



About AGEON



Ageon Electronic Controls is a **Brazilian company** that, for more than two decades, has been **manufacturing electronic controls** for the refrigeration, heating, air conditioning, fitness, and industrial automation industries. Always demonstrating the capacity **for innovation and a commitment to excellence** in its activities, the company understands that as important as offering **reliable products** is providing **quality services** to its consumers.

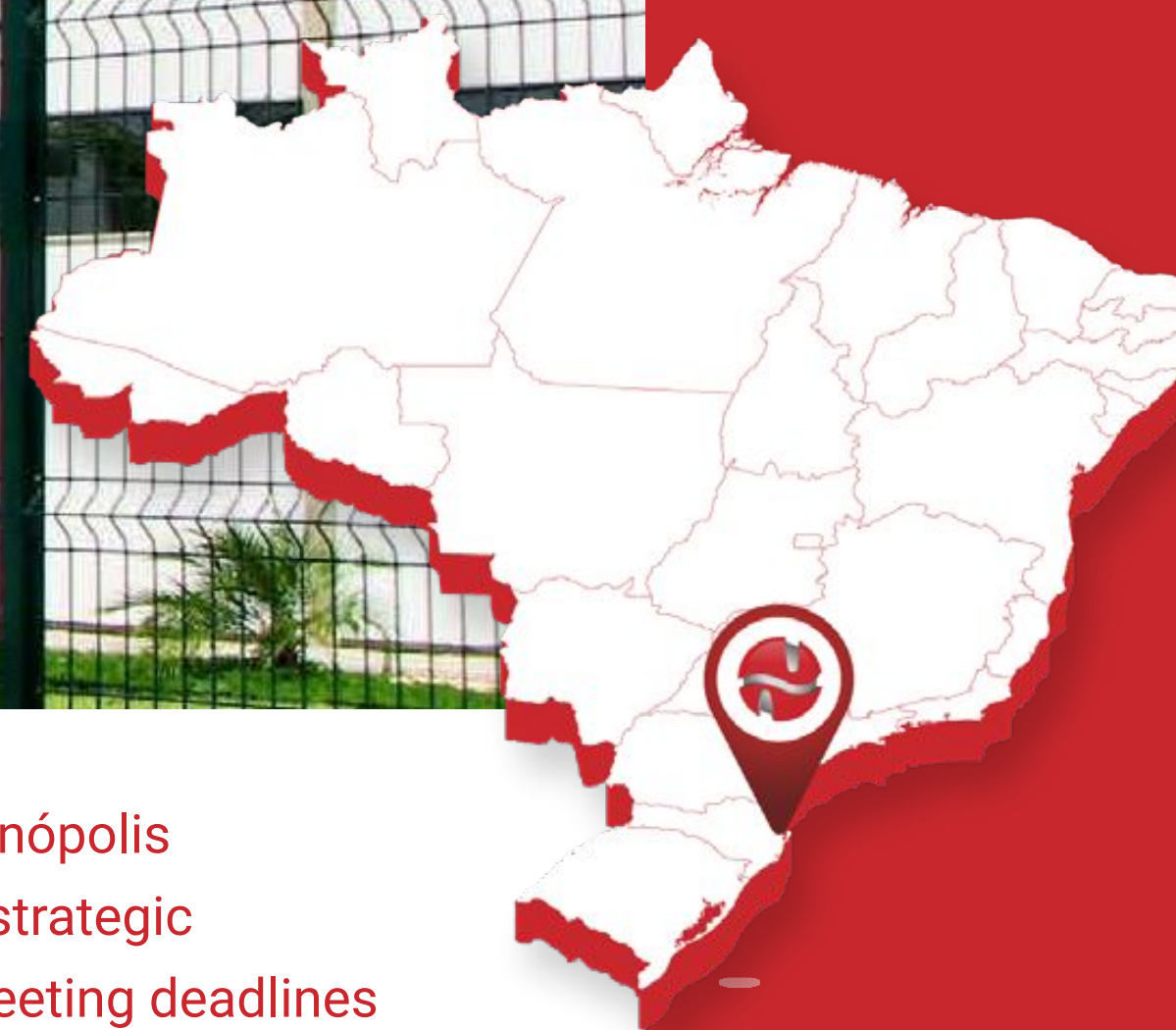
Ageon has a factory-direct technical support service staffed by qualified professionals capable of **assisting customers** in various situations. Not to mention the ongoing investments in research and **development of new products** and the distribution policy that provides **convenience, flexibility, and delivery assurance to manufacturers, distributors, and retailers.**

Ageon Electronic Controls

Palhoça / SC - Brazil



Strategic location



Ageon is strategically positioned in a vital industrial center in Palhoça, Florianópolis metropolitan area, located in an important national foreign trade zone. This strategic positioning ensures efficient logistics, allowing us to consistently excel in meeting deadlines and ensuring timely deliveries. Explore Ageon and get into a world of cutting-edge solutions for temperature control and automation. Prepare to be impressed!



Practical **Guide**

Practical Guide

Temperature Controller

BLACK LINE



What is the

BLACK

LINE



The temperature controllers in the Black Line have been developed to combine design and high performance. In addition to their modern and sophisticated appearance, the Black Line controllers bring improvements that simplify both their installation and usage.



Practical, stylish, and easy to use



Design

modern and elegant



Attachment

using screws or clips



Compatible

With FastKey
programming key



Exclusive frontal panel

With 6 keys



Extra functions

Such as Standby and
Economic Mode



Conectivity

Cowith the ArcSys monitoring
system

Main applications

Versatility is one of the characteristics of the Black Line controllers. Therefore, Ageon has developed the Black Line with different models of controllers that can be applied in:

- / Wine cellars*
- / Refrigerated counters*
- / Freezer rooms*
- / Brewery equipment*
- / Ovens*
- / Beverage displays*
- / Pasteurizers*
- / Milk coolers*



Connectivity with **ArcSys** allows **online monitoring** of the Black Line temperature controllers through a **computer or smartphone connected to the internet**. Explore the ArcSys monitoring system for more details.

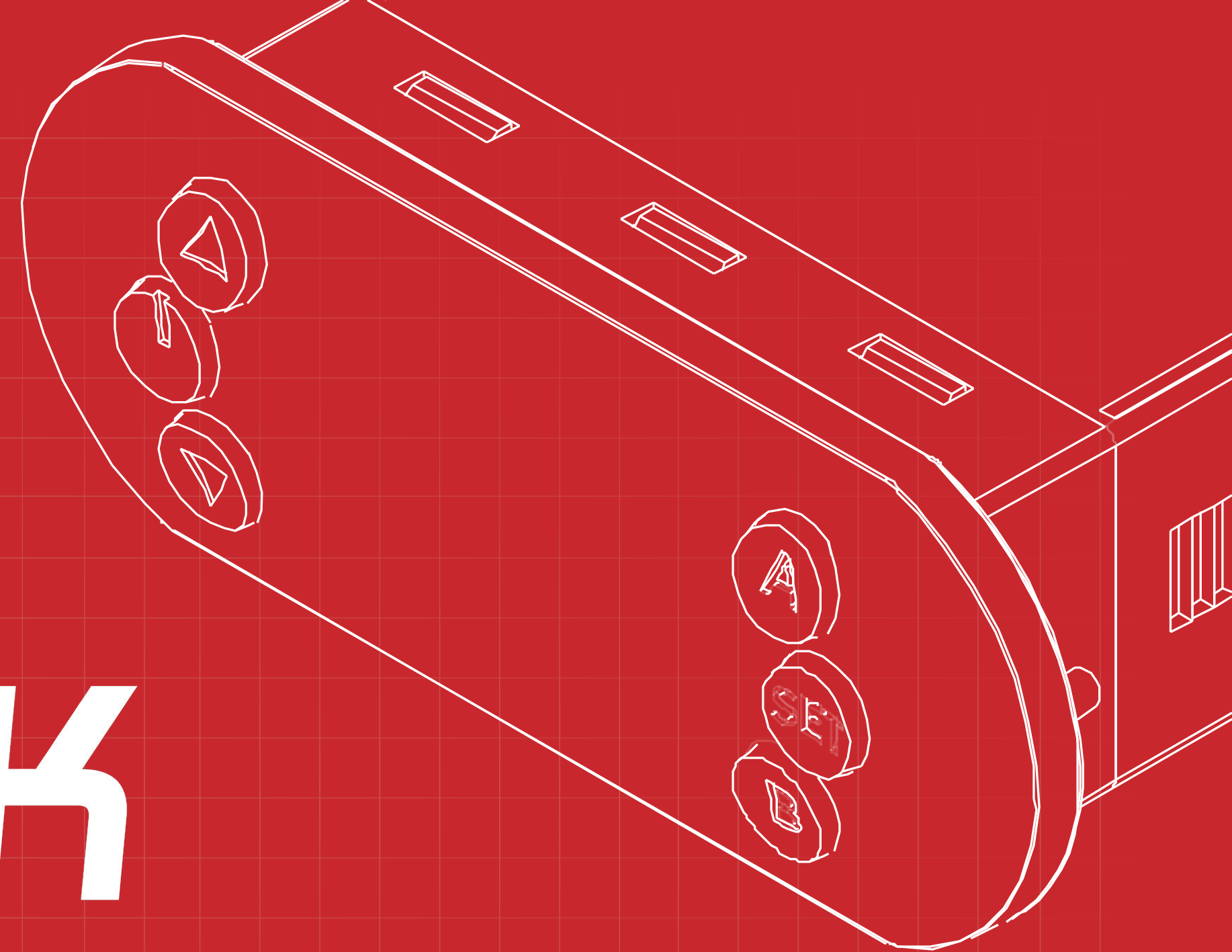




Advantages and Functions

BLACK LINE

You already know that quality is synonymous with Ageon controllers. But beyond the characteristics related to aesthetics, the Black Line brings important advantages for those working with temperature controllers for heating or cooling.



Advantages

Differentiated design, modern and elegant

One of the main differentiators of the Black Line is its sophisticated aesthetics. The design of these controllers enhances the product where it is applied, especially in commercial environments.

More Keys, More convenience

The Black Line controllers feature a panel with 6 keys, making both configuration and use of the device easier.

Screw or clip mounting

The two mounting options for Black Line controllers allow easy installation, even in applications where access to the back of the controller is limited.



Extra Functions

Energy savings with **Economical Mode**

The Black Line models have the option to work with 'Economical Mode' function on, that reduces electricity consumption in refrigeration systems.

Keep control with **Standby mode**

Now it's possible to put your temperature controller in Standby mode. The device can be turned on or off without removing the power supply.

Thermostat or thermometer? **You decide!**

The Black Line controllers feature the Thermometer Mode function, allowing you to deactivate all outputs and use the product solely for temperature display.



COMPARISON

temperature controllers

BLACK

LINE

Model	Sensors	Outputs	Heating	Cooling	Temperature control	Other features	Main applications
A102	1	1	✓	✓	On-off	Natural defrosting	Wine cellars, beverage displays, refrigerated counters, brewery equipment, ovens, refrigerators, freezers, saunas, heated floors.
A103	2	2	✓	✓	On-off	Natural defrosting Forced defrosting Cyclic timer	Wine cellars, refrigerated counters, brewery equipment, charcuterie, ovens, two-stage systems, two-ambient independent control
A103 PID	1	2	✓	✗	PID	Cyclic timer	Egg incubators
A104	1	2	✗	✓	On-off	Voltage monitor Cyclic timer	Milk cooling tanks, refrigeration systems without defrosting
A106	2	3	✗	✓	On-off	Forced defrosting Digital input	Freezers, counters, cold rooms.
A108	2	1	✓	✗	On-off (diferential)	CDT	Solar heating systems, pools



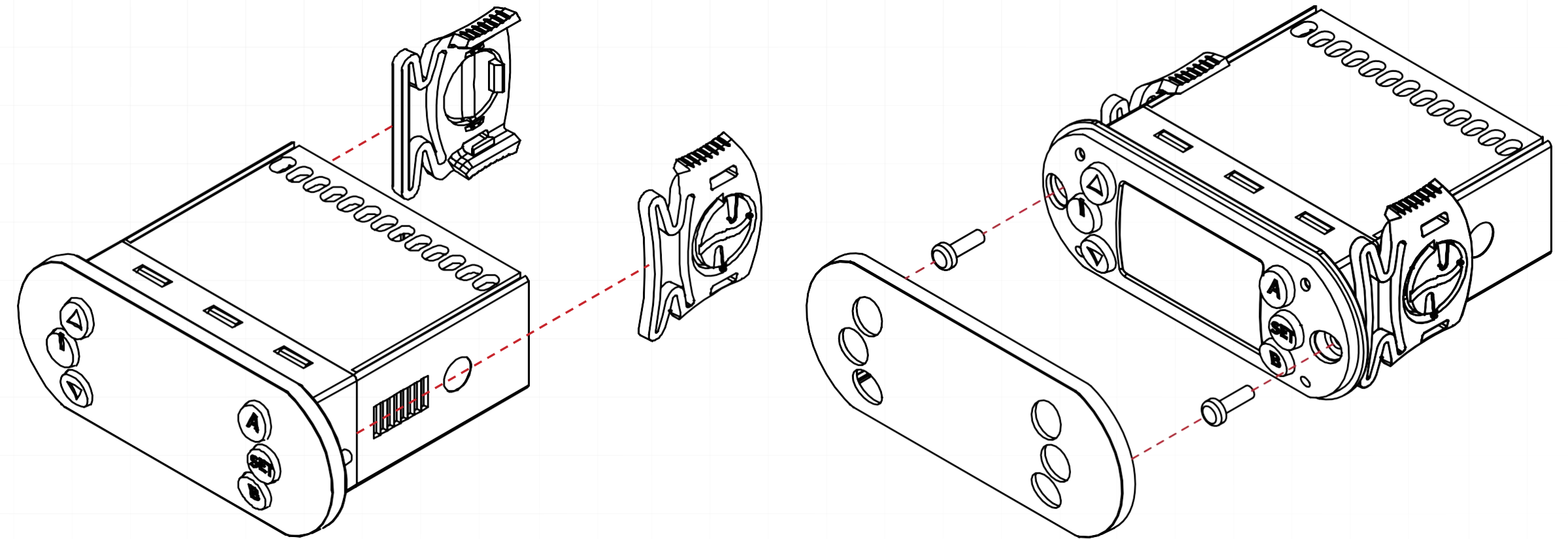
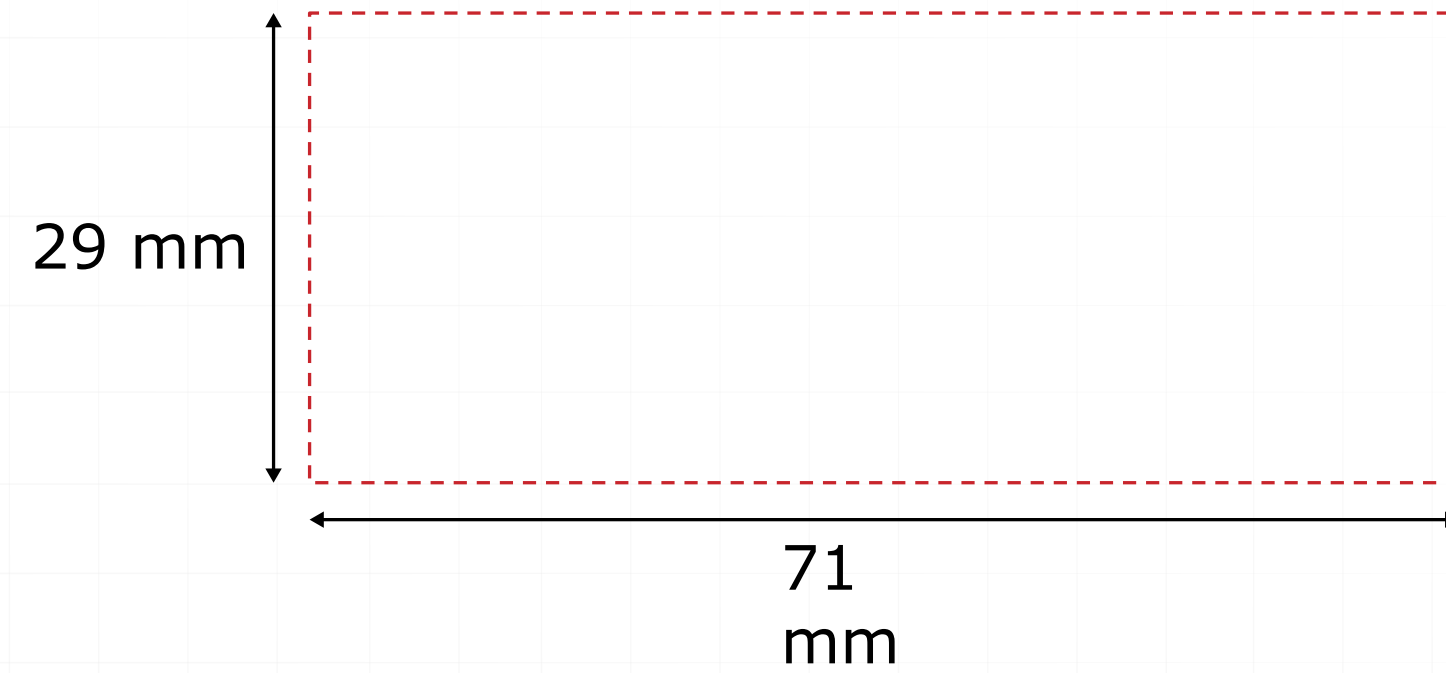
Using
BLACK
LINE

Ageon Black Line controllers stand out not only for their design but also for their practicality. Whether it is the technician performing the configuration or the end user who will actually use the product, the Black Line brings ease to every stage of usage.

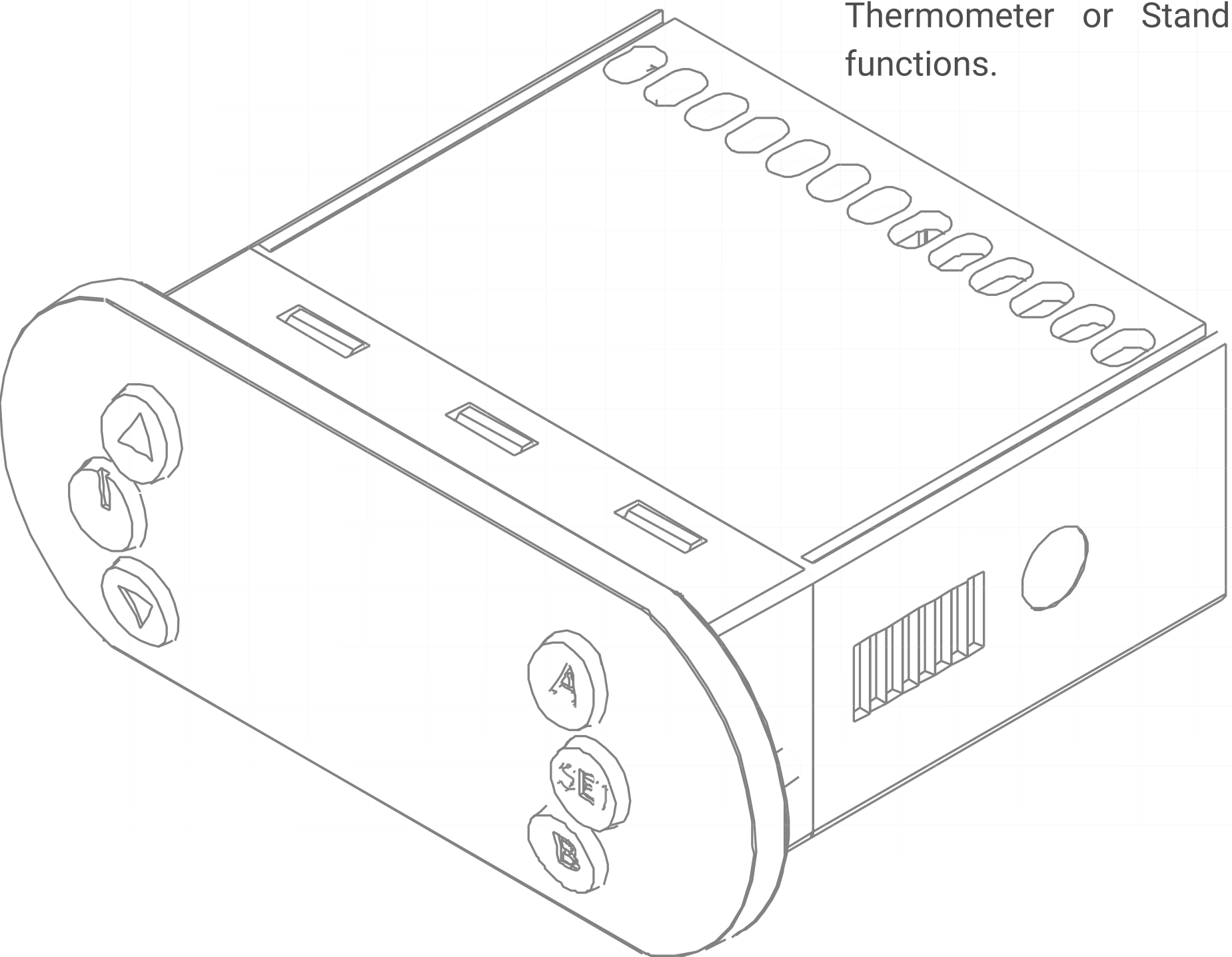
Installation

Install your Black Line controller in a rectangular cutout of **71 x 29 mm**. The device can be attached to the surface in two ways:

- By fitting the clips that come with the product onto the rear part and pressing it against the mounting surface.
- By removing the front face of the controller and using screws in the holes located at the ends.



Interface



• **Power Key:** Used for Thermometer or Standby functions.



• **"Up" key:** Increments values. When pressed simultaneously with the "Down" key for 4 seconds, enters or exits the parameter table.

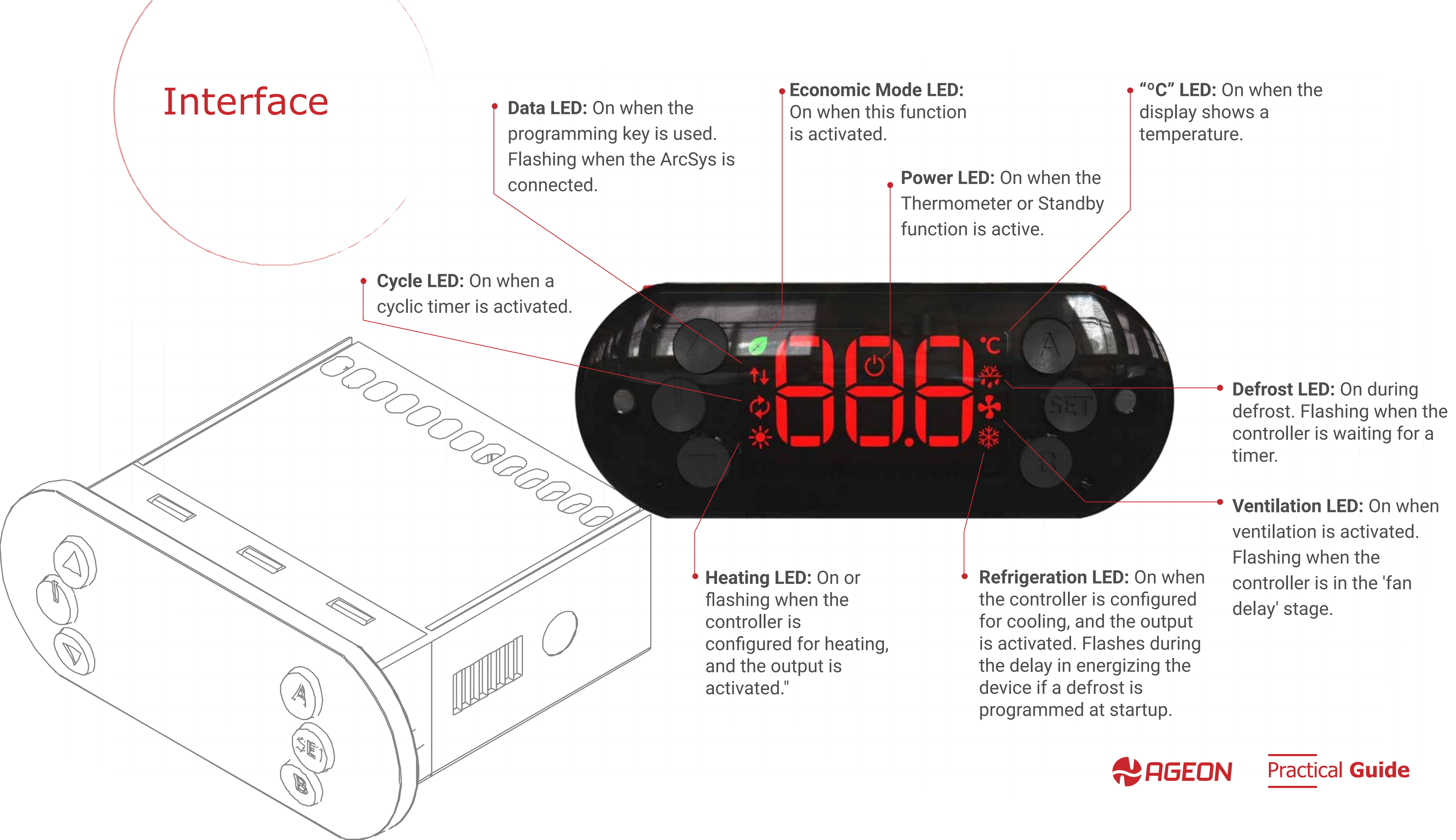
• **"A" Key:** Can be configured for various actions according to the model.

• **"Down" key:** Decrements values. When pressed simultaneously with the "Up" key for 4 seconds, enters or exits the parameter table.

• **"B" Key:** Can be configured for various actions according to the model.

• **"SET" Key:** Displays the setpoint on the home screen and values in the parameter table. When used in conjunction with the 'Up' and 'Down' keys, it adjusts values, either the setpoint or parameters.

Interface



Data LED: On when the programming key is used. Flashing when the ArcSys is connected.

Economic Mode LED: On when this function is activated.

“°C” LED: On when the display shows a temperature.

Cycle LED: On when a cyclic timer is activated.

Power LED: On when the Thermometer or Standby function is active.

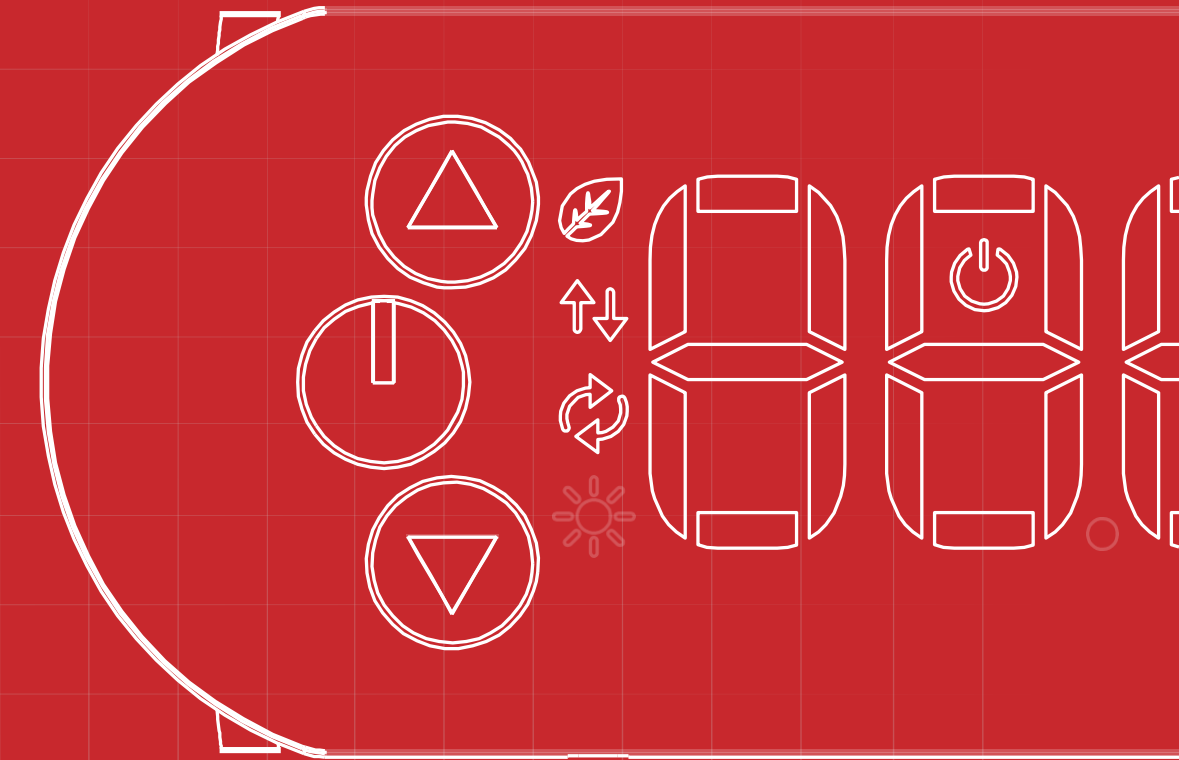
Defrost LED: On during defrost. Flashing when the controller is waiting for a timer.

Heating LED: On or flashing when the controller is configured for heating, and the output is activated."

Refrigeration LED: On when the controller is configured for cooling, and the output is activated. Flashes during the delay in energizing the device if a defrost is programmed at startup.

Ventilation LED: On when ventilation is activated. Flashing when the controller is in the 'fan delay' stage.

Usage

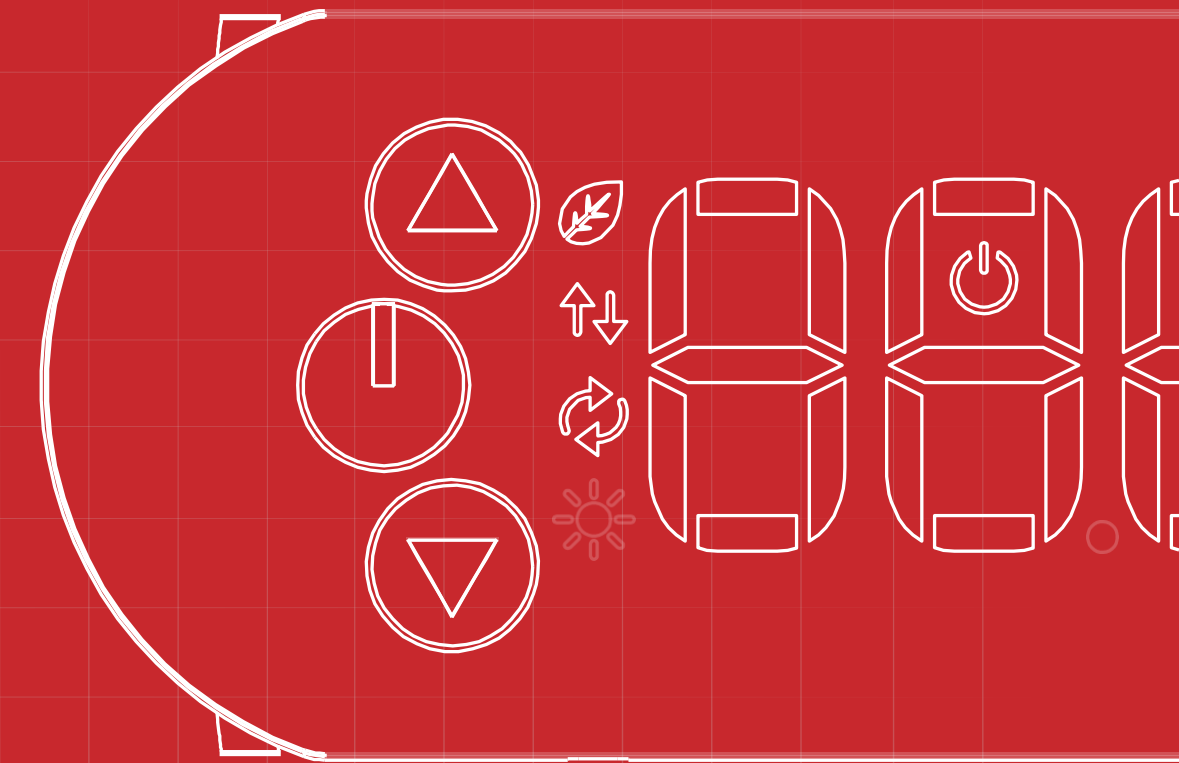


Setpoint adjustment

Setpoint is the most basic setting of a temperature controller. It defines the ideal temperature that the system should maintain. To change the Setpoint of Black Line controllers, simply follow the procedure below:

- 1** While the controller is displaying the temperature, press and hold the SET key until the current Setpoint is shown on the display.
- 2** Still holding the SET key, use the 'Up' and 'Down' keys to change the Setpoint value.
- 3** When the adjustments are complete, simply release all keys, and the controller will return to displaying the temperature on the display.

Usage

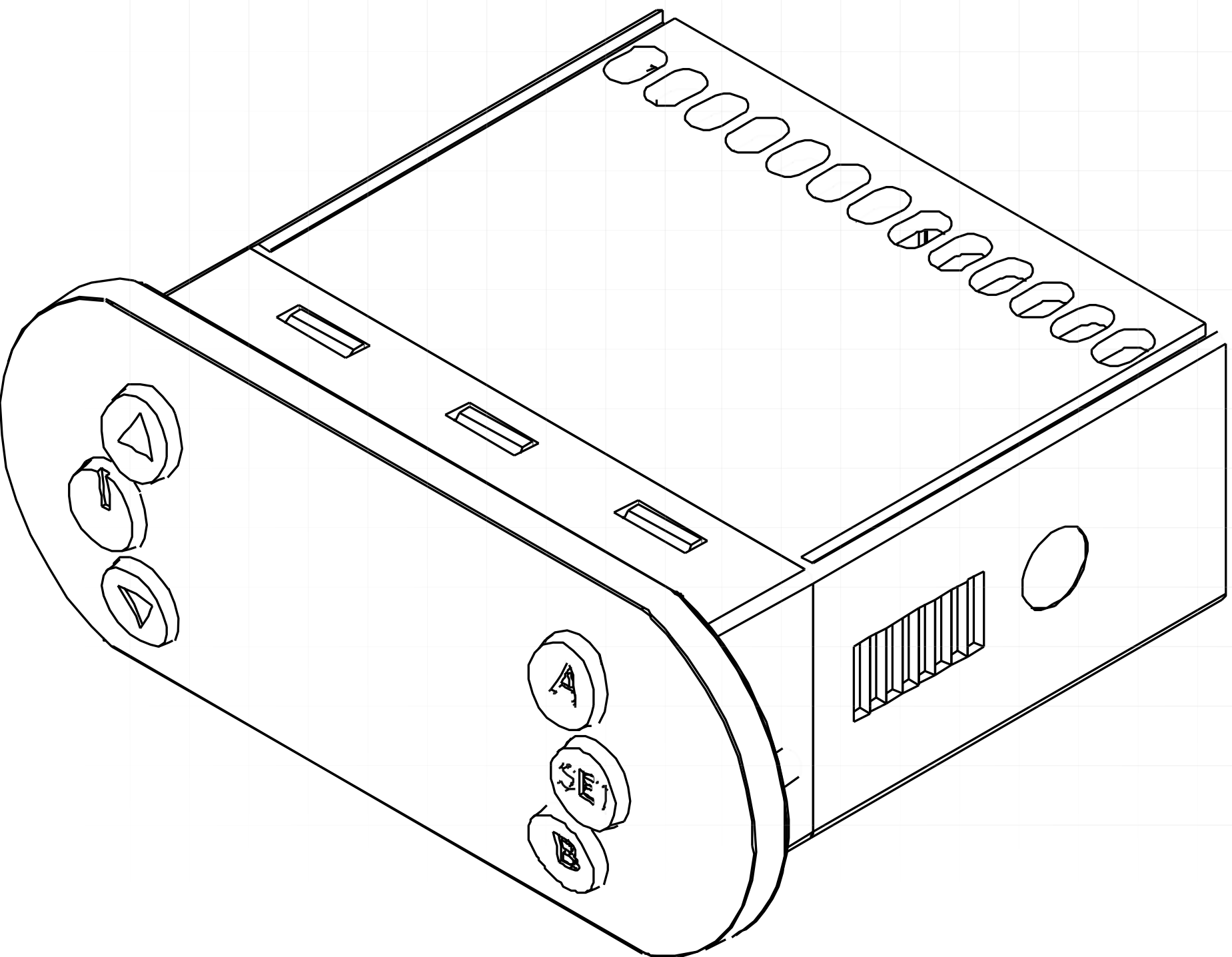


Parameters setting

With the exception of the Setpoint, all parameters of the Black Line controllers require an access code for modification. By default, the access code for Ageon controllers is **28**. To access the parameter list, simply follow the steps below:

- 1** With the device displaying the temperature, simultaneously press the 'Up' and 'Down' keys for about 4 seconds until the display shows 'Cd.' Release all keys.
- 2** Press the SET key, and while holding this key, use the 'Up' and 'Down' keys to adjust the value to 28. Once again, release all keys. The display will once again show the parameter 'Cd.'
- 3** Navigate between parameters using the 'Up' and 'Down' keys, and select the parameter you want to configure. With the parameter selected, press the 'Set' key, and with the 'Up' and 'Down' keys, adjust its value. Then, release the keys and navigate to the next parameter.
- 4** Repeat the process until all parameters are configured. After adjusting the parameters, simply release all keys and wait for the controller to display the temperature again.

Troubleshooting



Error codes

Error E1

Error E2

If the Black Line controller displays E1 or E2 on the display, it indicates an issue with the temperature sensor (sensor 1 or sensor 2, respectively). In these cases, please check:

- Ensure the sensor is properly connected to the device and correctly wired to the terminals.
- Confirm that the sensor is within the supported temperature range (-50°C to 100°C).
- Make sure the sensor is not pressed between cutting, perforating surfaces, or under excessive pressure.
- Ensure the sensor and the cable are in good condition, without damage such as oxidation, poorly made splices, among others.

Quick Relay Test

If the user wants to ensure that the relay outputs are working, a manual test can be performed. To enter test mode, access the parameter table and enter the value **77** in the 'Cd' parameter. Wait for the display to show 'tst' and press the 'B' button to test the relay.

Factory Parameters Reset

To reset your Black Line temperature controller to factory parameters, set the 'Cd' parameter to the value **97**, and then press the 'A' key.

Frequently asked questions

Can I splice the sensor cable?

Yes. The sensor cable can be extended as long as the splices are well insulated. It is recommended to install it away from electromagnetic sources such as power wires. Use PP-type wires 2x20 AWG or 0.5 mm² and respect the maximum limit of 50 meters for the sensor cable length.

Can the sensors be immersed in liquid?

We do not recommend immersing the sensors in any type of liquid, as this can compromise their functionality. We recommend using a thermowell for this purpose.

What happens to the display during defrosting?

The functioning of the display during defrosting can be set by the parameter 'd6'. The temperature before the defrosting can be blocked by a defined time or until the temperature before the cycle is measured again.

Can I connect loads directly to the relay output?

Yes, you can. However, the load used must not exceed the specified current for the relay and the maximum input current to ensure the device's longevity. Nevertheless, we recommend using a contactor or solid-state relay in cases where the current approaches the nominal limit.

Why is there so much temperature variation?

This can be caused by various factors, such as the sensor's positioning, power of a resistance or compressor, application structure, among others. In such cases, we recommend checking if the temperature sensor is correctly positioned. Another way to minimize variations is to set a fittable value for the 'FL' parameter, that defines the 'inertia' for the probe.

Other products



ArcSys *Monitoring system*

Have you ever imagined accessing your controllers quickly from your phone? Monitoring your equipment anytime, anywhere? ArcSys is Ageon's solution to simplify the temperature monitoring of your equipment over the internet. With it, you can generate reports, change parameters, and configure email alarms. All of this can be done directly from your computer or mobile device.



FastKey *Programming key*

FastKey enables you to replicate the configuration of one controller to others even more easily and quickly. You can store up to 9 different programs, edit parameters directly on the programming key, and transfer them to temperature controllers without the need to power them up. All of this through a single, compact, and comprehensive device.

Advantages of choosing **Ageon**



Open Channel with the Manufacturer

One of Ageon's main differentiators is its open communication channel with customers. This means that even end customers have easy access to the company, whether to ask questions, request information, training, or promotional materials.



Factory Technical Support

Ageon has a qualified team to provide direct factory technical support. Our support team is also ready to guide the end customer on the installation and use of our products. This way, the distributor can resell Ageon products with the confidence that their customer will not be left without assistance if they have any questions about the product.



2-Year Warranty

All products manufactured by Ageon undergo rigorous quality control, resulting in extremely low field problem rates. Nevertheless, all Ageon products come with a 2-year factory warranty, reaffirming our commitment to quality and customer satisfaction.

Advantages of choosing **Ageon**



Offering Quality Products

Ageon distributor provides quality products to its customers. Concern for quality is one of Ageon's main characteristics, reflected in our continuous improvement processes certified by the ISO 9001 seal. Offering Ageon products to your customers is a guarantee of satisfaction.



Referral Policy

Ageon has a referral and non-competition policy with its distributors. In other words, requests that do not fit our commercial policy are directed straight to the distributors in the region. This way, Ageon demonstrates its appreciation for the distributor, directing customers to their store.

Practical Guide

Frequency inverters

AG DRIVE



What is

AG DRIVE

AG Drive is Ageon's line of frequency inverters that has arrived to simplify automation.

Versatility is its middle name, as its devices can be applied in various automation segments.



Compact *and surprising*



Easy
configuration



Capacity
Motors up to 1 hp



Convenience
Remote HMI option



Power supply
Single or two-phase



Design
Compact and elegant



Communication
Modbus RTU / RS-485, and models with
voltage and current analog input



Main applications

Versatility is one of the most important characteristics of the AG Drive frequency inverters. Therefore, according to the specific requirements of each case, AG Drive can be applied in:

- / Agitators*
- / Winding machines*
- / Centrifuges*
- / Conveyor belts*
- / Labeling machines*
- / Extruders*
- / Snack machines*
- / Ice cream machines*
- / Milk coolers*
- / General-purpose machines*



The Modbus RTU communication employed in this line of inverters allows integration with PLCs and other machines, further facilitating automation."



Diferentials

Communication Modbus RTU / RS-485

Enables the integration with PLCs, slave function*, supervisory systems, and other equipment to further facilitate the automation of your system

Display Visualization in Hertz or RPM

The 4-digit display allows the visualization of the motor rotation in frequency (Hz) or rotations per minute (RPM) according to user preference.

Output Frequency up to 500 Hz

Allows the activation of three-phase motors with a frequency of up to 500 Hz, such as spindle motors, for example."



Diferentials

Designed for greater robustness and durability

The AG Drive line was designed for the industrial environment, using resistant materials from its silicone HMI to the electronic components inside.

Mounting with Screws or DIN Rail 35

Ideal for installation in control panels, AG Drive inverters can be quickly and easily mounted on DIN Rail 35 or with screws.



Identifying users' needs

What is the network power supply voltage?	What is the motor power supply?	What is the motor power?	What is the motor's rated current?	Suggested model
220 a 240 Vrms (single or two-phase)	220 V (three-phase)	0,5 hp	2,6 A	AG Drive Mini - XF2-05 AG Drive Pro - XF2-05
		1 hp	4.0 A	AG Drive Mini - XF2-10 AG Drive Pro - XF2-10
		2 hp	7,3 A	AG Drive Pro - XF2-20



COMPARISON

Frequency inverters



AG DRIVE MINI

AG DRIVE PRO

Technical specifications

	AG DRIVE MINI	AG DRIVE PRO
Output frequency	0 to 500 Hz	0 to 500 Hz
Analog input	✓	✓
Analog input signal	0 to 10V	0 to 10V, 0 to 20 mA ou 4 to 20 mA
Analog output	✗	✓
Analog output signal	✗	0 to 10V, 0 to 20 mA ou 4 to 20 mA
Modbus RTU Communication (RS-485)	✓ Requires adapter	✓
Available Powers	0.5 hp and 1.0 hp	0.5 hp, 1.0 hp, 2 hp and 5 hp
Digits on Display	4	4
Quick View (Hz, RPM, and A)	✓	✓
V/F Control	✓	✓
Quadratic Control	✗	✓

Functions and parameters

DC Braking	✗	✓
Band to be avoided	✗	✓
Inertia stop	✓	✓
Multi-step speed	0 to 500 Hz	0 to 500 Hz

Frequently asked questions

What is the torque/speed curve?

The torque/speed curve indicates how electric motors vary their torque in relation to speed. It is important to note that at low speeds, the applied torque tends to be lower than the nominal torque. In this regard, it is possible to adjust the torque compensation parameter (**P051**) to reduce the impacts of this operating condition.

What are the Main parameters?

AGEON inverters come with various parameters that allow users to configure them according to specific applications. However, some key parameters are important to review, such as:

- P11** - Ramp-up time;
- P12** - Ramp-down time;
- P23** - Motor frequency low limit;
- P24** - Motor frequency high limit;
- P51** - Overload current;
- P301** - Inverter output frequency setting;
- P302** - Inverter command mode selection.

Can I use Modbus communication?

AGEON inverters have the ability to be controlled via Modbus RTU. It's important to note that the AG DRIVE PRO series has native capability, while the AG DRIVE MINI series requires an adapter.

How can I control the inverter?

AGEON inverters have various control topologies, including through the frequency inverter panel, Modbus RTU communication, remote HMI, some on/off advanced/return topologies, and speed control via multispeed and potentiometer.

How may I define the ramps?

When defining startup and deceleration ramps, it is important to consider the inertia of the loads. In this regard, for larger inertias, acceleration/deceleration times should be defined to reduce undesirable increases in the inverter bus voltage.



Visit ageon.com.br

