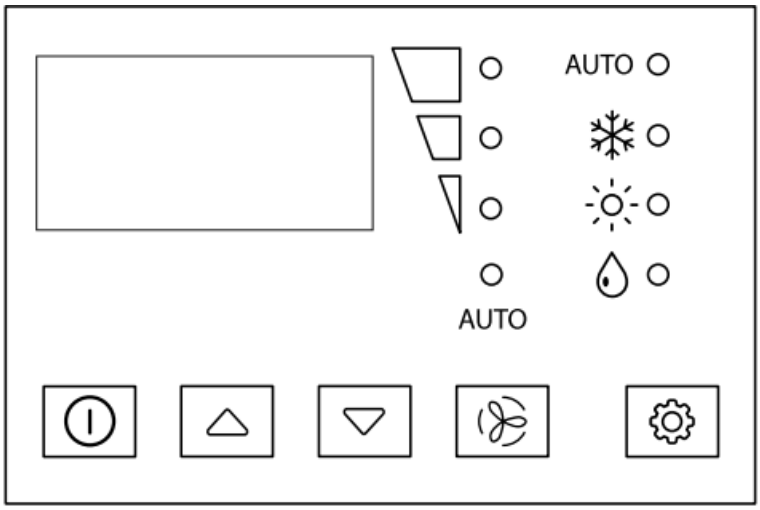
DOMETIC Control Unit for Air Conditioning System User Manual

Contents

CLIMATE CONTROL

MARINE CABIN CONTROL



Marine Air Digital Elite

Control unit for air conditioning systems

Short Installation and Operating Manual

Copyright

1 Important notes

Please read these instructions carefully and follow all instructions, guidelines, and warnings included in this product manual in order to ensure that you install, use, and maintain the product properly at all times. These instructions MUST stay with this product.

By using the product, you hereby confirm that you have read all instructions, guidelines, and warnings carefully and that you understand and agree to abide by the terms and conditions as set forth herein. You agree to use this product only for the intended purpose and application and in accordance with the instructions, guidelines, and warnings as set forth in this product manual as well as in accordance with all applicable laws and regulations. A failure to read and follow the instructions and warnings set forth herein may result in an injury to yourself and others, damage to your product or damage to other property in the vicinity. This product manual, including the instructions, guidelines, and warnings, and related documentation, may be subject to changes and updates. For up-to-date product information, please visit **documents.dometic.com**.

2 Related documents

Find the installation and operating manual online at qr.**dometic.com/bexvKl**.

3 Explanation of symbols

A signal word will identify safety messages and property damage messages, and also will indicate the degree or level of hazard seriousness.

 **WARNING!**
Indicates a hazardous situation that, if not avoided, could result in death or serious injury.

 **NOTE** Supplementary information for operating the product.

3.1 Safety instructions

The manufacturer accepts no liability for damage in the following cases:

- Faulty assembly or connection
- Damage to the product resulting from mechanical influences or the wrong connection voltage
- Alterations to the product without the express permission from the manufacturer
- Used for purposes other than those described in the operating manual

Note the following basic safety information when using electrical devices to protect against:

- Electric shock
- Fire hazards
- Injury

 **WARNING! Electrical shock**
> Electrical devices are not toys. Always keep and use the device out of the reach of children.
> People (including children) whose physical, sensory or mental capacities or whose lack of experience or knowledge prevent them from using this product safely should not use it without the supervision or instruction of a responsible person.
> Only use the device as intended.

4 Intended use

The Marine Air Digital Elite control is a microcontroller-based unit designed for use with any chilled water air conditioning system as long as its control box is equipped with a Unity control board or a Passport I/O control board. The Marine Air Digital Elite control is designed to regulate the temperature in closed living or working compartments on boats.

This product is only suitable for the intended purpose and application in accordance with these instructions.

This manual provides information that is necessary for proper installation and/or operation of the product. Poor installation and/or improper operation or maintenance will result in unsatisfactory performance and a possible failure.

The manufacturer accepts no liability for any injury or damage to the product resulting from:

- Incorrect installation, assembly or connection, including excess voltage
- Incorrect maintenance or use of spare parts other than original spare parts provided by the manufacturer

- Alterations to the product without express permission from the manufacturer
- Use for purposes other than those described in this manual

Dometic reserves the right to change product appearance and product specifications.

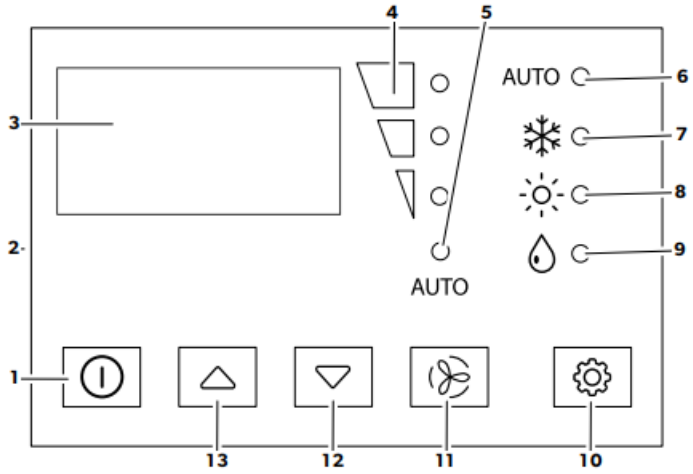
5 Operating the system

NOTE

If your air conditioner has a Shaded-Pole (SP) fan motor instead of a Split-Capacitor (SC) High-Velocity (HV) fan motor, you **must** program “SP” into parameter P-14 before operating the equipment. Refer to Changing parameters on page 5 to find out how to change the parameter setting.

5.1 Input and indicator elements

[1]



1. Power button
2. Temperature sensor
3. Digital display
4. Manual fan indicators (high, medium, low)
5. Auto fan indicator
6. Auto mode indicator
7. Cool mode indicator
8. Heat mode indicator
9. Moisture mode indicator
10. Mode button
11. Fan button
12. Down button - lower temperature set point
13. Up button - raise temperature set point

5.2 Basic operation

Table 1: Modes of operation

Mode	Explanation
Off mode	When the control is in off mode, all control outputs are turned off. The program mode can only be accessed from the off mode.
On mode	When the control is in on mode, the system runs according to the settings shown on the display. When the system is switched on, the settings and parameters resume based on those last stored when the unit was operating.
Automatic mode	In automatic mode the cabin temperature is maintained within a range of ±1.1 °C (2 °F) of the set point temperature by default. This set point temperature differential can be reduced to ±0.55 °C (1 °F). If the ambient temperature rises above the set point, the system starts cooling. If the ambient temperature drops below the set point, the system starts heating. In order for the system to switch from heating to cooling or from cooling to heating, the temperature has to rise or fall by double the set point temperature differential.
Cool mode	If the ambient temperature rises above the set point, the system starts cooling. There will be no heating while cool mode is active.
Heat mode	If the ambient temperature drops below the set point, the system starts heating. There will be no cooling while heat mode is active.
Moisture mode	Every four hours the system starts the fan to circulate the air for 30 minutes. After that, a cooling cycle is started until the room temperature is cooled down by 1.1 °C (2 °F) or until the cooling cycle has run for one hour. Starting with software revision B23, when in moisture mode, the system will also prevent the temperature from falling below a minimum temperature. The default setting for this minimum temperature is 10°C (50°F). The minimum temperature can be changed within the range of 4.4°C (39.9°F) to 23.9°C (75.0°F).

Programmode	The operating parameters can be adjusted for an efficient operation of the system within any installation.

Table 2: Fan modes

Mode	Explanation
Automatic fan mode	The system chooses between the three available fan speeds based on the temperature differential between room temperature and set point.
Manual fan mode	The user can choose the desired fan speed between the three available fan speeds.
Fan-only mode	The fan operates for air circulation when no cooling or heating is desired.
Cycled fan operation	The fan only operates during the heating or cooling cycles. When used with an optional electric heater, the fan remains on for four minutes after the heater cycles off.
Continuous fan operation	The fan operates continuously as long as the system is in on mode.

Table 3: Buttons

Symbol in Fig. on page 3	Name	Explanation
	Power button	Switch between on and off mode.
	Up button	Increase the set point temperature by one degree or change setting in programming mode.
	Down button	Decrease the set point temperature by one degree or change setting in programming mode.
	Fan button	Switch between automatic fan mode and the three manual fan speeds.
	Mode button	Select the operating mode when the system is in on mode.

Table 4: Mode indicators

Symbol in Fig. on page 3	Name	Explanation
AUTO	Automatic mode	In automatic mode this LED is lit as well as either the heat mode LED or cool mode LED, depending on whether the system is in a cooling or heating cycle with the water valve opened.
❄	Cool mode	The system is in cool mode or in a cooling cycle while automatic mode is active.
☼	Heat mode	The system is in heat mode or in a heating cycle while automatic mode is active.
💧	Moisture mode	The system is in moisture mode.

Table 5: Fan indicators

Symbol in FIG	Name	Explanation
	Manual fan mode	The fan speed bars show the fan speed: • Upper bar: maximum fan speed • Middle bar: medium fan speed • Bottom bar: minimum fan speed.
AUTO	Automatic fan mode	The fan speed is chosen automatically based on temperature differential .

5.3 Changing system modes

5.3.1 Changing between on and off mode

> Press ⏻ to change between on and off mode.
v In on mode, the display shows the inside air temperature.

5.3.2 Selecting operating mode

1. Make sure the system is in on mode.
2. Press ⚙ until the LED next to the desired operating mode is lit.

v The operating mode is changed.

5.4 Changing fan settings

5.4.1 Changing between automatic and manual mode

The user can choose between four operating settings:

- Automatic
- Low speed fan
- Medium speed fan

- High speed fan

> Press to choose automatic fan operation or one of the three manual fan speeds.

v The fan indicator marks the current operating setting.

5.4.2 Changing between cycled and continuous fan operation

> Press and hold for 5 seconds to change the setting.

v The display shows the new setting by displaying “CYC” for cycled or “CON” for continuous fan operation.

5.5 Display functions

5.5.1 Show the set point temperature

NOTE

Each time or is pressed, the set point temperature increases or decreases by 1 degree.

> Press or .

v The display shows the set point temperature for 5 seconds before the display changes back to the inside air temperature.

5.5.2 Show outside air temperature

NOTE

The outside air temperature can only be displayed if the optional outside air sensor is installed.

1. Make sure that the system is in on mode.
2. Press the and simultaneously.

v The display shows the outside air temperature.

5.5.3 Show chilled-water-inlet temperature

NOTE

The chilled-water-inlet temperature can only be displayed if the optional water inlet sensor is installed.

1. Make sure that the system is in on mode.
2. Simultaneously press and .

v The display shows the chilled-water-inlet temperature.

5.5.4 Show water temperature

1. Make sure that the system is in on mode.
2. Simultaneously press and .

v The display shows the water temperature.

5.6 Lock unlock keypad

NOTE

For software revisions B28 and newer an exception for the keypad lock has been added. The key combination of the ⏻ and ▽ to display the chilled-water-inlet temperature can be used even if the keypad lock is active.

> Simultaneously press △, ▽ and ✣ to toggle the keypad lock on or off.
v The display shows “LC”, when the keypad has been locked, or “UL”, when the keypad has been unlocked.

5.7 Changing the set point temperature

1. Press △ or ▽ once to display the set point temperature.

2. While the set point temperature is displayed press and hold △ or ▽ to increase or decrease the set point temperature.

3. To make finer adjustments press △ or ▽ G repeatedly to increase or decrease the set point temperature by 0.55 °C (1 °F) every time the button is pressed.
v The new set point temperature is shown for 5 seconds before the display changes back to the inside air temperature.

6 Programming the control unit

6.1 Entering program mode

1. Make sure the system is in off mode.
2. Press ⚙.
3. Press △.
4. Press ▽.
5. Press ⚙.

v The display alternates between “P-1” and “95” (or a different number between “35” and “95”). This means the system is in program mode and the first parameter “P-1” can be changed.

6.2 Exiting program mode

If no button is pressed for 50 seconds, the system will exit program mode automatically. Press ⏻ to change back to off mode without waiting for 50 seconds.

6.3 Identifying the software version

Some software functions and programmable parameters are only available for specific software versions. You should therefore identify the software version of your control unit before starting to program it.

1. Enter program mode.
v The display alternates between “P-1” and “95” (or a different number between “35” and “95”).
2. Press ⏻.
v The software version (e.g. “B23”) is displayed for 1 second before the system changes back to off mode.

6.4 Changing parameters

1. Make sure the system is in program mode. (In program mode the parameter number (e.g. P-1) and the parameter setting are displayed alternately.)
2. Use  to increase the parameter number or use button IMG to decrease the parameter number until you reach the parameter you want to change.
3. Use  and  to change the parameter setting.
4. Repeat these steps until all parameters have the desired settings.

v The parameter settings have been changed. You can now proceed by exiting program mode (Exiting program mode on page 5) or by saving the settings as new default settings (Handling default settings on page 6).

6.5 Handling default settings

The system is delivered with the factory default settings listed in the table (Parameter overview on page 6).

You can adapt these settings to your system configuration and set custom default values.
Note the custom default settings in the column “Custom”.

6.5.1 Memorizing new program parameters

NOTE

To return to the factory default settings, reset the parameter settings listed in Parameter overview on page 6 manually. Then save the settings as described below.

1. Make sure the system is in program mode. (In program mode a parameter number (e.g. P-1) and the parameter settings are displayed alternately.)
2. Make all the changes you want to save as new default settings.
3. Simultaneously press buttons  and  .

v The current parameter settings are memorized as new default settings. The system exits program mode.

6.5.2 Restoring memorized default settings

NOTE

To return to the factory default settings, reset the parameter settings listed in Parameter overview on page 6 manually. Then save the settings as described below.

1. Make sure the system is in program mode (Entering program mode on page 5).
2. Select P-15 (Changing parameters on page 5).
3. Change the parameter setting to “rSt”.
4. Press while “rSt” is displayed.

v The last memorized default settings are restored. The system exits program mode and P-15 is set back to “nor” again.

6.6 Parameter overview

No.	Description	Factory Default	Range

P-1	High fan speed limit	95	56 – 95
			5 – 95 This feature is only available in softw are revision B24 and newer.
P-2	Low fan speed limit	50	30 – 75
P-3	Reserved for future use		
P-4	Temperature sensor calibration	Ambie nt tem p.	Measurement of ambient temperature can be raised or lowered by 5.5°C (10°F) Setting increments have to be entered in °F even if the P-10 setting has been changed t o °C.
P-5	Reserved for future use		
P-6	Reserved for future use		
P-7	Reserved for future use		
P-8	Reserved for future use		
P-9	Display brightness control	15	4 (dimmest) – 18 (brightest)
P-10	Temperatures in Fahrenheit or Celsius	F	F = Fahrenheit
			C = Celsius
P-11	Reserved for future use		
P-12	Reverse fan speeds during heat mode	rEF	nor = normal fan operation
			rEF = reversed fan in heat mode
P-13	Reverse-cycle heating or electric heat-only option ins talled	nor	nor = reverse-cycle heating
			ELE = electric heater installed
P			SC = Split Capacitor fan motor

-14	Fan-motor type: Split Capacitor or Shaded Pole	SC	SP = Shaded Pole fan motor
P-15	Reset memorized programming defaults	nor	rST = reset defaults nor = normal
P-16	Hydronic water valve forced open	nor	OPn = valve forced open nor = normal operation
P-17	Temperature differential	– 9.44 °C (15.0°F)	2.8°C (37.0°F) … 13.9°C (57.0°F) Setting increments have to be entered in °F even if the P-10 setting has been changed to °C.
P-18	Air filter cleaning/replacement timer setting (x10 hours)	0	0 = timer disabled 10 – 250 (100 – 2500 hours)
P-19	Air filter cleaning/replacement timer setting (x10 hours) and reset This feature is only available in software revision A15 and newer.	0	Displays the elapsed time (in hours x10) since the timer was started or reset. The setting can only be reset to 0.
P-20	CAN-bus unit ID This feature is only available in software revision A16 and newer.	0	0 – 255 Each control on a CAN-bus network must have a unique Unit ID.
P-21	CAN-bus group ID This feature is only available in software revision A16 and newer.	0	0 – 255 (The address for the control’s CAN bus network group should be different from any CAN-bus Unit ID.
P-22	Volage calibration	AC voltage	Adjust to match the accurate voltage reading
P-23	Set point temperature differential This feature is only available in software revision. B24 and newer.	2	1 = 0.55°C (33.0°F) differential 2 = 1.1°C (34.0°F) differential
P-24	Moisture mode minimum temperature This feature is only available in software revision. B24 and newer.	10°C (50°F)	4.4°C (39.9°F) … 23.9°C (75.0°F) Setting increments have to be entered in °F even if the P-10 setting has been changed to °C.

P-25	Auto fan speed temperature differential This feature is only available in software revision B24 and newer.	1.1°C (34.0°F)	0.55°C (33.0°F) … 1.67°C (35.0°F) Setting increments have to be entered in °F even if the P-10 setting has been changed to °C.
P-26	Supply air high temperature limit This feature is only available in software revision B24 and newer.	OFF	OFF
			35°C (95°F) … 60°C (140°F) in 5-degree steps Setting increments have to be entered in °F even if the P-10 setting has been changed to °C.

7 Disposal

Place the packaging material in the appropriate recycling waste bins, wherever possible. Consult a local recycling center or specialist dealer for details about how to dispose of the product in accordance with the applicable disposal regulations.

DOMETIC

dometic.com

YOUR LOCAL DEALER
dometic.com/dealer

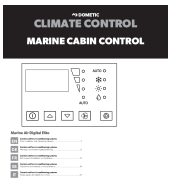
YOUR LOCAL SUPPORT
dometic.com/contact

YOUR LOCAL SALES OFFICE
dometic.com/sales-offices

A complete list of Dometic companies, which comprise the Dometic Group, can be found in the public filings of:
DOMETIC GROUP AB • Hemvarnsgatan 15 • SE-17154 Solna • Sweden

4445104394 2024-08-09

Documents / Resources

	**DOMETIC Control Unit for Air Conditioning System** [pdf] User Manual SIO_4445104394_INT5, LT_2024-08-09, Control Unit for Air Conditioning System, Unit for Air Conditioning System, Air Conditioning System, Conditioning System, System

References

- **User Manual**