Protection and monitoring relay

CBS-400B

INSTRUCTION MANUAL

(M257B01-03-24A)

CE


22
PAP

SAFETY PRECAUTIONS

Follow the warnings described in this manual with the symbols shown below.

DANGER
Warns of a risk, which could result in personal injury or material damage.

ATTENTION
Indicates that special attention should be paid to a specific point.

If you must handle the unit for its installation, start-up or maintenance, the following should be taken into consideration:

Incorrect handling or installation of the device may result in injury to personnel as well as damage to the device. In particular, handling with voltages applied may result in electric shock, which may cause death or serious injury to personnel. Defective installation or maintenance may also lead to the risk of fire.

Read the manual carefully prior to connecting the device. Follow all installation and maintenance instructions throughout the device's working life. Pay special attention to the installation standards of the National Electrical Code.

Refer to the instruction manual before using the device

In this manual, if the instructions marked with this symbol are not respected or carried out correctly, it can result in injury or damage to the device and / or installations.

CIRCUTOR S.A.U. reserves the right to modify features or the product manual without prior notification.

DISCLAIMER

CIRCUTOR S.A.U. reserves the right to make modifications to the device or the unit specifications set out in this instruction manual without prior notice.

CIRCUTOR S.A.U. on its web site, supplies its customers with the latest versions of the device specifications and the most updated manuals.

www.circutor.com

CIRCUTOR S.A.U. recommends using the original cables and accessories that are supplied with the device.

CONTENTS

REVISION LOG

Table 1: Revision log.

Date	Revision	Description
01/20	M257B01-03-19A	First Version
09/20	M257B01-03-20A	Changes in the following sections: 3.6
12/22	M257B01-03-22A	Changes in the following sections: 8.1.
09/23	M257B01-03-23A	Changes in the following sections: 8.1.
01/24	M257B01-03-24A	Changes in the following sections: 5.6.3. - 7.3.5.1. - 8.1. - Annex A

SYMBOLS

Table 2: Symbols.

Symbol	Description
CE	In accordance with the relevant European directive.
	Device covered by European Directive 2012/19/EC. At the end of its useful life, do not discard of the device in a household refuse bin. Follow local regulations on electronic equipment recycling.
⎓	Direct current.
~	Alternating current.

Note: *The images of the devices are for illustrative purposes only and may differ from the original device.*

1.- VERIFICATION UPON RECEPTION

Upon reception of the device check the following points:

a) The device meets the specifications described in your order.
b) The device has not suffered any damage during transport.
c) Perform an external visual inspection of the device prior to switching it on.
d) Check that it has been delivered with the following:

- An installation guide

> If any problem is noticed upon reception, immediately contact the transport company and/or **CIRCUTOR**'s after-sales service.

2 - PRODUCT DESCRIPTION

The **CBS-400B** is a type B earth leakage protection and monitoring device (IEC 60755) with 4 independent channels, compatible with the earth leakage transformers in the **WGB** product range, and includes adjustable prealarm leakage sensitivity and integrated RS-485 communications.

The device features:

- **Display** for viewing the parameters.
- **3 keys** to browse through the different screens and program the device.
- **4 independent channels** with their corresponding output relay.
- **Digital output** as a prealarm function.
- **Digital input** for external trip.
- **RS-485** communications.

The **WGB** are a range of electronic, type-B earth leakage protection and monitoring transformers (IEC 60755) to be used **with RGU-100B** and **CBS-400B** earth leakage protection and monitoring relays.

Circutor has 4 models, depending on the maximum current of the monitored circuit (**In**):

- ✓ **WGB-35,** for **In: 80 A**.
- ✓ **WGB-55** for **In: 160 A**.
- ✓ **WGB-80** for **In: 250 A**.
- ✓ **WGB-110 for In: 400 A**.

The transformers have:

- **6 LEDs** providing information about the transformer's status.
- **2 RJ45** connection and power supply ports.

3.- INSTALLATION OF THE DEVICE

3.1.- PRELIMINARY RECOMMENDATIONS

In order to use the device safely, personnel operating it must follow the safety measures that comply with the standards of the country where it is to be installed; operators must wear the required personal protective equipment (rubber gloves, approved facial protection and flame-resistant clothing) to prevent injuries from electric shock or arcs caused by exposure to current-carrying conductors, and they must heed the various warnings indicated in this instruction manual.

The **CBS-400B** device must be installed by authorised and qualified staff.

The power supply plug must be disconnected and measurement systems switched off before handling, altering the connections or replacing the device. It is dangerous to handle the device while it is powered.

Cables must always be kept in perfect condition to avoid accidents or injury to personnel or installations.

Restrict the operation of the device to the specified measurement category, voltage or current values.

The manufacturer of the device is not responsible for any damage resulting from failure by the user or installer to heed the warnings and/or recommendations set out in this manual, nor for damage resulting from the use of non-original products or accessories or those made by other manufacturers.

Do not use the device to take any measurements if an anomaly or malfunction is detected.

Check the surrounding environment before starting to take measurements. Do not take any measurements in hazardous or explosive environments.

Before carrying out maintenance, repair or handling of any of the device's connections, the device must be disconnected from all power sources, both from the device's own power supply and the measurement's.
Contact the after-sales service if you detect that the device is not working properly.

3.2.- INSTALLATION

When the device is on, its terminals, opening covers or removing elements may expose the user to parts that are hazardous to touch. Do not use the device until it is fully installed.

The device must be installed inside a medium or low voltage electric panel or enclosure, with DIN rail mounting (IEC 60715).

The device has a LED (**CPU**) that indicates voltage presence. Even in the case that the aforesaid LED is off, the user still needs to check the device is disconnected from any power supply.

The device must be connected to a power circuit protected by a fuse according to its power and consumption rating. It must be fitted with a circuit breaker or equivalent device to disconnect the device from the power supply.

3.3.- PANEL ADAPTER 72 x 72 mm

Note: *The 72 x 72 mm panel adapter is a separately sold accessory.*

CIRCUTOR has a panel adapter for **CBS-400B** devices so that it can be installed on 72 x 72 mm panels.

Figure 1 illustrates how the panel adapter is connected to a **CBS-400B**.

Before installing the adapter, the device must be disconnected from all power and measurement supplies.

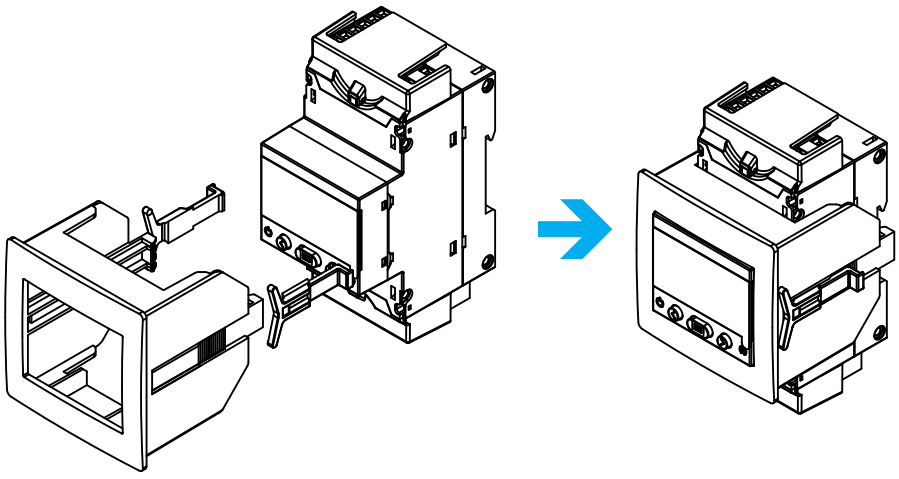


Figure 1: Installation of the panel adapter.

Table 3: Technical characteristics of the Panel Adapter.

Technical Specifications	
Protection degree	IP40
Enclosure	Self-extinguishing V0 plastic

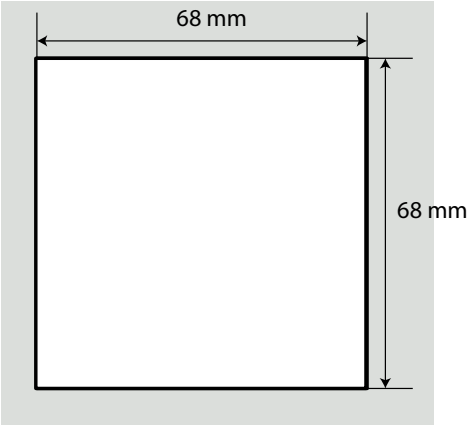


Figure 2: Cut in the panel.

3.4.- DEVICE TERMINALS

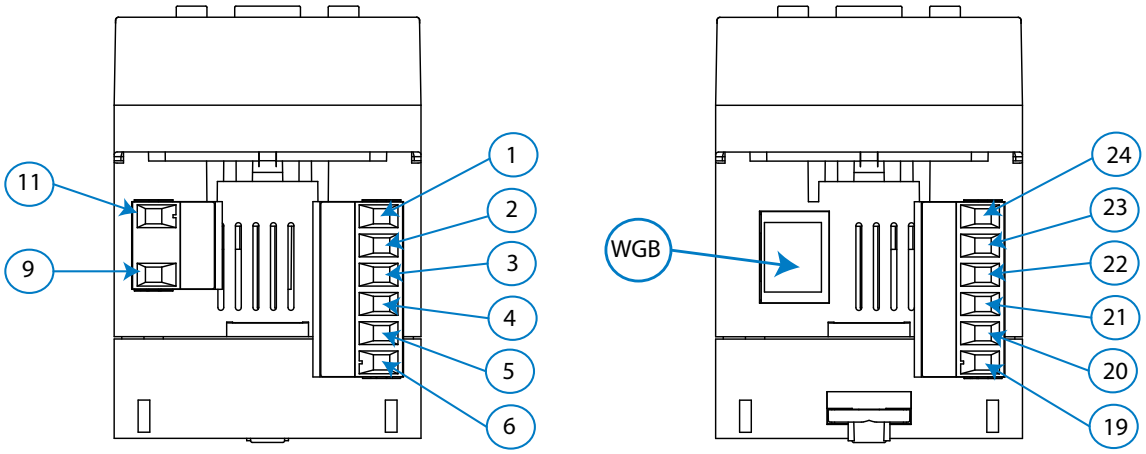


Figure 3: Terminals of the CBS-400B: Upper - Lower.

Table 4: List of CBS-400B terminals.

Device terminals	
9: A1 +, Power supply	**19: Prealarm,** Digital output (NO)
11: A2 -, Power supply	**20: Prealarm,** Digital output (Common)
1: R1, Output relay channel 1 (NO)	**21: TRIP,** Digital input for external trigger
2: R2, Output relay channel 2 (NO)	**22: GND** for RS-485 and Digital input **TRIP**
3: C1, Common output relay channel 1 and channel 2	**23: B-**, RS-485
4: R3, Output relay channel 3 (NO)	**24: A+**, RS-485
5: R4, Output relay channel 4 (NO)	**WGB:** transformer connection **WGB**
6: C2, Common output relay channel 3 and channel 4	

3.5.- WGB TRANSFORMERS

When the device is on, its terminals, opening covers or removing elements may expose the user to parts that are hazardous to touch. Do not use the device until it is fully installed.

The transformer is designed for wall-mounting or DIN-rail assembly with an accessory for installation.

The **WGB** is a feed-thru busbar type transformer, where the conductor cables to be measured must pass through the inner hole or window of the transformer.

3.5.1. PANEL INSTALLATION

For panel installation, 4 clamping clips, are provided with the transformer, see **Figure 4**.

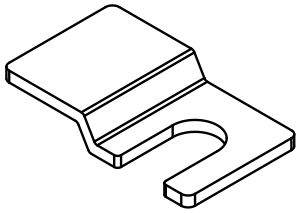


Figure 4: Clamping clip.

The clamping clips which must be installed on the **WGB** as shown in **Figure 5**.

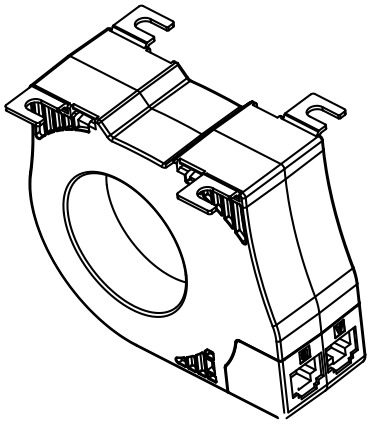


Figure 5: Position of the clamping clips.

3.5.2. INSTALLATION ON A DIN RAIL

For installation on a DIN rail, a support bracket is provided with the device, see **Figure 6**.

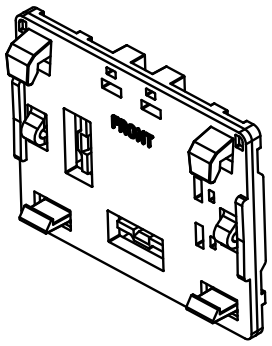


Figure 6: Support bracket.

The steps to ensure proper installation are:

1.- Attach the bracket to the DIN rail. Be sure the side marked FRONT is visible. The bracket can be installed in 2 ways, depending on how the **WGB** is to be positioned, **Figure 7**.

2.-Mount the **WGB** on the bracket, **Figure 7**.

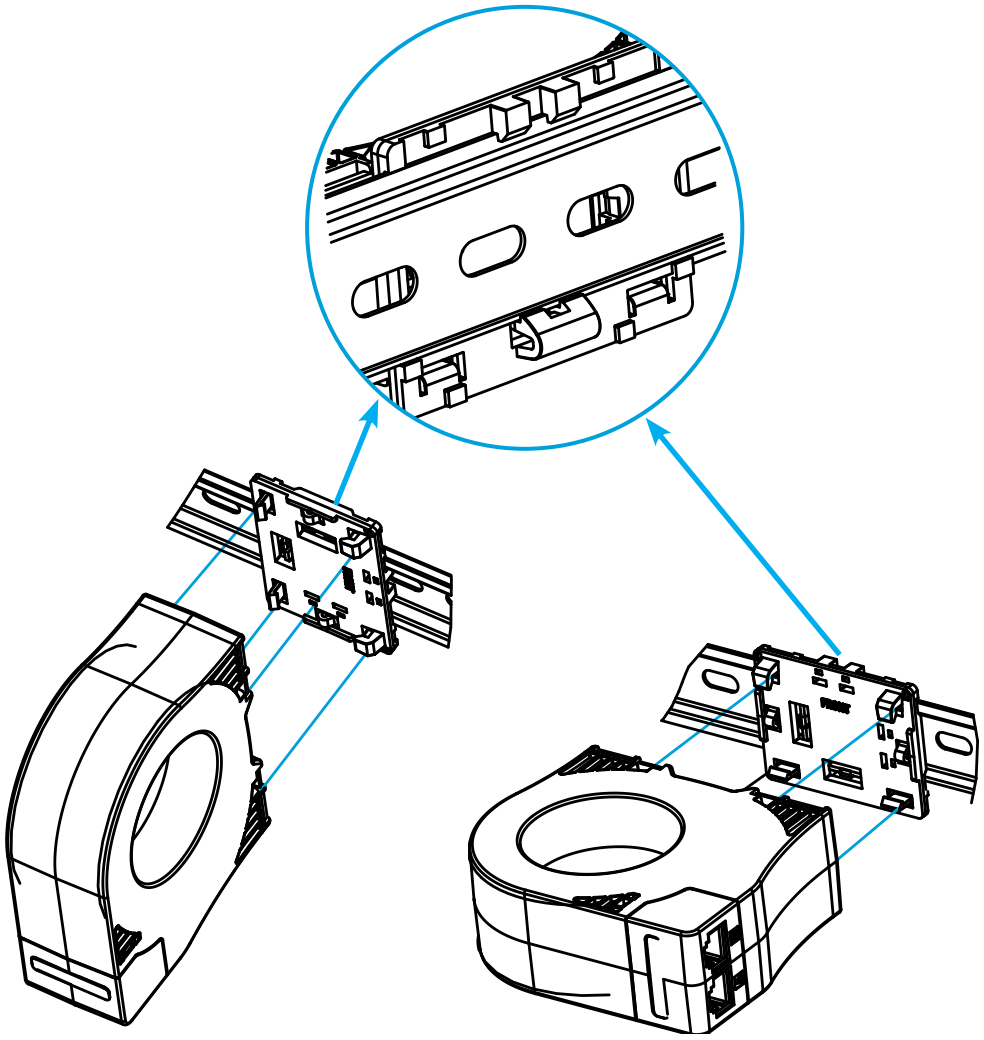


Figure 7: Installation on a DIN rail.

Note: *To remove the bracket from the DIN rail, use a screwdriver to pry it off,* **Figure 8**.

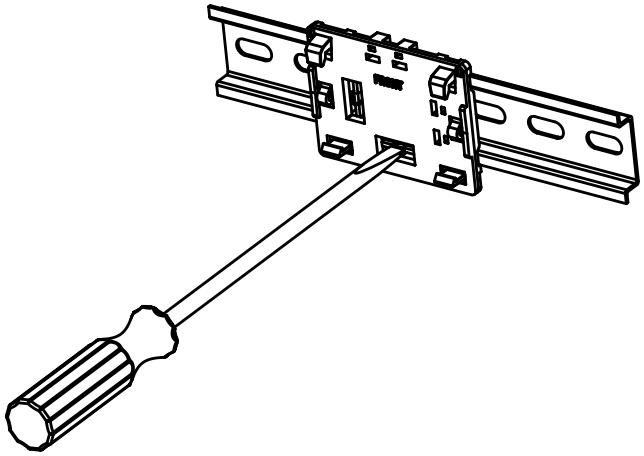


Figure 8: To remove the bracket use a screwdriver.

3.5.3. TRANSFORMER TERMINALS

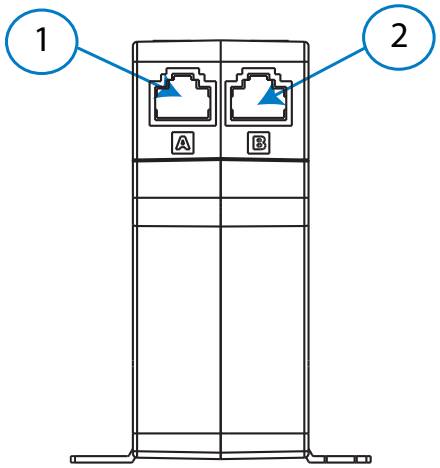


Figure 9: WGB terminals.

Table 5: List of WGB terminals

Device terminals	
1, 2	Connection terminals to the **CBS-400B** and to the rest of **WGB** transformers.

3.5.4. TRANSFORMER LEDs

WGB transformers have 6 indicating LEDs.

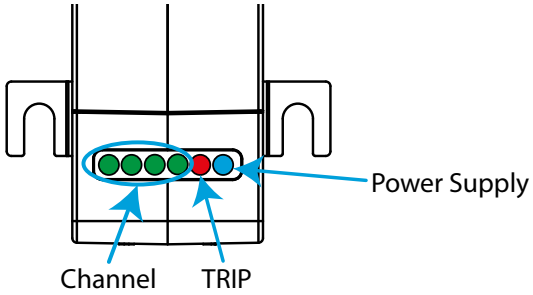


Figure 10: WGB transformer LEDs.

- **Power** (Blue color), indicates that the device is supplied power.

- **TRIP:** (Red color), indicates that a leakage current trip has occurred.
  (Red blinking), indicates that a prealarm has been generated.

- **Channel** (Green color), indicates the channel used for the **WGB**.

Table 6: Channel LEDs.

LEDs	Description	
Channel		Channel 1
		Channel 2
		Channel 3
		Channel 4

3.6.- CONNECTION DIAGRAMS

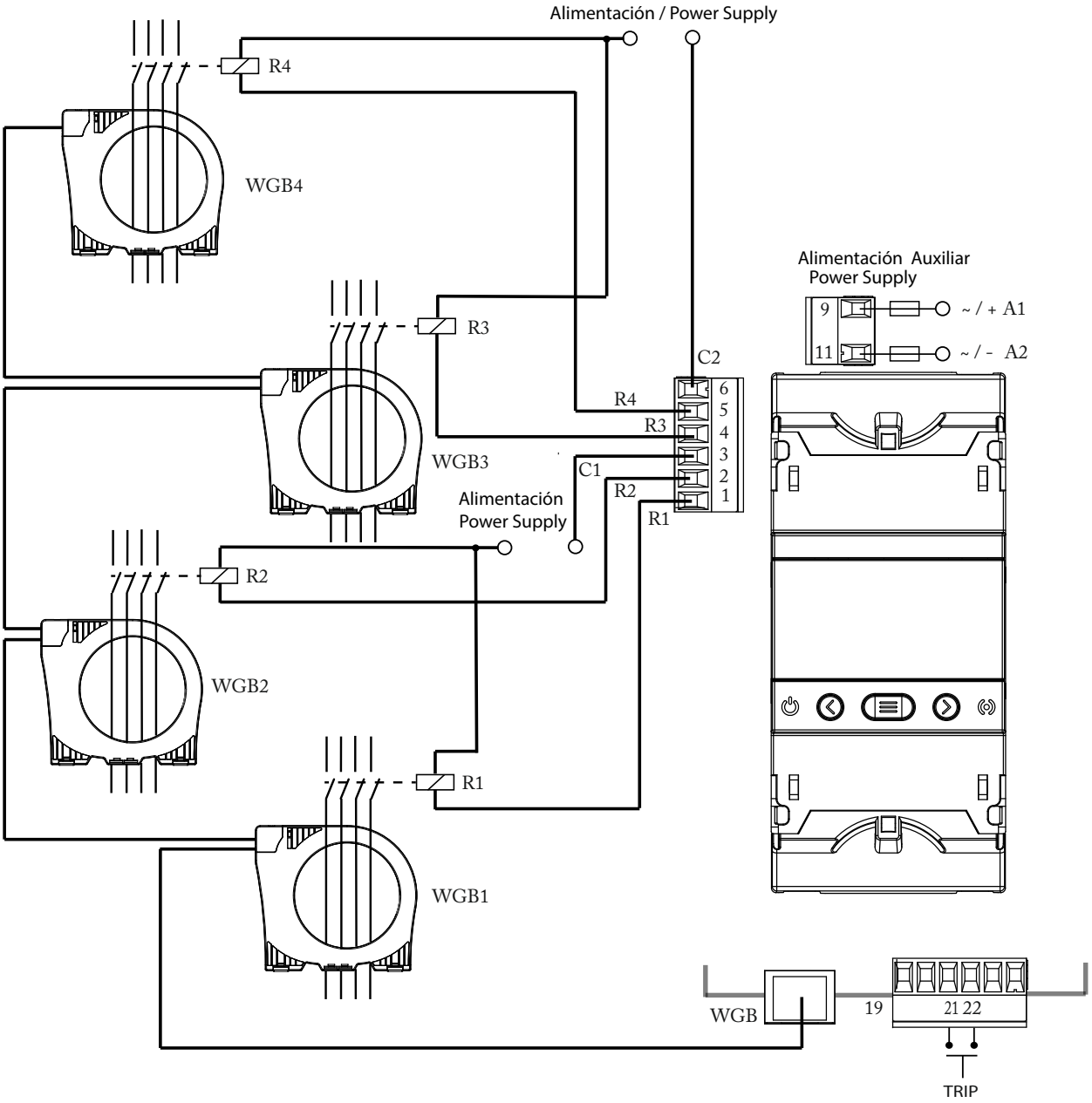


Figure 11: CBS-400B Connection diagram.

3.7.- INSTALLATION CONNECTIONS

All active conductors that supply the loads or part of the installation where protection is required must pass through the associated **WGB** transformers

For each of the channels to be monitored, connect the **WGB** transformer to the **CBS-400B** or to the next transformer in the installation, using the RJ45 cable, **Figure 12**.

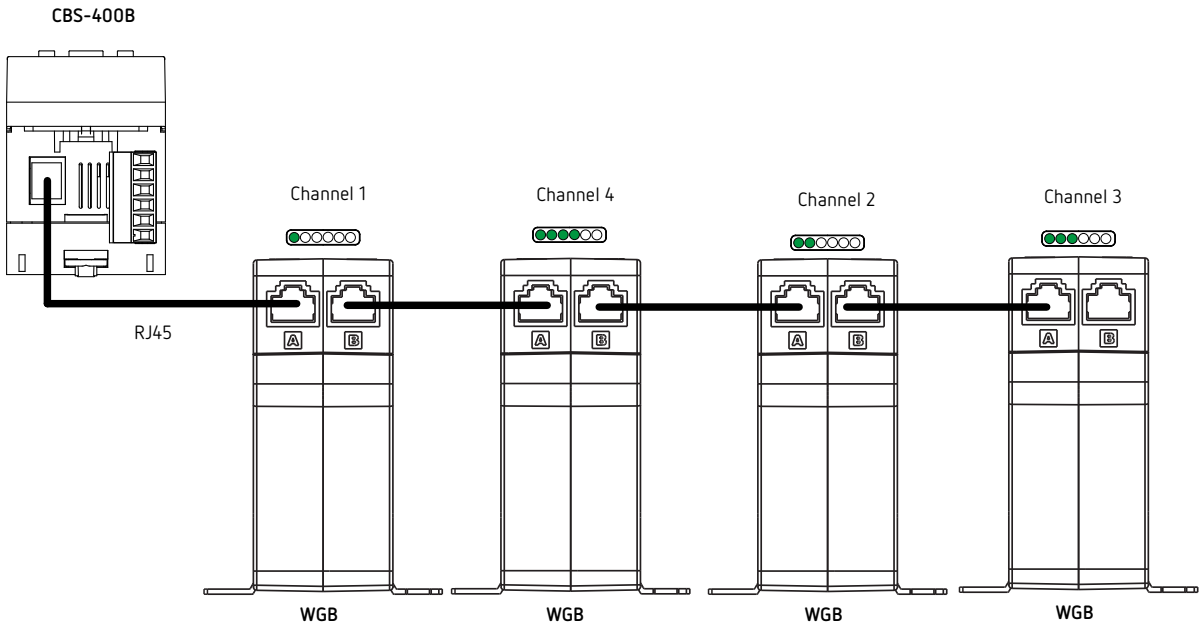


Figure 12: CBS-400B - WGB connection.

Note: *If a RJ45 connection cable other than the one supplied with the* ***WGB*** *is used, it must have a cross-section of 4 x 2 x AWG24/7. The maximum distance from the* ***CBS-400B*** *to the furthest* ***WGB*** *must be of 9 metres.*

The **CBS-400B** detects the transformers automatically, assigning each of them a specific channel.

Connect the **CBS-400B** output relays to each of the installed channels.

If the automatic channel connection carried out by the device does not match the installation carried out in the output relays, the numbering of the channels in the **CBS-400B** can be changed without modifying the installation (see ***"6.3 .- CHANNELS"***).

If the installation is modified and it involves new transformer, a replacement of the **WGB** ... the **CBS-400B** will detect this change and light the screens in yellow, see ***"5.2.- PROBLEMS OR CHANGES IN THE INSTALLATION".***

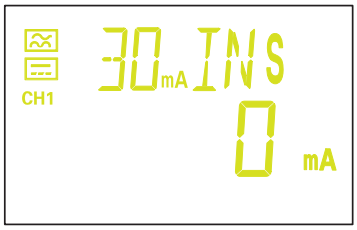


Figure 13: Change in the installation.

4.- OPERATION

4.1.- LED INDICATORS

The **CBS-400B** device has 2 LEDs:

- **CPU**, white color, indicates that the device is on.

- **ALARM**,

Table 7: ALARM LED.

LED	Description
ALARM	**Red blinking:**
	Indicates that a prealarm has been generated in one of the channels.
	Red ON:
	Indicates that one of the channels is tripped.

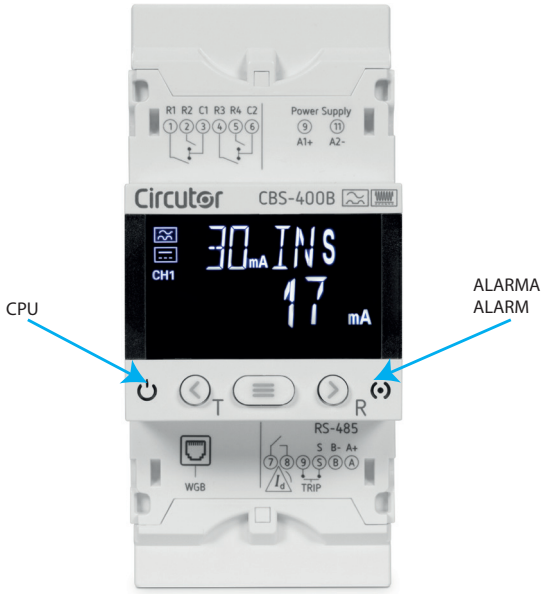


Figure 14: CBS-400B LED indicators.

4.2.- DISPLAY

The device has a backlit LCD display that is split into two areas (**Figure 15**):

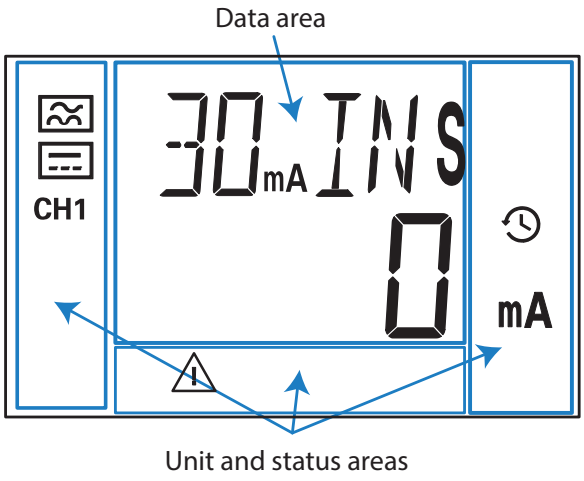


Figure 15: CBS-400B display areas.

✓ The **data area**, which displays all the values measured by the device.

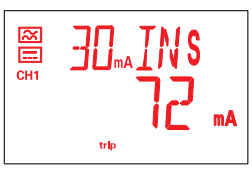
✓ The **unit and device status area**, which displays the different statuses, units and device information (**Table 8**).

Table 8: Display icons.

Icon	Description	Icon	Description
	Alternating current	1 3 2 4	Prealarm activated
	Direct current		The device clock has not been set up
CH1 **CH2** **CH3** **CH4**	Channel: **CH1** channel 1, **CH2** channel 2, **CH3** channel 3, **CH4** channel 4	**trip**	A trip has been generated
prog	Programming screen		Programming menu: Locked with a password. Unlocked.
	Internal device error, contact **SAT**		

The device's display can change color, indicating:

Yellow color:
The installation has changed, see *"5.2.- PROBLEMS OR CHANGES IN THE INSTALLATION"*.



Red color:
A relay has tripped due to leakage current, see *"5.4 .- TRIP DISPLAY SCREENS"*,
An Individual test has been carried out, see *"5.5.- TEST SCREEN"*.
An error was detected in the **WGB.**

4.3.- KEYBOARD FUNCTIONS

The **CBS-400B** has 3 keys to browse through the different screens and program the device.

Function of the keys (**Table 9**):

Table 9: Function of the keys on display screens.

Key	Short keystroke	Long keystroke (3s)
<	Previous screen	Performs a TEST on the channel that is displayed
>	Next screen	If tripped, the displayed channel's relay is RESET
≡	-	Access to the direct settings, the setup menu or the event menu, depending on the screen being displayed.

4.4.- DIGITAL OUTPUTS

The device has a digital output (terminals 19 and 20 of **Figure 3**) that is activated when a prealarm is generated, see ***"6.2.- PREALARM"***.

4.5.- RELAYS

The **CBS-400B** has 4 output relays, one per channel (terminals 1... 6 of **Figure 3**) to carry out a trip on each of the channels. See ***"5.6.- DIRECT SETTINGS"*** to configure the trip parameters.

4.6.- DIGITAL INPUT

The device has a digital input, **TRIP**, (terminals 21 and 22 of **Figure 3**) to carry out a global external trip. If this input is activated, all the installation's channels are tripped.

5.- DISPLAY

When starting the device, the initial screen is displayed, showing the version of the device, **Figure 16**, and after 3 seconds, the clock setup menu appears.

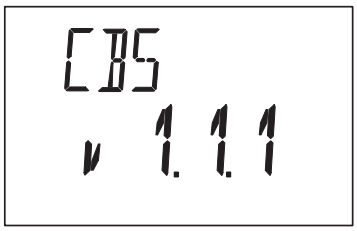


Figure 16: Initial Screen.

5.1.- CLOCK SETUP MENU

Each time the device is switched on, the current date and time has to be configured.
If no key is pressed for 60 seconds, the device goes to the main display screen without updating the date and time. The display screen shows the icon , indicating that the **CBS-400B** clock has not been configured.

Figure 17 shows the year setup screen.

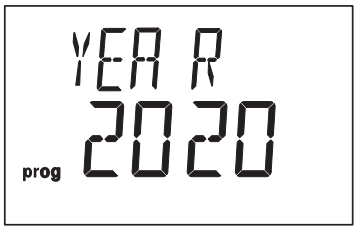


Figure 17: Clock setup: Year.

Press key > to increase the year value, and key < to reduce it.
Press key ≡ to confirm the value and skip to the month configuration screen, **Figure 18**.

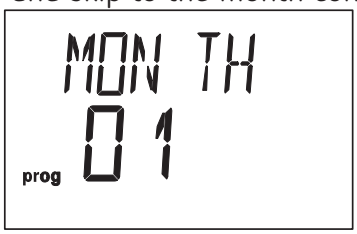


Figure 18: Clock setup: Month.

Press key > to increase the month value, and key < to reduce it.
Press key ≡ to confirm the value and skip to the day configuration screen, **Figure 19**.

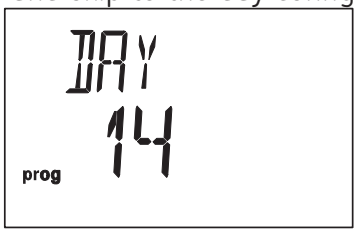


Figure 19: Clock setup: Day.

Press key > to increase the day value, and key < to reduce it.

Press key ≡ to confirm the value and skip to the hour configuration screen, **Figure 20**.

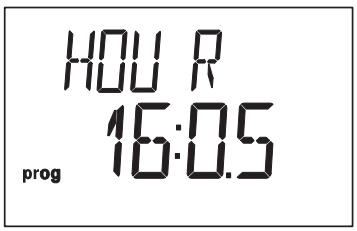


Figure 20: Clock setup: Time.

Press key > to increase the hour value, and key < to reduce it. Press key ≡ to confirm the value and configure the minutes, pressing the keys > and < .

Press key ≡ to end the configuration; the screen in **Figure 21** is displayed for 3 seconds.

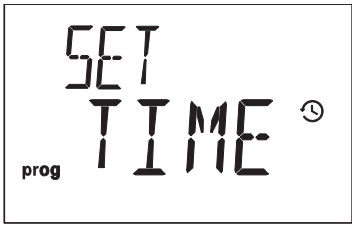
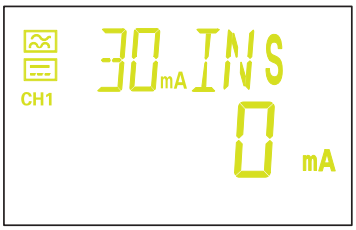


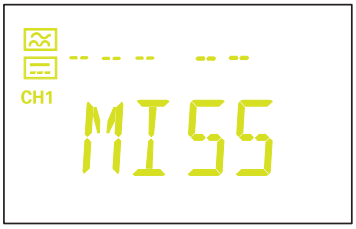
Figure 21: Clock setup: Setup completed.

5.2.- PROBLEMS OR CHANGES IN THE INSTALLATION

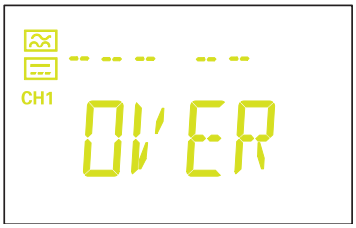
If the device detects a problem in the installation when the clock has been set up, the screens will be lit in yellow and one of the following screens will be displayed:



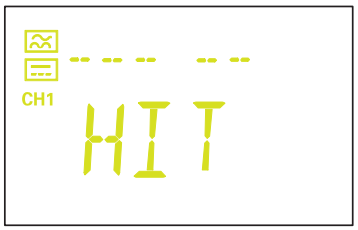
The installation has changed, the new installation has to be saved by accessing the setup menu, see ***6.6.1.- SAVE INSTALLATION".***



The installation has changed and the device does not find the **WGB** in the channel being displayed.
If the **WGB** has been removed from the installation, access the setup menu and save the installation, see ***"6.6.1.- SAVE INSTALLATION".***



The device has detected more **WGB** transformers than the installation can accept.



The device has detected **WGB** transformers that are not registered in the installation. The new installation has to be saved; this is carried out accessing the setup menu, see ***"6.6.1.- SAVE INSTALLATION"***.

5.3.- DISPLAY SCREENS

The display screens show the leakage current and the trip current and delay values of each channel, **Figure 22**.

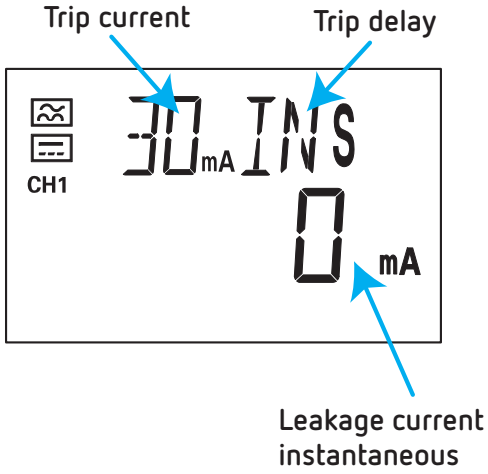
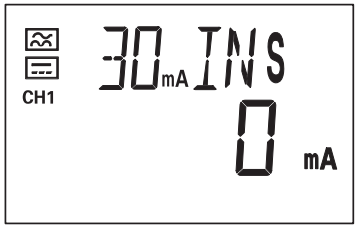
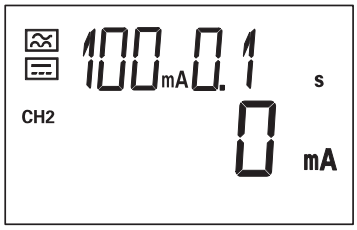


Figure 22: Display screen.

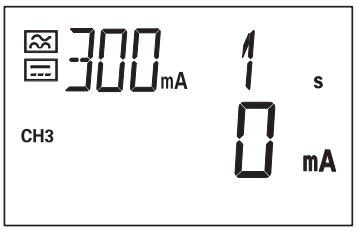
Use keys > and < to browse through the different screens:



Channel 1:
Trip current (mA)
Trip delay
Total leakage current (alternating + direct) instantaneous (mA)



Channel 2:
Trip current (mA)
Trip delay
Total leakage current (alternating + direct) instantaneous (mA)



Channel 3:
Trip current (mA)
Trip delay
Total leakage current (alternating + direct) instantaneous (mA)

Channel 4:
Trip current (mA)
Trip delay
Total leakage current (alternating + direct) instantaneous (mA)

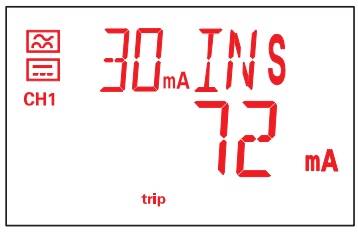
Access the general setup menu by pressing the key for > 3s.
(See *"6.- CONFIGURATION"*)
Note: *If no key is pressed for 1 minute, the device goes to Channel 1's display screen.*

Access the event menu by pressing the key for > 3s.
(See *"5.7.- EVENT MENU"*)
Note: *If no key is pressed for 1 minute, the device goes to Channel 1's display screen.*

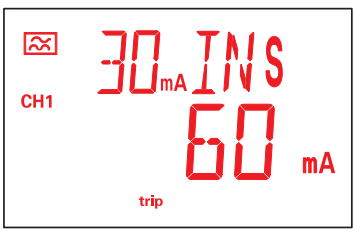
5.4.- TRIP DISPLAY SCREENS

If a trip has been generated in a channel, the display screen of that channel will be displayed in red, the **Alarm** LED will be lit in red and the last cycle current that tripped the relay will be displayed.

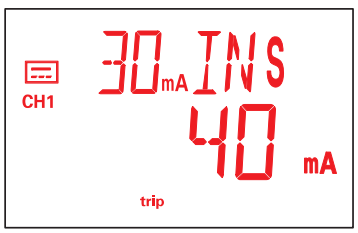
Use key to browse through the different trip information screens:



Trip current (mA)
Trip delay
Total leakage current (alternating + direct) that tripped the relay (mA)



Trip current (mA)
Trip delay
Alternating leakage current that tripped the relay (mA)



Trip current (mA)
Trip delay
Direct leakage current that tripped the relay (mA)

When pressing key > for > 3s, the relay returns to its initial status and **Figure 23** is displayed for 3s before returning to the channel display screen.

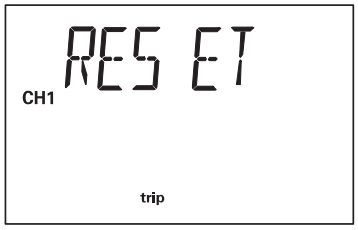


Figure 23: Reset.

5.5.- TEST SCREEN

It is possible to carry out an individual test on each channel to verify the proper functioning of the relay.

To do this, press key < for > 3s while it displays the screen of the channel on which the test is to be carried out.

If the relay has been tripped correctly, the screen in **Figure 24** is displayed. And the **Alarm** LED is lit in red.

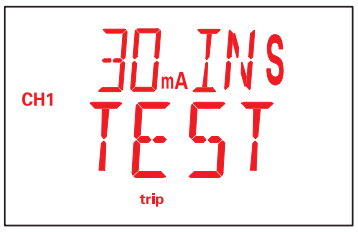


Figure 24: Individual test.

The relay is returned to its idle status by pressing the key > for > 3s; the screen in **Figure 25** is displayed for 3s before returning to the channel display screen.

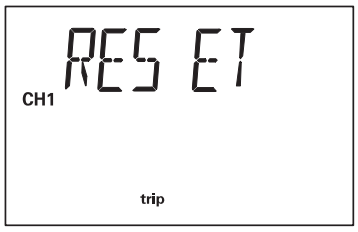


Figure 25: Reset.

If the trip could not be carried out, the error screen (**Figure 26**) is displayed for 3s before returning to the channel display screen.

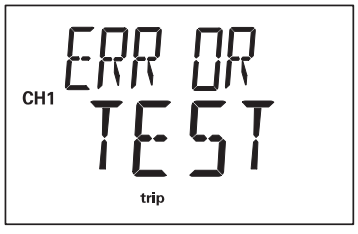


Figure 26: Test Error.

5.6 .- DIRECT SETTINGS

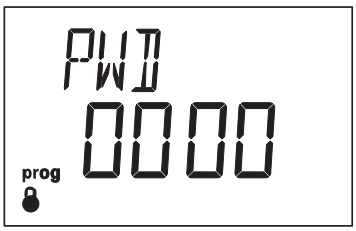
From the channel's display screens, we can configure the trip current and delay for each of the relays.

To do this, press key ☰ for > 3s while it displays the screen of the channel on which to apply the settings.

Note: *In **"ANNEX A.- DIRECT SETTINGS"** we can see the configuration tree.*

5.6.1.- PASSWORD

If the configuration password has been activated (see "***6.5.- PASSWORD***"), the following screen is displayed to enter the access password.

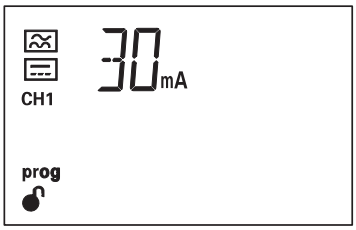


Use keys > and < to modify the digit's value.
Press key ☰ to skip through the digits.

To validate the value and skip to the first programming point, with a long keystroke press ☰.

5.6.2.- TRIP CURRENT

The relay's trip current is configured in this screen.



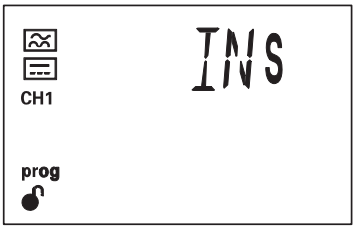
Use keys > and < to skip through the different options: **30 mA**, **100 mA**, **300 mA**, **500 mA**, **1.0 A**, **3.0 A.**

To skip to the next programming point, press once the key ☰.

Hold down the key ☰ for > 3s, to validate the data and exit the programming.

5.6.3.- DELAY AND RELAY CURVE

This screen is used to configure the delay of the relay trip or the type of trip curve.



Use keys > and < to skip through the different options:

INS, Curve INS
S, Curve SEL
0.1s, **0.2s**, **0.3s**, **0.4s, 0.5s, 0.8s, 1s, 3s, 5s.**

Note: *If the Trip current is **30 mA**, only the **INS** curve can be programmed.*
Note: *If the Trip current is **1.0 A** or **3.0 A**, the **INS** and **S** curves cannot be programmed.*

To return to the last programming point, press once the key ☰.

Hold down the key ☰ for > 3s, to validate the data and exit the programming.

5.7.- EVENT MENU

To enter the event menu, we must display the Events screen and press the key ☰ for > 3s.

The device displays the last 10 events generated in each channel.

The **CBS-400B** saves 4 different types of events:

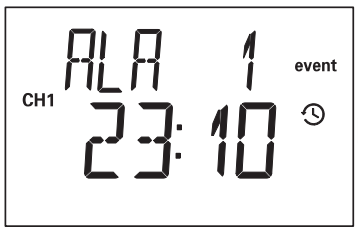
TRIP**,** trip of a channel's relay.
ALA, prealarm activated.
TST **,** individual test
TRA **,** error in a transformer.

Use keys > and < to move from one event to another.

Press key ☰ for > 3s, to exit the event menu.

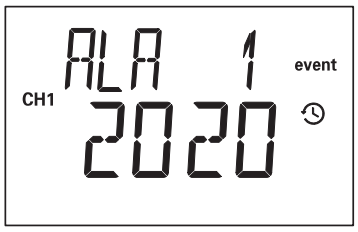
Three screens are displayed for **Prealarm, Test and Error events in the transformer**:

Event 1 of channel 1: Prealarm



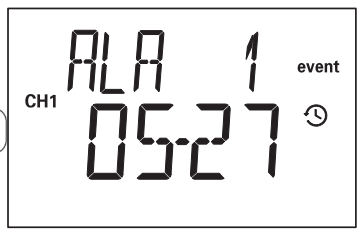
Time

Event 1 of channel 1: Prealarm



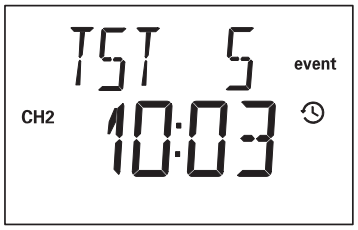
Year

Event 1 of channel 1: Prealarm



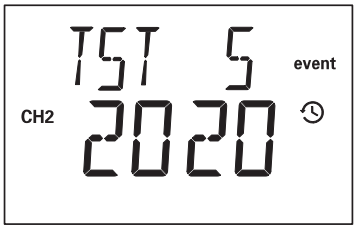
Month and Day

Event 5 of channel 2: Test



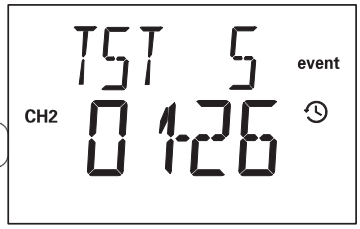
Time

Event 5 of channel 2: Test



Year

Event 5 of channel 2: Test

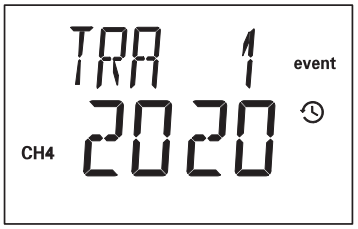


Month and Day

Event 1 of channel 4: WGB error

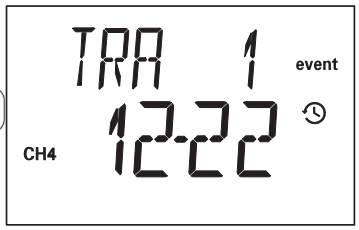
Time

Event 1 of channel 4: WGB error



Year

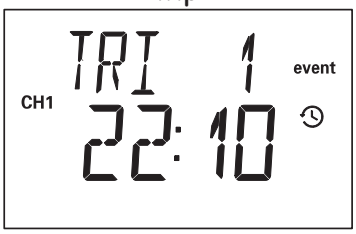
Event 1 of channel 4: WGB error



Month and Day

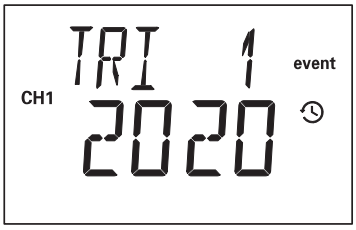
Six screens are displayed for **Trip** events:

Event 1 of channel 1: Trip



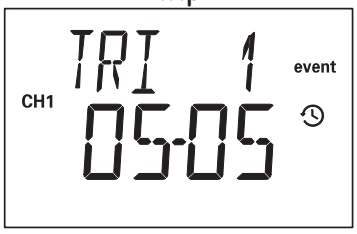
Time

Event 1 of channel 1: Trip



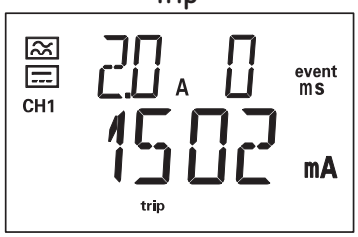
Year

Event 1 of channel 1: Trip



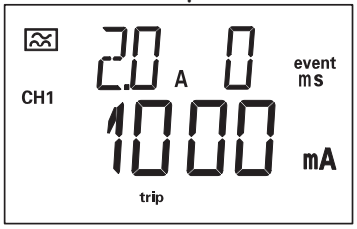
Month and Day

Event 1 of channel 1: Trip



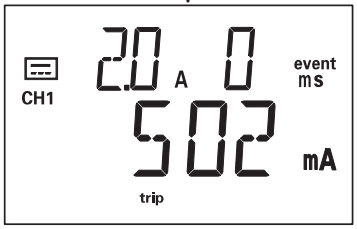
Trip information (alternating + direct)

Event 1 of channel 1: Trip



Trip information (alternating)

Event 1 of channel 1: Trip

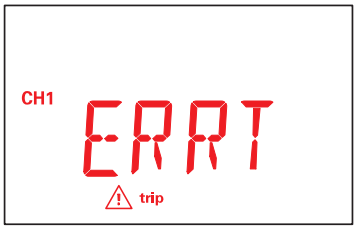


Trip information (direct)

The register of events can be reset by communications, see ***"7.3.4 .- EVENTS"***.

5.8.- OTHER SCREENS

While the **CBS-400B** is operating different screens can appear, indicating:



Communication with the **WGB** of the channel being displayed has been lost.

6.- CONFIGURATION

To enter the setup menu, we must display the Events screen and press the key for > 3s.

The **CBS-400B** organises the device's configuration of the equipment into 6 menus, **Figure 27**.

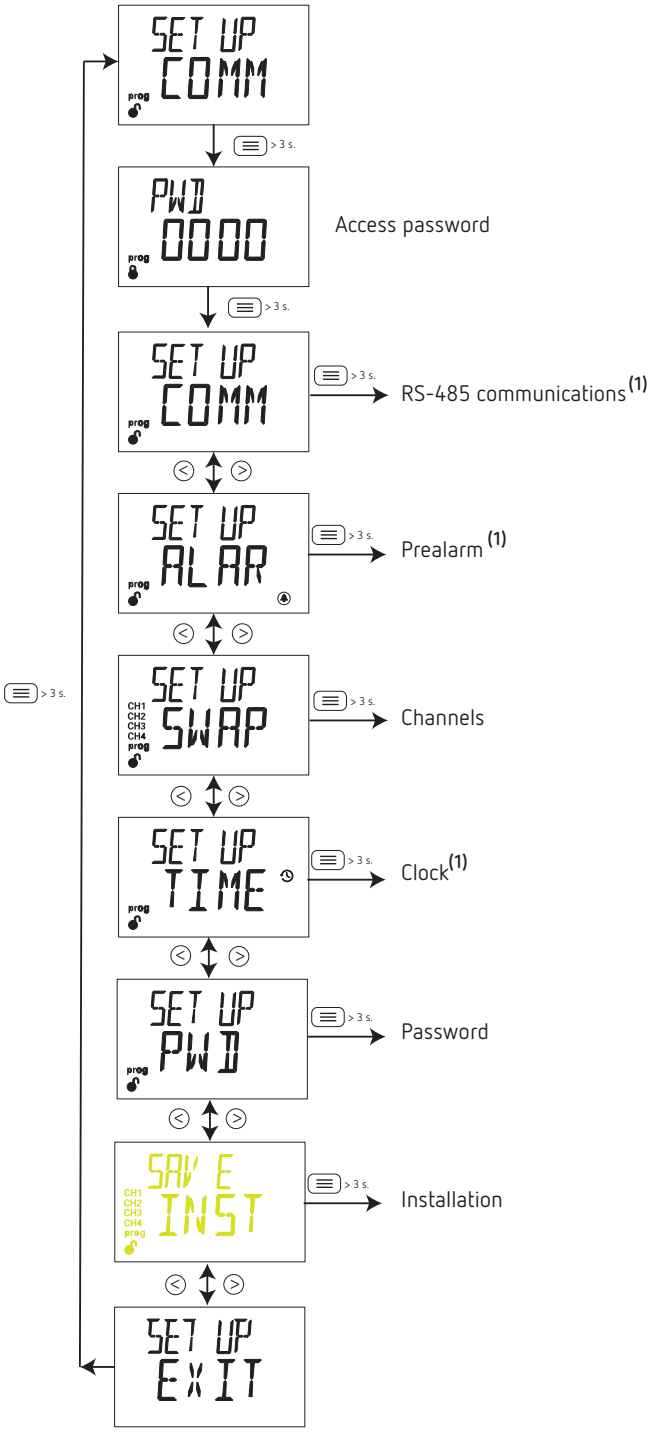


Figure 27: Setup menu.

(1) Menu visible with password locked.

Note: *In **"ANNEX B.- SETUP MENU"** we can see the configuration tree.*

The device's setup menu can be protected by password; if it is protected, the screen in **Figure 28** will be displayed when accessing the setup menu.

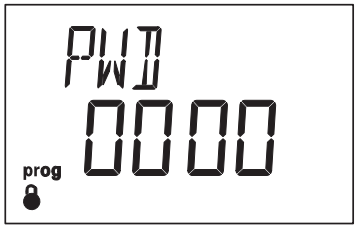


Figure 28: Password Screen.

Use keys (>) and (<) to modify the digit's value.

Press key (≡) keys to skip the digit.

To validate the value, hold down the key (≡) for > 3s; if the password is correct, in the bottom left of the display, we can see the icon 🔓.

Note: *The password can be modified in* ***"6.5.- PASSWORD"***

If the password is not entered or the one entered is incorrect, in the bottom left of the display, we can see the icon 🔒, and only the clock setup menu can be modified. Some of the other menus will be visible and others not.

6.1.- RS-485 COMMUNICATIONS

Figure 29 shows the initial screen of the RS-485 communications menu. Press the key (≡) for > 3s, to access the menu.

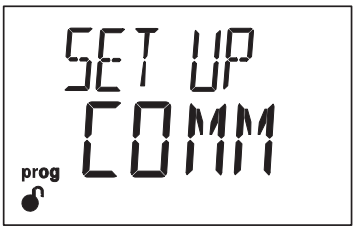
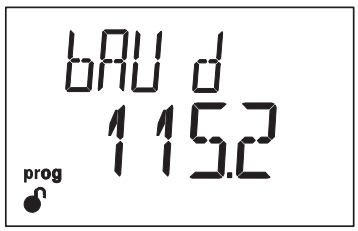


Figure 29: Communications menu.

6.1.1.- BAUD RATE

This screen is used to set up the baud rate of the RS-485 communications.



Use keys (>) and (<) to skip through the different options:

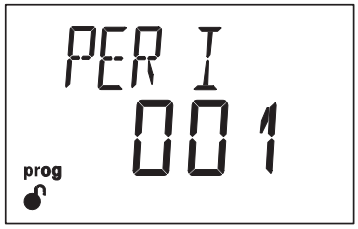
4.8 **(4800),** 9.6 **(9600),** 19.2 **(19200),** 38.4 **(38400),** 57.6 **(57600),** 115.2 **(115200)** bps

To skip to the next programming point, press once the key (≡).

Hold down the key (≡) for > 3s, to validate the data and exit the programming.

6.1.2.- PERIPHERAL NUMBER

This screen enables peripheral number configuration.



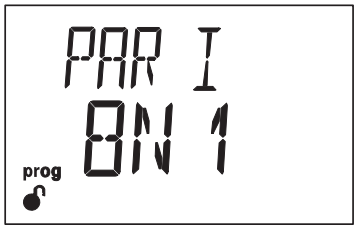
Use keys (>) and (<) to modify the value.

Minimum value: 1.
Maximum value: 247.

To skip to the next programming point, press once the key (≡).
Hold down the key (≡) for > 3s, to validate the data and exit the programming.

6.1.3.- DATA FORMAT

This screen is used to configure the data format.



Use keys (>) and (<) to skip through the different options:

- 8N1, 8 data bits, no parity, 1 stop bit.
- 8E1, 8 data bits, even parity, 1 stop bit.
- 8O1, 8 data bits, odd parity, 1 stop bit.
- 8N2, 8 data bits, no parity, 2 stop bits.
- 8E2, 8 data bits, even parity, 2 stop bits.
- 8O2, 8 data bits, odd parity, 2 stop bits.

To skip to the next programming point, press once the key (≡).
Hold down the key (≡) for > 3s, to validate the data and exit the programming.

6.2.- PREALARM

Figure 30 shows the initial screen of the prealarm menu. Press the key ☰ for > 3s, to access the menu.

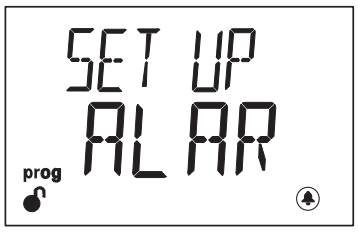
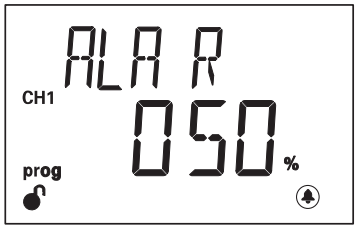


Figure 30: Prealarm menu.

In this menu we can configure the prealarm of each of the device's 4 channels. Icons **CH1**, **CH2**, **CH3** and **CH4** indicate the channel that is being configured at any given time.

6.2.1.- PREALARM CURRENT OF CHANNEL x

This screen is used to configure the current at which the prealarm will be activated according to the % of the trip current of channel x's relay.



Use keys > and < to modify the value.

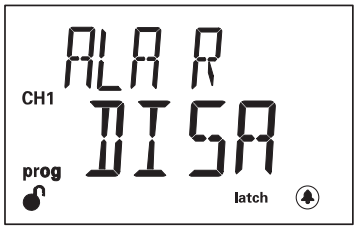
Minimum value: 1%.
Maximum value: 100%.

To skip to the next programming point, press once the key ☰.

Hold down the key ☰ for > 3s, to validate the data and exit the programming.

6.2.2.- OPERATION PREALARM OF CHANNEL x

This screen is used to configure the operation prealarm of channel x.



Use keys > and < to skip through the different options:

DISA, prealarm deactivated.
AUTO, prealarm activated with latch deactivated; if the condition for the prealarm disappears, the prealarm is disconnected.
MANU, prealarm activated with latch activated; the prealarm disappears when resetting via the keyboard or communications (see ***"7.3.3.- TRIPPING DUE TO TEST OR COMMUNICATIONS").***

To skip to the next programming point, press once the key .

Hold down the key for > 3s, to validate the data and exit the programming.

6.3.- CHANNELS

Figure 31 shows the initial screen of the channel switching menu. Press the key for > 3s, to access the menu.

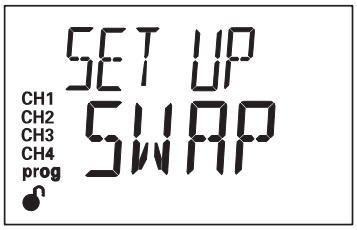
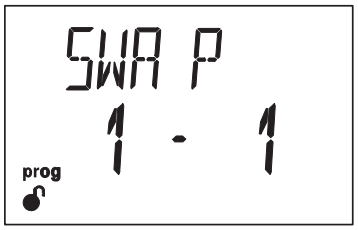


Figure 31: Channel menu.

6.3.1.- CHANNEL SWITCHING

In this screen we can switch the channels detected by the **CBS-400B**, i.e. we can configure that channel 1 detected by the **CBS-400B** becomes channel 2. Only one channel can be switched at a time, each time we enter the menu.



Use keys > and < to select the channel to be switched.

Press key to skip to the selection of the channel we want it to become.

Hold down the key for > 3s, to validate the data and exit the programming.

6.4.- CLOCK SETUP

Figure 32 shows the initial screen of the setup menu. Press the key for > 3s, to access the menu.

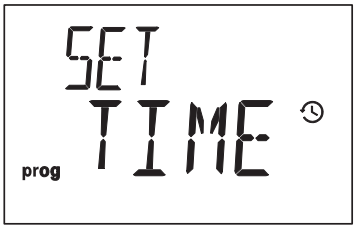


Figure 32: Clock setup menu.

See section ***"5.1.- CLOCK SETUP MENU"*** to set up the device's clock.

6.5.- PASSWORD

Figure 33 shows the initial screen of the password configuration menu. Press the key for > 3s, to access the menu.

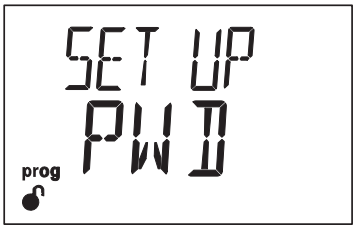
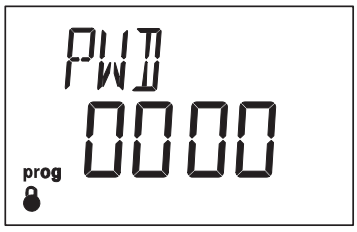


Figure 33: Clock setup menu.

6.5.1.- PASSWORD

This screen is used to configure the password to access the configuration menus.



Use keys > and < to modify the digit's value.

Press key to skip through the digits.

To validate the value, with a long keystroke (>3s), press .

Note: *If value 0000 is configured, the device deactivates the configuration password.*

6.6.- INSTALLATION

Note: *Visible menu if the installation has been changed.*

Figure 34 shows the initial screen of the installation menu. Press the key for > 3s, to access the menu.

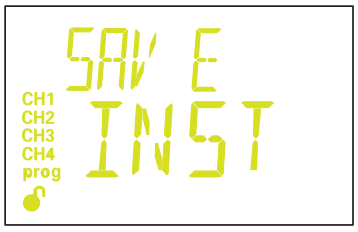
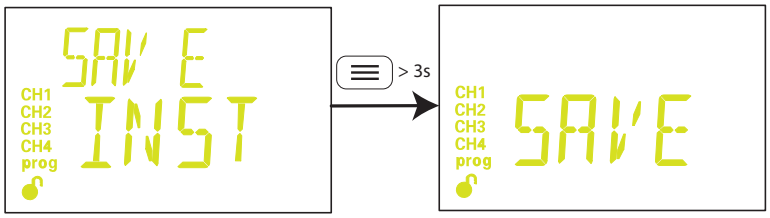


Figure 34: Installation menu.

6.6.1.- SAVE INSTALLATION

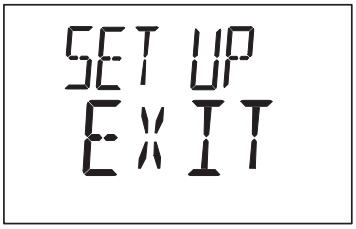
If the installation of the **CBS-400B** has been modified, i.e. the **WGB** transformers have been replaced (see *"3.7.- INSTALLATION CONNECTIONS"*), the following screen appears to save the current configuration.



To save the installation, with a long keystroke (>3s), press . The screens are no longer yellow.

6.7.- MENU EXIT

Setup menu exit screen:



Hold down the key for > 3s, to exit the setup menu.

7.- RS-485 COMMUNICATIONS

The **CBS-400B** has an RS-485 communications port. The device is equipped with the **MODBUS RTU** communication protocol as standard.

7.1.- CONNECTIONS

The RS-485 cable must be wired using twisted pair cable with mesh shield (minimum 3 wires), with a maximum distance of 1200 meters between the **CBS-400B** and the master unit.
In this bus we can connect a maximum of 32 **CBS-400B**.

For communication with the master unit, we must use a smart RS-232 to RS-485 network protocol converter.

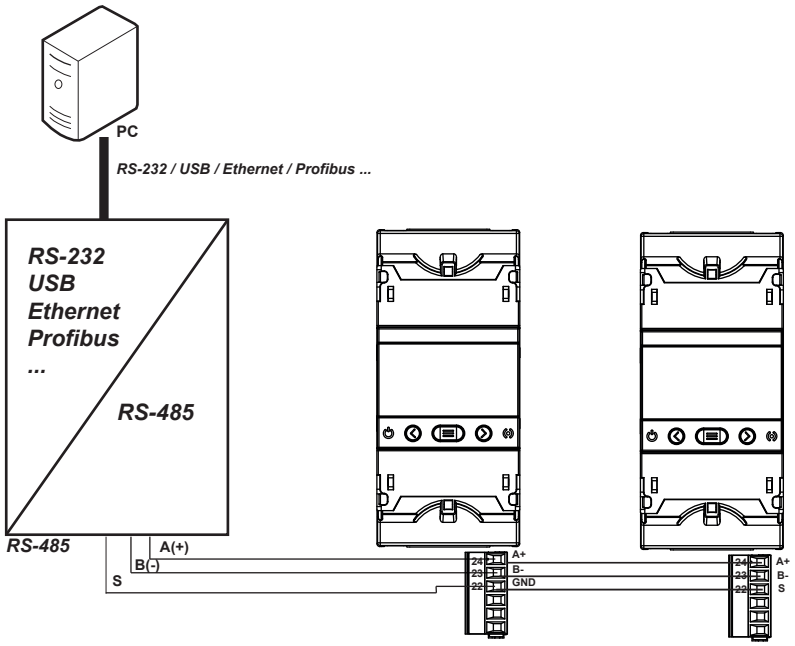


Figure 35: RS-485 connection diagram.

Note: *Default values of the RS-485 communication:* ***9600 bps, no parity, 8 data bits*** *and* **1 stop bit**.

7.2.- MODBUS PROTOCOL

Within the Modbus protocol, the **CBS-400B** uses the RTU (Remote Terminal Unit) mode.
The Modbus functions implemented in the device are as follows:

Function 0x01: Reading a relay.
Function 0x02: Reading input status.
Functions 0x03 and 0x04: Reading integer registers.
Function 0x05: Writing a relay.
Function 0x10: Writing multiple registers.

7.3.- MODBUS COMMANDS

All **MODBUS** map addresses are in Hexadecimal format.

7.3.1.- VARIABLES OF THE CBS-400B AND INSTALLATION

Function 0x02 is used for these variables.
Functions 0x01 and **0x05** are used for the variable ***Save the new installation***.

Table 10: Modbus Memory Map: CBS-400B-INSTALLATION (Table 1).

CBS-400B-INSTALLATION			
Parameter	Format	Address	Value
Installation tripped due to **TRIP** input	bool	5DC	**0:** Not tripped - **1:** Tripped
The installation has changed	bool	7CE	**0:** Not changed - **1:** Changed
Internal error detected in the **CBS-400B**	bool	7CF	**0:** Not detected - **1:** Detected
Save the new installation	bool	F9F	**1:** Save the installation

Function 0x04 is used for these variables.

Table 11: Modbus Memory Map: CBS-400B-INSTALLATION (Table 2).

CBS-400B-INSTALLATION			
Parameter	Format	Address	Value
Date and time of the device	Unit [32]	283C - 283D	Device date (Epoch format)
Serial no. of the **WGB** registered in the installation's Channel 1	String	3458 ...345E	-
Serial no. of the **WGB** registered in the installation's Channel 2	String	345F ... 3465	-
Serial no. of the **WGB** registered in the installation's Channel 3	String	3466... 346C	-
Serial no. of the **WGB** registered in the installation's Channel 4	String	346D ... 3473	-
Installation status	Unit [16]	3583	**0... 5** (see **Table 12**)
Status of **CBS-400B**	Unit [16]	3584	**0... 2** (see **Table 13**)
ID no. of **CBS-400B**	Unit [32]	35E8-35E9	-
Serial no. of **CBS-400B**	Unit [16]	364C... 3652	-

Possible installation statuses, **Table 12**:

Table 12: Installation statuses.

Possible installation statuses	
Value	Description
0	Correct installation
1	A new **WGB** has been detected and added to the installation
2	The WGB's registered in the installation are not detected
3	A **WGB** not registered in the installation has been detected
4	More **WGB**'s than the installation can accept has been detected
5	There is no **WGB** registered in the installation

Possible statuses of **CBS-400B**, **Table 13**:

Table 13: Statuses of CBS-400B.

Possible statuses CBS-400B	
Value	Description
0	Device in startup process
1	Device idle
2	Device tripped due to activation of the **TRIP** input

7.3.2.- CHANNEL VARIABLES

Function 0x04: reading of registers, is used for these variables

Table 14: Modbus Memory Map: Channel variables.

Configuration variable	Format	Address				Units Format
		Channel 1	Channel 2	Channel 3	Channel 4	
WGB model	String	FA0-FA1	1068-1069	1130-1131	11F8-11F9	-
Serial no. of **WGB**	String	FA2...FA8	106A...1070	1132.. 1138	11FA...1200	-
Firmware version (part 1)	Unit [16]	FA9	1071	1139	1201	-
Firmware version (part 2)	Unit [16]	FAA	1072	113A	1202	-
Firmware version revision	Unit [16]	FAB	1073	113B	1203	-
WGB status	Unit [16]	FAC	1074	113C	1204	**0... 6** (see **Table 15**)
WGB channel	Unit [16]	FAD	1075	113D	1205	**1:** channel 1
Programmed trip curve or delay	Unit [16]	FAE	1076	113E	1206	ms
Programmed trip current	Unit [16]	FAF	1077	113F	1207	mA
Instant total leakage current	Unit [16]	FB0	1078	1140	1208	mA
Instant alternating leakage current	Unit [16]	FB1	1079	1141	1209	mA
Instant direct leakage current	Unit [16]	FB2	107A	1142	120A	mA
Total leakage current that tripped the relay	Unit [16]	FB3	107B	1143	120B	mA
Alternating leakage current that tripped the relay	Unit [16]	FB4	107C	1144	120C	mA
Direct leakage current that tripped the relay	Unit [16]	FB5	107D	1145	120D	mA
Programmed prealarm current	Unit [16]	FB6	107E	1146	120E	%
Prealarm Operation	Unit [16]	FB7	107F	1147	120F	**0:** Deactivated **1:** Activated with deactivated latch **2:** Activated with activated latch

Possible statuses of **WGB**, **Table 15**:

Table 15: WGB statuses.

Possible statuses of WGB	
Value	Description
0	**WGB** in startup process
1	**WGB** in idle status
2	**WGB** tripped due to detected leakage current
3	**WGB** tripped due to TEST with Test error result
4	**WGB** tripped due to TEST with Test successful result
5	**WGB** tripped due to communications
6	**WGB** tripped due to **TRIP** input

Function 0x02 is used for these variables.

Table 16: Modbus Memory Map: Status of the Channels.

Parameter	Format	Address				Value
		Channel 1	Channel 2	Channel 3	Channel 4	
Internal error detected in the **WGB**	bool	0000	0028	0050	0078	**0:** Not detected **1:** Detected
Prealarm activated	bool	0001	0029	0051	0079	**0:** Deactivated **1:** Activated
Channel tripped	bool	0002	002A	0052	007A	**0:** Not tripped **1:** Tripped
Channel tripped due to leakage current	bool	0003	002B	0053	007B	
Channel tripped due to error in the **WGB**	bool	0004	002C	0054	007C	
Channel tripped due to test	bool	0005	002D	0055	007D	
Channel tripped due to **TRIP** input	bool	0006	002E	0056	007E	
Channel tripped due to communications	bool	0007	002F	0057	007F	
WGB not connected	bool	0008	0030	0058	0080	**0:** Not detected **1:** Detected
WGB does not respond to requests	bool	0009	0031	0059	0081	

7.3.3.- TRIPPING DUE TO TEST OR COMMUNICATIONS

The following functions are used for these variables: **0x01** and **0x05**.

Table 17: Modbus Memory Map: Configuration of the trip and prealarm.

Configuration of the Trip and Prealarm				
Configuration variable	Format	Address	Valid data range	Default value
Tripping due to **TEST** of channel 1	bool	07D0	**FF00:** Activate Test of channel **0000**: Finish TEST	0000
Tripping due to **TEST** of channel 2	bool	07F8		
Tripping due to **TEST** of channel 3	bool	0820		
Tripping due to **TEST** of channel 4	bool	0848		

Table 17 (Continued): Modbus Memory Map: Configuration of the trip and prealarm.

Configuration of the Trip and Prealarm				
Configuration variable	Format	Address	Valid data range	Default value
Tripping due to Communications of channel 1	bool	07D1	**FF00:** Tripping of channel **0000**: Channel reset	0000
Tripping due to Communications of channel 2	bool	07F9		
Tripping due to Communications of channel 3	bool	0821		
Tripping due to Communications of channel 4	bool	0849		

7.3.4.- EVENTS

The following steps must be taken to read the events:

1.- Read the ***No. of events in the channel*** to consult.
2.- Write the channel number to consult in ***Channel selection***.
3.- Write the event number to consult in ***Event selection***.
4.- Read the 8 ***Event*** registers simultaneously to consult the event's details.

Table 18: Modbus Memory Map: Events.

Parameter	Format	Address	Function	Value
No. of events in channel 1	Unit [16]	13BA	0x04	0... 10
No. of events in channel 2	Unit [16]	13BB	0x04	
No. of events in channel 3	Unit [16]	13BC	0x04	
No. of events in channel 4	Unit [16]	13BD	0x04	
Channel selection	Unit [16]	1388	0x03 0x10	1... 4
Event selection	Unit [16]	1389		1... 10
Event	Unit [16]	1389-138A	0x04	Type of event: **0:** Tripping of the channel's relay **1:** Prealarm activated **2:**Individual test **3:** Error in a transformer
	Unit [16]	138B		Event date (Epoch format)
	Unit [16]	138C		Programmed trip current
	Unit [16]	138D [(2)]		Programmed trip curve or delay
	Unit [16]	138E [(2)]		Total trip current (alternating + direct)
	Unit [16]	138F [(2)]		Alternating trip current
	Unit [16]	138E [(2)]		Direct trip current
Delete Events	bool	FA0	0x01 0x05	**1:** Deletes saved events

[(2)] Valid registers when the read event is a relay trip.

7.3.5.- DEVICE CONFIGURATION VARIABLES

The following functions are used for these variables:
Function 0x03: Reading of registers
Function 0x10: Writing multiple registers.

7.3.5.1.- Configuration of the trip and prealarm

Table 19: Modbus Memory Map: Configuration of the trip and prealarm.

Configuration of the Trip and Prealarm							
Configuration variable	Format	Address				Valid data range	Default value
		Channel 1	Channel 2	Channel 3	Channel 4		
Relay curve or delay [3]	Unit [16]	3714	37DC	38A4	396C	**Table 20**	0
Trip current [3]	Unit [16]	3715	37DD	38A5	396D	**Table 21**	30 mA
Prealarm current	Unit [16]	3716	37DE	38A6	396E	1... 100%	50%
Prealarm Operation	Unit [16]	3717	37DF	38A7	396F	**0:** Deactivated **1:** Activated with deactivated latch **2:** Activated with activated latch	1

[3] To programme the relay delay and the trip current, you must first read the possible values of each **WGB**, which can be found in **Table 20** and **Table 21**.

Table 20: Modbus Memory Map: Relay curve or delay table.

Relay curve or delay table							
Parameter	Format	Function	Address				Value
			Channel 1	Channel 2	Channel 3	Channel 4	
Value 1	Unit [16]	0x04	1004	10CC	1194	125C	**1:** Curve INS - **0**[4]
Value 2	Unit [16]	0x04	1005	10CD	1195	125D	**2:** Curve SEL - **0**[4]
Value 3	Unit [16]	0x04	1006	10CE	1196	125E	**100** ms - **0**[4]
Value 4	Unit [16]	0x04	1007	10CF	1197	125F	**200** ms - **0**[4]
Value 5	Unit [16]	0x04	1008	10D0	1198	1260	**300** ms - **0**[4]
Value 6	Unit [16]	0x04	1009	10D1	1199	1261	**400** ms - **0**[4]
Value 7	Unit [16]	0x04	100A	10D2	119A	1262	**500** ms - **0**[4]
Value 8	Unit [16]	0x04	100B	10D3	119B	1263	**800** ms - **0**[4]
Value 9	Unit [16]	0x04	100C	10D4	119C	1264	**1000** ms - **0**[4]
Value 10	Unit [16]	0x04	100D	10D5	119D	1265	**3000** ms - **0**[4]
Value 11	Unit [16]	0x04	100E	10D6	119E	1266	**5000** ms - **0**[4]
Value 12	Unit [16]	0x04	100F	10D7	119F	1267	**0**[4]
Value 13	Unit [16]	0x04	1010	10D8	11A0	1268	**0**[4]
Value 14	Unit [16]	0x04	1011	10D9	11A1	1269	**0**[4]
Value 15	Unit [16]	0x04	1012	10DA	11A2	126A	**0**[4]
Value 16	Unit [16]	0x04	1013	10DB	11A3	126B	**0**[4]

[4] **0:** Indicates that the value is not available.

Table 21: Modbus Memory Map: Trip current table.

Trip current							
Parameter	Format	Function	Address				Value
			Channel 1	Channel 2	Channel 3	Channel 4	
Value 1	Unit [16]	0x04	1014	10DC	11A4	126C	**30** mA - **0**(5)
Value 2	Unit [16]	0x04	1015	10DD	11A5	126D	**100** mA - **0**(5)
Value 3	Unit [16]	0x04	1016	10DE	11A6	126E	**300** mA - **0**(5)
Value 4	Unit [16]	0x04	1017	10DF	11A7	126F	**500** mA - **0**(5)
Value 5	Unit [16]	0x04	1018	10E0	11A8	1270	**1000** mA - **0**(5)
Value 6	Unit [16]	0x04	1019	10E1	11A9	1271	**3000** mA - **0**(5)
Value 7	Unit [16]	0x04	101A	10E2	11AA	1272	**0**(5)
Value 8	Unit [16]	0x04	101B	10E3	11AB	1273	**0**(5)
Value 9	Unit [16]	0x04	101C	10E4	11AC	1274	**0**(5)
Value 10	Unit [16]	0x04	101D	10E5	11AD	1275	**0**(5)
Value 11	Unit [16]	0x04	101E	10E6	11AE	1276	**0**(5)
Value 12	Unit [16]	0x04	101F	10E7	11AF	1277	**0**(5)
Value 13	Unit [16]	0x04	1020	10E8	11B0	1278	**0**(5)
Value 14	Unit [16]	0x04	1021	10E9	11B1	1279	**0**(5)
Value 15	Unit [16]	0x04	1022	10EA	11B2	127A	**0**(5)
Value 16	Unit [16]	0x04	1023	10EB	11B3	127B	**0**(5)

(5) **0:** Indicates that the value is not available.

7.3.5.2.- RS-485 communications

Table 22: Modbus Memory Map: SR-485 Communications.

RS-485 Communications				
Configuration variable	Format	Address	Valid data range	Default value
Peripheral number	Unit [16]	36B0	1... 247	1
Baud rate	Unit [32]	36B1 - 36B2	4800, 9600, 19200, 38400, 57600, 115200	9600
Data format	Unit [16]	36B3	**0:** 8N1, **1:** 8E1, **2:** 801 **3:** 8N2, **4:** 8E2, **5:** 802	**0**

7.3.5.3.- Channel switching

Table 23: Modbus Memory Map: Channel switching.

Channel switching				
Configuration variable	Format	Address	Valid data range	Default value
Channel switching (Channel 1)	Unit [16]	3718	1.... 4	1
Channel switching (Channel 2)	Unit [16]	37E0	1.... 4	2
Channel switching (Channel 3)	Unit [16]	38A8	1.... 4	3
Channel switching (Channel 4)	Unit [16]	3970	1.... 4	4

7.3.5.4.- Clock setup

Table 24: Modbus Memory Map: Clock setup.

Clock setup				
Configuration variable	Format	Address	Valid data range	Default value
Clock setup	Unit [32]	283C - 283D	Date and time are given in Epoch format	

7.3.5.5.- Password

Table 25: Modbus Memory Map: Password.

Password				
Configuration variable	Format	Address	Valid data range	Default value
Password	Unit [16]	2A97	0000... 9999[6]	0000

[6] If value 0000 is configured, the device deactivates the configuration password.

8.- TECHNICAL FEATURES

8.1.- CBS-400B

AC Power supply	
Rated voltage	230 V ~ ± 15%
Frequency	50 ... 60 Hz
Consumption	11 VA
Installation category	CAT III 300V

Monitoring features	
Protection Type	Type B
Sensitivity (IΔn)	0.03 - 0.1 - 0.3 - 0.5 - 1 - 3 A
Adjustable trigger delay	INS - [S] - 0.1 - 0.2 - 0.3 - 0.4 - 0.5 - 0.8 - 1 - 3 - 5 s
Rated frequency of the monitored circuit	DC: 0 Hz - AC: 50 Hz - 1 kHz
Rated residual non-operating current	0.8 IΔn
Rated conditional short-circuit current (Icc)	Depends on the circuit breaker
Rated short-time withstand current (Icw)	
Uimp of the voltage source	4 kV (CAT III)
Compatible WGB transformers	WGB 35/55/80/110

Relay outputs	
Quantity	1
Maximum voltage open contacts	230 V ~
Maximum current	6 A
Maximum switching power	1500 VA
Electrical life (250V ~ / 5A)	$60x10^3$ Cycles
Mechanical life	$10x10^6$ Cycles

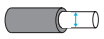
Digital output	
Type	Optoisolated
Maximum voltage	230 V ~
Maximum current	0.1 A

Digital input	
Type	Potential free contact
Insulation	5.3 kV
Input impedance	2 KΩ

RS-485 Communications	
Communications protocol	Modbus RTU
Baud rate	4800 -9600 - 19200 - 38400 - 57600 - 115200 bps
Data bits	8
Stop bits	1 - 2
Parity	without, even, odd

User interface	
Display	LCD custom (negative)
Keyboard	3 keys
LED	2 LED

Environmental features	
Operating temperature	-10°C ... +50 °C
Storage temperature	-20 °C ... +70 °C
Relative humidity (without condensation)	5... 95%
Maximum altitude	2000 m
Protection degree	IP30, Front: IP40,
Pollution degree	2

Mechanical characteristics			
			
Terminals: 1, 3, 9, 11, 19... 24	2.5 mm^2	≤ 0.4 Nm, M2.5	Flat
Dimensions	**Figure 36 (mm)**		
Weight	208 g.		
Enclosure	Self-extinguishing V0 plastic		

Standards	
Low-voltage switchgear. Part 2: Automatic switch protection	IEC 60947-2-M
General safety requirements for residual current operated protective devices	IEC 60755[7]
Environmental testing -- Part 2-1: Tests - Test A: Cold (IEC 60068-2-1:2007).	UNE-EN 60068-2-1
Environmental testing -- Part 2-2: Tests - Tests B: Dry heat. (IEC 60068-2-2:2007)	UNE-EN 60068-2-2
Environmental testing - Part 2-78: Tests - Test Cab: Damp heat, steady state	UNE-EN 60068-2-78

[7] Measurement conditions for Type B waveform specified in IEC 60755.

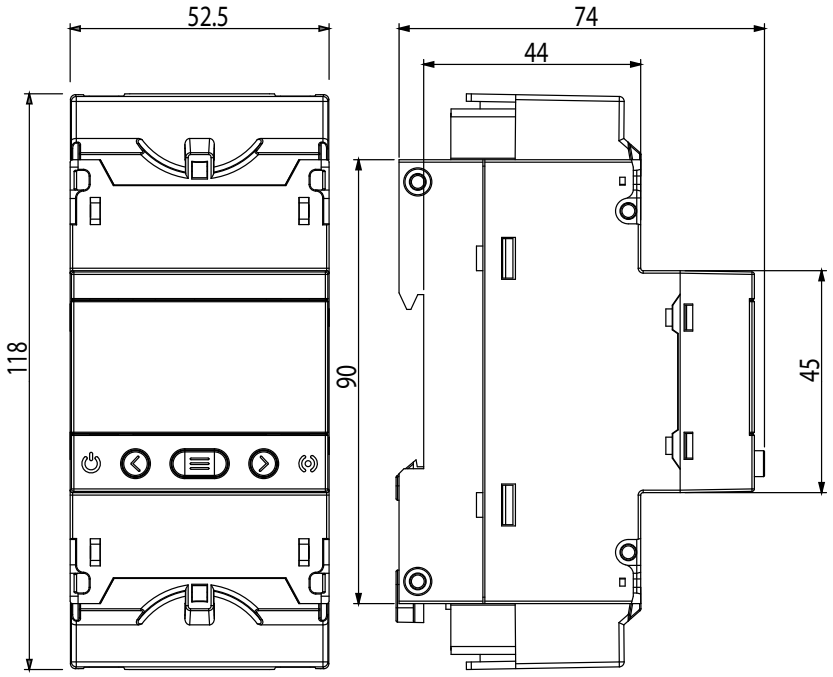


Figure 36: Dimensions CBS-400B.

8.2.- WGB

Electrical features				
Models	WGB-35	WGB-55	WGB-80	WGB-110
Type	Bar			
Maximum rated current of the monitored circuit (In)	80 A	160 A	250 A	400 A
Frequency	50... 1 kHz			
Maximum operating voltage	≤ 720 V ~, ≤ 750 V ⎓			
Accuracy	Tripping current			
	30 mA			± 2 mA
	100 mA			± 5 mA
	300 mA			± 20 mA
	500 mA			
	1.0 A			± 200 mA
	3.0 A			

User interface	
LED	6 LEDs

Environmental features	
Operating temperature	-10 °C ... +50 °C
Storage temperature	-20 °C ... +70 °C
Relative humidity (without condensation)	5... 95%
Maximum altitude	2000 m
Thermical class	150 °C

Mechanical features				
	WGB-35	WGB-55	WGB-80	WGB-110
Window size	Ø 35.5 mm	Ø 55.5 mm	Ø 80.5 mm	Ø 110.5 mm
Weight	235 g.	355 g.	555 g.	750 g.
Enclosure	Self-extinguishing V0 plastic			
Cable from WGB to RGU-100B				
Connector	RJ45 standard			
Cable cross-section	4 x 2 x AWG24/7			
Temperature range	-20 °C ... +70 °C			
Length [8]	1.5 m			

[8] Length of the cable included with the **WGB**.

Standards	
Low-voltage switchgear and controlgear - Part 2: Circuit-breakers	IEC 60947-2-M

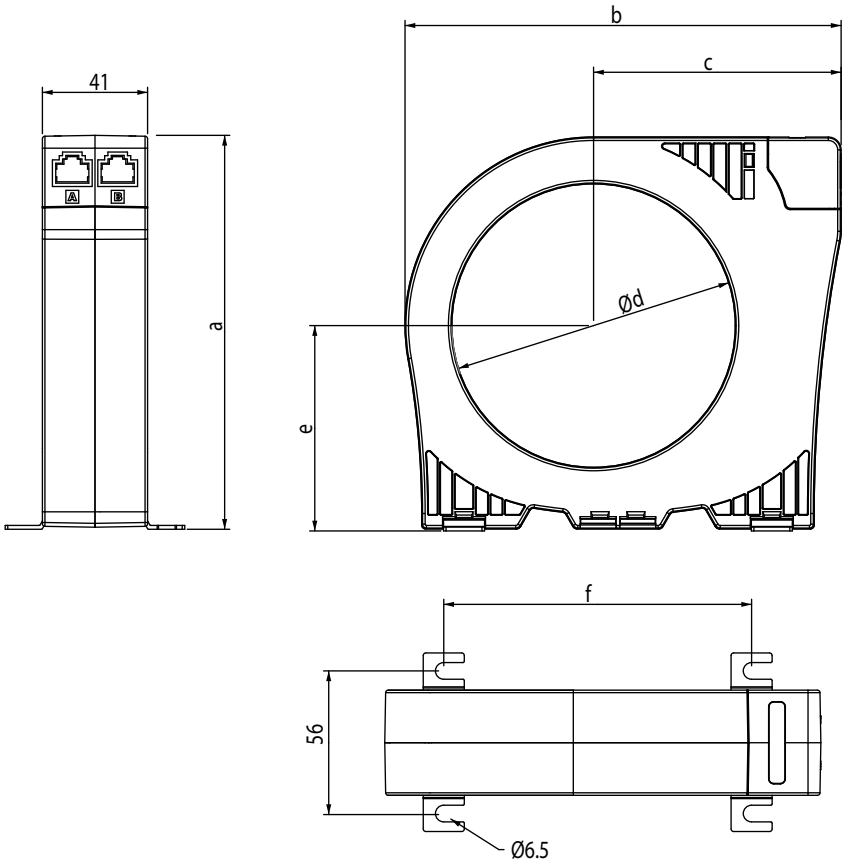


Figure 37: WGB dimensions.

Figure 38: WGB dimensions.

WGB dimensions						
	a	b	c	d	e	f
WGB-35	80	97	61.5	35,5	44.5	54
WGB-55	98.5	118	72	55.5	52.5	81.5
WGB-80	123.5	140	81.5	80.5	65	101.5
WGB-110	153.5	170	96.5	110.5	80	120

9.- MAINTENANCE AND TECHNICAL SERVICE

In the case of any query in relation to device operation or malfunction, please contact the **CIRCUTOR S.A.U.** Technical Support Service.

Technical Assistance Service
Vial Sant Jordi, s/n, 08232 - Viladecavalls (Barcelona)
Tel: 902 449 459 (Spain) / +34 937 452 919 (outside of Spain)
email: sat@circutor.com

10.- GUARANTEE

CIRCUTOR guarantees its products against any manufacturing defect for two years after the delivery of the units.

CIRCUTOR will repair or replace any defective factory product returned during the guarantee period.

- No returns will be accepted and no unit will be repaired or replaced if it is not accompanied by a report indicating the defect detected or the reason for the return.
- The guarantee will be void if the units has been improperly used or the storage, installation and maintenance instructions listed in this manual have not been followed. "Improper usage" is defined as any operating or storage condition contrary to the national electrical code or that surpasses the limits indicated in the technical and environmental features of this manual.
- **CIRCUTOR** accepts no liability due to the possible damage to the unit or other parts of the installation, nor will it cover any possible sanctions derived from a possible failure, improper installation or "improper usage" of the unit. Consequently, this guarantee does not apply to failures occurring in the following cases:
  - Overvoltages and/or electrical disturbances in the supply;
  - Water, if the product does not have the appropriate IP classification;
  - Poor ventilation and/or excessive temperatures;
  - Improper installation and/or lack of maintenance;
  - Buyer repairs or modifications without the manufacturer's authorisation.

CIRCUTOR, SA – Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
(+34) 937 452 900 – info@circutor.com

(ES) DECLARACIÓN UE DE CONFORMIDAD

La presente declaración de conformidad se expide bajo la exclusiva responsabilidad de CIRCUTOR con dirección en **Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) España**

Producto:

Relé de protección y monitorización diferencial tipo B con 4 canales

Serie:

CBS-400B

Marca:

CIRCUTOR

EL objeto de la declaración es conforme con la legislación de armonización pertinente en la UE, siempre que sea instalado, mantenido y usado en la aplicación para la que ha sido fabricado, de acuerdo con las normas de instalación aplicables y las instrucciones del fabricante

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

Está en conformidad con la(s) siguiente(s) norma(s) u otro(s) documento(s) normativos(s):

IEC 60947-2:2016 Ed 5.0 Annex M

Año de marcado "CE":

2020

(EN) EU DECLARATION OF CONFORMITY

This declaration of conformity is issued under the sole responsibility of CIRCUTOR with registered address at Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Spain

Product:

Type-B Earth leakage current protection relay, 4 channels

Series:

CBS-400B

Brand:

CIRCUTOR

The object of the declaration is in conformity with the relevant EU harmonisation legislation, provided that it is installed, maintained and used for the application for which it was manufactured, in accordance with the applicable installation standards and the manufacturer's instructions

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

It is in conformity with the following standard(s) or other regulatory document(s):

IEC 60947-2:2016 Ed 5.0 Annex M

Year of CE mark:

2020

(FR) DÉCLARATION UE DE CONFORMITÉ

La présente déclaration de conformité est délivrée sous la responsabilité exclusive de CIRCUTOR dont l'adresse postale est **Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelone) Espagne**

Produit:

relais de protection d'intensité de courant différentiel type B, 4 canaux

Série:

CBS-400B

Marque:

CIRCUTOR

L'objet de la déclaration est conforme à la législation d'harmonisation pertinente dans l'UE, à condition d'avoir été installé, entretenu et utilisé dans l'application pour laquelle il a été fabriqué, conformément aux normes d'installation applicables et aux instructions du fabricant

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

Il est en conformité avec la(les) suivante (s) norme(s) ou autre(s) document(s) réglementaire (s):

IEC 60947-2:2016 Ed 5.0 Annex M

Année de marquage « CE »:

2020

Viladecavalls (Spain), 9/6/2020
General Manager: Ferran Gil Torné

CIRCUTOR, SA – Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
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(DE) KONFORMITÄTSERKLÄRUNG UE

Vorliegende Konformitätserklärung wird unter alleiniger Verantwortung von CIRCUTOR mit der Anschrift, Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Spanien, ausgestellt

Produkt:

Differenzstrom-Überwachungsrelais Typ B, 4 Kanäle

Serie:

CBS-400B

Marke:

CIRCUTOR

Der Gegenstand der Konformitätserklärung ist konform mit der geltenden Gesetzgebung zur Harmonisierung der EU, sofern die Installation, Wartung undVerwendung der Anwendung seinem Verwendungszweck entsprechend gemäß den geltenden Installationsstandards und der Vorgaben des Herstellers erfolgt.

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

Es besteht Konformität mit der/den folgender/folgenden Norm/Normen oder sonstigem/sonstiger Regelwerk/Regelwerken

IEC 60947-2:2016 Ed 5.0 Annex M

Jahr der CE-Kennzeichnung:

2020

(PT) DECLARAÇÃO DA UE DE CONFORMIDADE

A presente declaração de conformidade é expedida sob a exclusiva responsabilidade da CIRCUTOR com morada em
Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Espanha

Producto:

Relé de monitorização de intensidade de corrente diferencial tipo B, 4 canais

Série:

CBS-400B

Marca:

CIRCUTOR

O objeto da declaração está conforme a legislação de harmonização pertinente na UE, sempre que seja instalado, mantido e utilizado na aplicação para a qual foi fabricado, de acordo com as normas de instalação aplicáveis e as instruções do fabricante.

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

Está em conformidade com a(s) seguinte(s) norma(s) ou outro(s) documento(s) normativo(s):

IEC 60947-2:2016 Ed 5.0 Annex M

Ano de marcação "CE":

2020

(IT) DICHIARAZIONE DI CONFORMITÀ UE

La presente dichiarazione di conformità viene rilasciata sotto la responsabilità esclusiva di CIRCUTOR, con sede in
Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcellona) Spagna

prodotto:

Relè di protezione e monitorizzazione di intensità di corrente differenziale tipo B, 4 canali

Serie:

CBS-400B

MARCHIO:

CIRCUTOR

L'oggetto della dichiarazione è conforme alla pertinente normativa di armonizzazione dell'Unione Europea, a condizione che venga installato, mantenuto e utilizzato nell'ambito dell'applicazione per cui è stato prodotto, secondo le norme di installazione applicabili e le istruzioni del produttore.

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive
2011/65/EU: RoHS2 Directive

È conforme alle seguenti normative o altri documenti normativi:

IEC 60947-2:2016 Ed 5.0 Annex M

Anno di marcatura "CE":

2020

Viladecavalls (Spain), 9/6/2020
General Manager: Ferran Gil Torné

CIRCUTOR, SA – Vial Sant Jordi, s/n
08232 Viladecavalls (Barcelona) Spain
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(PL)

DEKLARACJA ZGODNOŚCI UE

Niniejsza deklaracja zgodności zostaje wydana na wyłączną odpowiedzialność firmy CIRCUTOR z siedzibą pod adresem: **Vial Sant Jordi, s/n – 08232 Viladecavalls (Barcelona) Hiszpania**

produk:

przekaźnik monitorujący natężenie prądu różnicowego typu B, 4 canaly

Seria:

CBS-400B

marka:

CIRCUTOR

Przedmiot deklaracji jest zgodny z odnośnymi wymaganiami prawodawstwa harmonizacyjnego w Unii Europejskiej pod warunkiem, że będzie instalowany, konserwowany i użytkowany zgodnie z przeznaczeniem, dla którego został wyprodukowany, zgodnie z mającymi zastosowanie normami dotyczącymi instalacji oraz instrukciami producenta

2014/35/EU: Low Voltage Directive 2014/30/EU: EMC Directive

2011/65/EU: RoHS2 Directive

Jest zgodny z następującą(ymi) normą(ami) lub innym(i) dokumentem(ami) normatywnym(i):

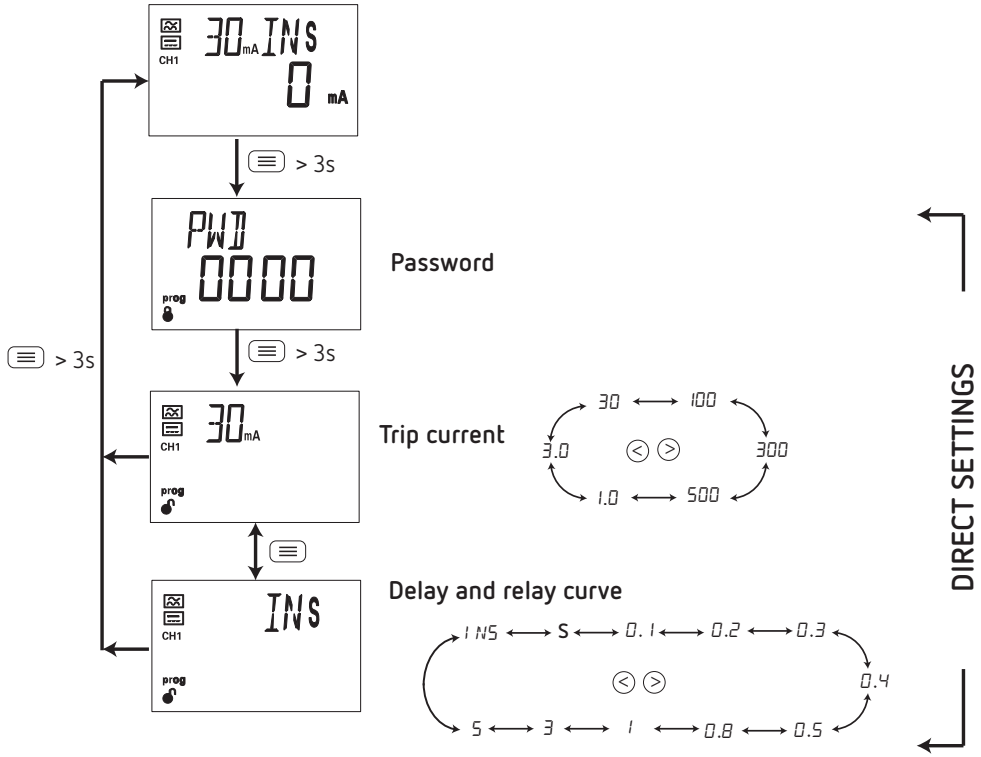
IEC 60947-2:2016 Ed 5.0 Annex M

Rok oznakowania "CE":

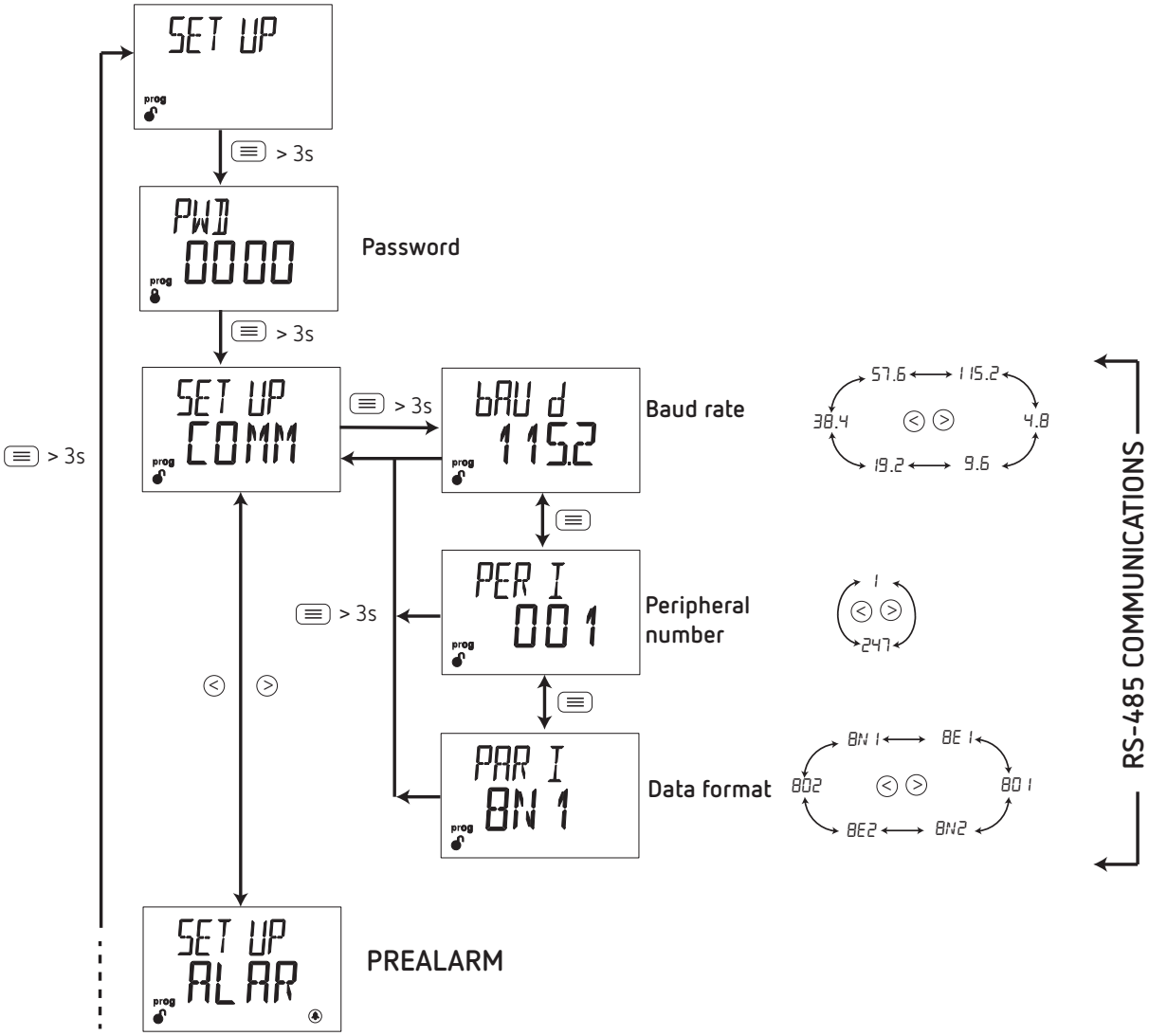
2020

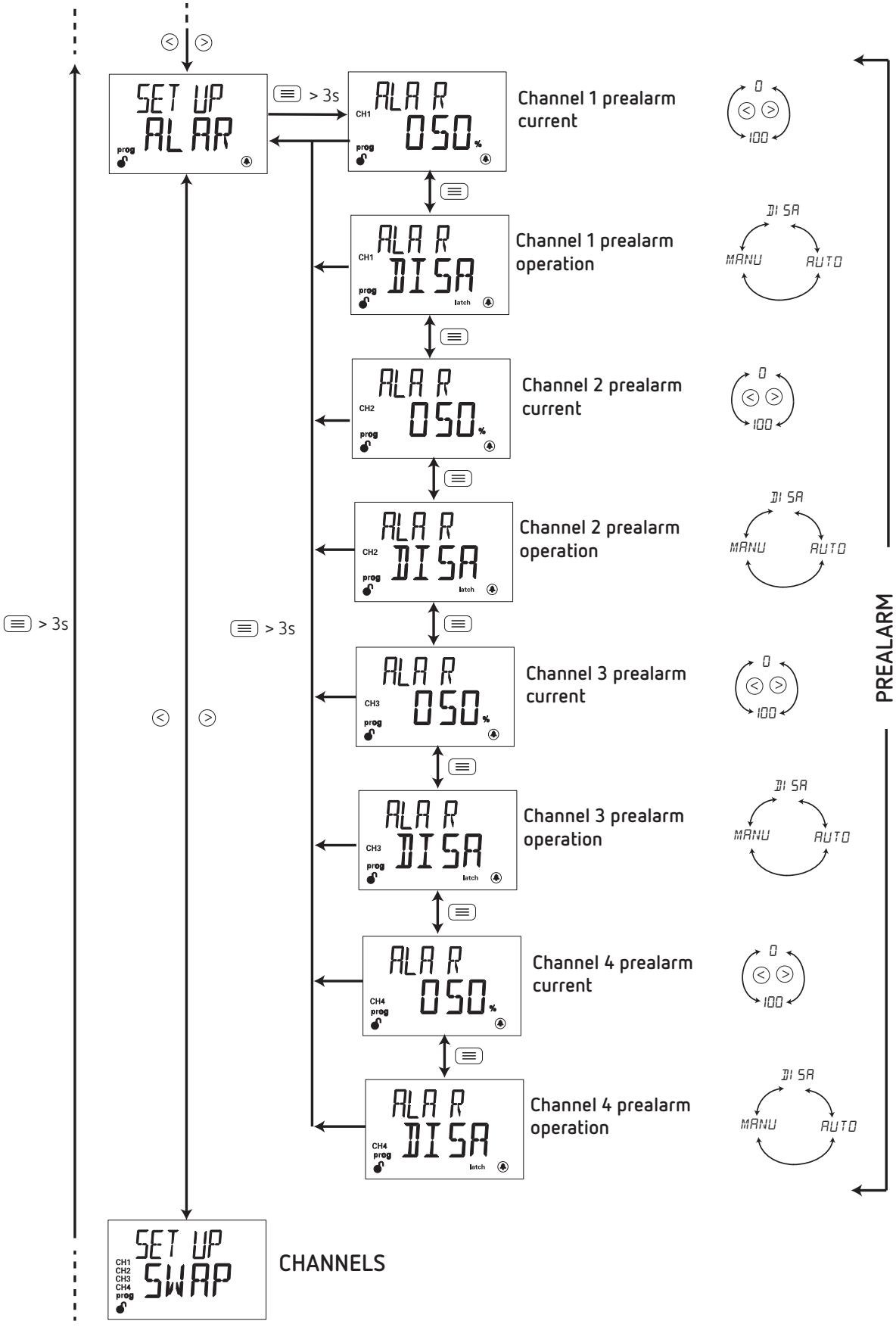
Viladecavalls (Spain), 9/6/2020
General Manager: Ferran Gil Torné

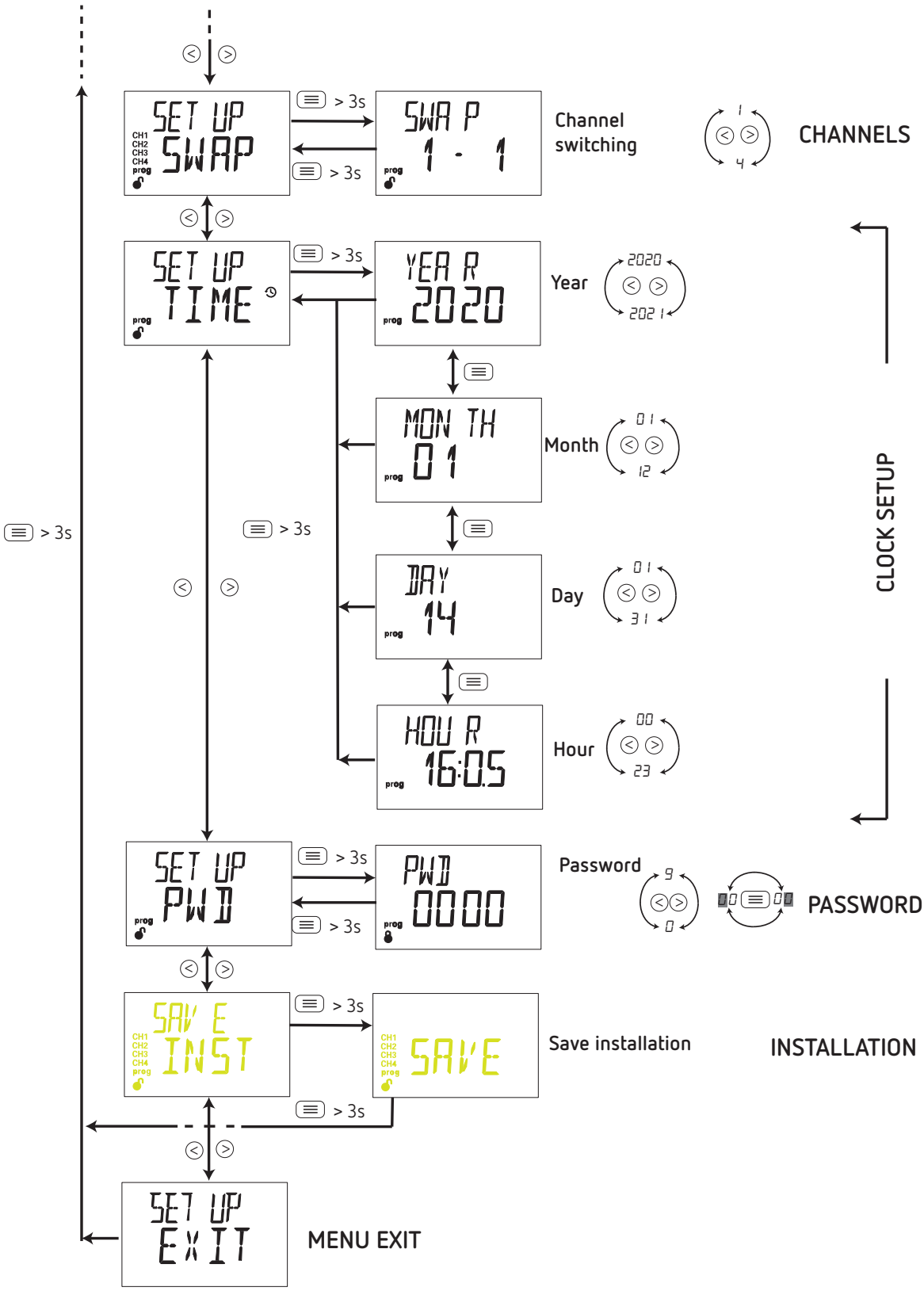
ANNEX A.- DIRECT SETTINGS



ANNEX B.- SETUP MENU




SET UP
ALAR
> 3s
ALAR
CH1
050
%
prog
Channel 1 prealarm current
0
100
ALAR
CH1
DISA
latch
Channel 1 prealarm operation
DISA
MANU
AUTO
ALAR
CH2
050
Channel 2 prealarm current
ALAR
CH2
DISA
Channel 2 prealarm operation
ALAR
CH3
050
Channel 3 prealarm current
ALAR
CH3
DISA
Channel 3 prealarm operation
ALAR
CH4
050
Channel 4 prealarm current
ALAR
CH4
DISA
Channel 4 prealarm operation
PREALARM
> 3s
> 3s
SET UP
SWAP
CH1
CH2
CH3
CH4
CHANNELS


SET UP SWAP
> 3s
SWAP 1 - 1
Channel switching
CHANNELS
SET UP TIME
YEAR 2020
Year
MONTH 01
Month
DAY 14
Day
HOUR 16:05
Hour
CLOCK SETUP
SET UP PWD
PWD 0000
Password
PASSWORD
SAVE INST
SAVE
Save installation
INSTALLATION
SET UP EXIT
MENU EXIT

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