanical contactor suitable for switching capacitive currents with a damping resistor to limit the inrush current
 - 1 protection with circuit breaker
- **1 Alptec series electronic power factor controller:**
 - Backlit LCD screen
 - Optical communication port
 - Switching by electromechanical relays
 - Display: cos φ, U, I, temp
 - Tripping on temperature overrun
 - Compensation fault displayed via alarms
- **1 connector block for:**
 - Load shedding by NC contact during generator operation
 - Current measurement via an external current transformer (CT)
- **Main built-in protection by circuit breaker**
 - With disengageable rotary handle for batteries with AT2, AT3 and AT4 type cabinets.

5. ELECTRICAL CHARACTERISTICS

5.1 Harmonic levels

	THDu (%)	THDi (%)	SH/ST (%)
H type	≤ 4	≤ 15	≤ 25

THDu: Voltage total harmonic distortion

THDi: Current total harmonic distortion

SH: Expanded power of the harmonic generators in the MV transformer secondary to be compensated (in kVA)

ST: Power in kVA of the MV/LV transformer

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5.2 Built-in protection

Ref.	Protection type	Circuit breaker rating (A)	Breaking capacity (kA)	Protection reference
MH012A40G3DH	DX ³	25	16	4 092 75
MH017A40G3DH		40		4 092 77
MH025A40G3DH		63		4 092 79
MH030A40G3DH				
MH043A40G3DH	DPX ³ 160	100	25	4 200 45
MH050A40G3DH		125		4 200 46
MH060A40G3DH		160		4 200 47
MH075A40G3DH				
MH087A40G3DH	DPX ³ 250	200	36	4 202 08
MH087A40G4DH				
MH100A40G3DH		250		4 202 09
MH100A40G4DH				
MH125A40G3DH	DPX ³ 630	320	36	4 220 01
MH137A40G4DB				
MH150A40G3DB				

6. CONNECTION

RISK OF INSULATION LOSS AND SHORT-CIRCUIT!

Size the power cables in accordance with standards IEC 61439-1 and IEC 61921.

- Recommended cable type: 1000 V, 105°C
- The cables must be sized for a current of 1.5 x I_n minimum

Power cables connection from the top or the bottom of the battery, depending on the cabinet.

6.1 Connection cables

6.1.1 Copper or Aluminum conductor cross-section

Réf.	COPPER		ALUMINUM ⁽³⁾		
	Recommended x-section ⁽¹⁾ (mm ²)	Maximum capacity ⁽²⁾ (mm ²)	Recommended x-section ⁽¹⁾ (mm ²)	Maximum capacity ⁽²⁾ (mm ²)	
MH012A40G3DH	6	35	10	50	
MH017A40G3DH					
MH025A40G3DH	16	70	16	150	
MH030A40G3DH					
MH043A40G3DH	25	95	35	150	
MH050A40G3DH					
MH060A40G3DH	35	240	50	240	
MH075A40G3DH					
MH075A40G4DH	50		70		
MH087A40G3DH	70	240	2 x 35	150	
MH087A40G4DH					
MH100A40G3DH			2 x 50		
MH100A40G4DH					
MH125A40G3DH	2 x 50		2 x 70		
MH137A40G4DB	120	240	150	240	
MH150A40G3DB					
MH150A40G4DB					

⁽¹⁾ The minimum cross-sections indicated in the table are given for information purposes only and are calculated for single-pole cables with an ambient temperature of 30°C. They do not take account of additional correction factors:

- o Installation method: trunking or cable trough
- o Very long lines to be used
- o Ambient temperature around the cables

Indicative values based on standard IEC 60364 for conductors made of **Copper or Aluminum**. These cross-sections may vary according to local regulations, the ambient temperature around the conductor, the installation method, line lengths, etc.

⁽²⁾ The connection options vary according to the type of accessory and type of conductor used.

⁽³⁾ The direct connection of the aluminum cables to the terminals of the circuit breakers and control terminal block is strictly prohibited without the use of suitable accessories. (ref. 4,063 10, 4 210 30).

7. CONFORMITY

IEC 61921
IEC 61439-2

8. EQUIPMENT AND ACCESSORIES

8.1 Current transformer

A current transformer (CT) must be installed on phase L1 of the general installation. The primary current should be defined according to the installation, the secondary 5 A, class 1-10 VA. (Can be supplied on request)

8.2 Controller alarm report option

Please contact us.

9. MAINTENANCE

During use, your capacitor bank may be exposed to different factors such as harmonics, high temperatures, voltage surges, an installation upgrade, environmental pollution (dust, vapors), and wear and tear (contactor, capacitor), etc.

These factors are likely to have harmful consequences on the capacitor bank and therefore to reduce its service life.

It is therefore important to carry out maintenance operations as outlined in the annual maintenance schedule in your maintenance manual, thereby extending the service life of your capacitor bank.

For more information, see the maintenance manual for ALPIMATIC automatic capacitor banks.