The AC-160-C Wireless multifunctional relay

The AC-160-C wireless multifunctional relay is a component of the JABLOTRON 100 system. The relay copies the status of selected PG outputs when enrolled to the control panel. It can also be installed as a stand-alone device and it follows status of up to 64 one–way communicating detectors (JA-15x series) according to the selected mode (Modes: extended copy, impulse, change of status, always switches off and block the relay). It has galvanically isolated relay contacts for switching power loads of 230 V / 16 A. This product can only be installed by a trained technician with a valid certificate issued by an authorised distributor.

Installation

⚠ **The device can only be connected to mains electricity by a person who has an adequate electrotechnical qualification It provides single pole switching which doesn´t provide safety isolation.**

The relay module is meant to be installed into plastic electrical boxes. There must be a JA-11xR radio module enrolled to the control panel to ensure cooperation with the system. It occupies one position in the JA-100 system.
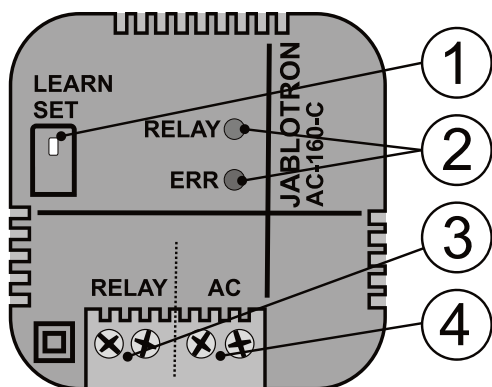

Figure: 1 – Learn (enroll) / set button; 2 – LED indicators; 3 – Relay output terminals; 4 - Mains power terminals 230 V AC

1. Connect the power wires (230 V AC) to the terminals (4), and turn the power on.
2. Basic procedure:
    a. When the relay has been turned on, the LED´s RELAY goes to green and ERR goes to yellow permanently to indicate the relay has not been enrolled to the system yet and also a detector has not been enrolled to the relay either.
    b. Using **F-Link** software, select the required position in the **Devices** window and launch the enrollment mode by clicking on the **Enroll** option.
    c. By pressing the **Learn/Set** (1) button longer than 3 s (until the yellow LED starts flashing) the relay sends an enrolling signal to the control panel. Enrolling to the control panel is confirmed when the yellow LED goes off.
3. Test the relay function by pressing the button (1). After approximately 0.5 s the output relay is actived. A switched relay is indicated by a red LED (RELAY).
4. Connect the controlled device to the terminals (3).

Notes:
- The relay goes to standby mode, when the mains is cut off or communication is lost with the control panel for more than 1 minute. When the relay has lost communication with an enrolled device then the restoration interval is 20 minutes (lost communication is indicated by permanent lighting of the ERR yellow LED). When the mains or communication with a control panel is restored, the relay returns to the status given by pre-defined settings within 2 minutes (for wireless detectors with a periodical link test such as the JA-151M, it can take up to 9 minutes).
- It is also possible to enrol the relay to the system by entering the production code via F-Link software. A sticker with the production code is on the rear side of the relay. All digits in the code are required (1400-00-0000-0001)
- JA-18x detectors <u>are not compatible</u> with the relay

- Multiple-input detectors such as the JA-150M are always enrolled to one position and the relay is only triggered by the first input of the detector. The second input has no effect.
- After each Learn/Set button press the relay changes its status after 0.5 s, as well as when an enrollment signal is transmitted or while entering the relay's service mode – indicated by the RELAY LED. When a control panel is already enrolled, the function can be disabled, see the settings below.

Setting the module properties

The module properties can be set in the **Devices** window of the **F-Link** software. When at the module position, use the **Internal settings** option to open a dialogue window where you can set the following options:

Manual relay controlling: Enabled: a short learn button *(1)* press changes the relay state (switches ON/OFF). Manual control is always possible even if communication with the control panel is being performed. Manual control can be completely disabled.

Reacts to PG(s): This option allows selection of the way the relay is triggered by one or more control panel PG outputs.

Common timer: Determines the period for which the output relay will be switched ON. The function differs according to the pre-set mode of the associated detector. This parameter serves for setting the timing of the switching impulse. A status-mode type of detector with an "extended copy" reaction set makes the relay stay active for the whole time even when the detector goes to standby. The timer can be set in pre-defined steps or the desired value up to 23h 59min 59s

Enrolled devices: This window includes 64 positions for enrolling detectors. There are two options to enroll them to the relay: the first is to enter the production code into the *production code* field and the second is enrolling them via the Learn/Set button for which see chapter **Enrolling the detectors**. In this case if used with JA-100 system it is recommended to use the internal menu for a final check of the activation modes of enrolled detectors.

⚠ **The relay internal settings do not work in online mode. That´s why it is not possible to enroll devices via F-Link SW by only inserting batteries. It is only possible by entering the serial number and saving the settings.**

Mode: This option determines how the relay will react to the activation of an enrolled detector.
- **None:** the detector has no function
- **Extended copy:** if the associated status-mode detector has the **copy** function already set, the relay will be switched ON for as long as the detector is activated. If the common timer has been previously pre-set, the relay switches off with this pre-set delay after detector deactivation.
- **Impulse:** detector activation will switch ON the relay for a pre-defined time given by the Common timer
- **Change status:** detector activation changes the relay status
- **Always switching off:** detector activation always switches off the relay
- **Block:** A particular active status-mode detector blocks switching the relay by other detectors for its whole activation period. If this status-mode detector goes to standby the Common timer is no longer effective. When blocking is over, the relay is activated again if any status–mode detector is activated. The blocking is indicated by the green LED flashing, blocking during other detector activation is indicated by alternate flashing in green / red of the RELAY LED.

Stand-alone mode

Up to 64 one-way communicating detectors of the JA-15x series can be enrolled to the relay. Enrollment and setup of the detectors is performed by the Learn/Set button (1). The relay can recognize 3 pressing lengths:

Short press < 3 s	Turns the relay ON or scrolls the menu
Long press > 3 s < 6 s	Enters the menu or sends an enrollment signal
Very long press 6 s	Exits the menu or confirms the timer

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Enrolling the detectors

First of all select the mode in which the detector should be operated and then enroll it.

Procedure:
1. Perform a long press of the Learn/Set button (1) until the yellow LED starts flashing.
2. When you release the button the relay is ready to receive an enrolling signal from a detector, confirmed by permanent lighting of the yellow LED and a flashing red LED. The number of flashes determines the operation mode to which the detector will be enrolled. Operation mode selection is performed by repeatedly briefly pressing the button.

No. of red LED flashes.	Mode
1x * * * *	Copy (extended)
2x ** ** ** **	Impulse
3x *** *** ***	Change status
4x **** ****	Always switches off
5x ***** *****	Block
1x longer lit, short pause	Mode for deleting detectors

Note: Extended copy – minimum switching time is 1 s

3. Insert the batteries into the detector – it sends an enrollment signal.
4. Enrolling is confirmed by alternate flashing of the LED in red and green.
5. When the enrollment procedure has been done correctly, the relay goes back to its normal operating mode – the green LED is ON. This means that if you want to enroll the next detector you must repeat the whole enrollment procedure.

Erasing the detectors

1. Perform a long press of the Learn/Set button (1) until the yellow LED starts flashing. Now release the button and the yellow LED indicates permanently and the red LED flashes.
2. By repeated pressing (5x) of the button (1) select the mode when the red LED lights constantly with a regular short pause.
3. Insert the batteries into the detector which is to be erased.
4. Erasing the detector from the relay is confirmed by alternate flashing of the red / green LED indicators.
5. When the erasing procedure has been done, the relay goes back to its normal operating mode.

Common timer setup

1. Perform a long press of the Learn/Set button (1) until the yellow LED starts flashing. Now release the button and the yellow LED indicates permanently and the red LED flashes.
2. Perform a long press of the Learn/Set button (1) again until the flashing of the red LED changes to permanent lighting of the green LED.
3. When the button is released the green LED will flash. The number of flashes determines the pre-set period of the Common timer.
4. By repeated pressing of the button (1) select the required time of the common timer. Table shows 5 default options. Those values can not be changed in stand-alone mode. When it is pre-set by F-Link to a different time than is mentioned (not to predefined/default values), the green LED lights with a regular short pause.

No. of green LED flashes.	Timer period
1x * * * *	1 s (default)
2x ** ** ** **	1 min
3x *** *** ***	3 min
4x **** ****	15 min
5x ***** *****	30 min
1x longer lit, short pause	Different settings (via F-Link)

5. Confirm the selected value by very long pressing (more than 6 s) until the red/green LED indicators start flashing. Settings are saved.

Note: no activity for longer than 1 minute terminates the setup/enrollment mode, saves the changes and goes to normal operating mode. To leave the setting/enrollment mode, press the Learn/Set button (1) for a very long time (more than 6 s) – a red/green LED indicator flashes briefly and the relay goes to its normal operating mode.

Operational status - optical indication

LED indication		Mode
ERR (yellow)	OFF	Everything OK
	ON (stand-alone mode)	Setting
	ON (operation with control panel)	Loss of communication or Internal settings entered
	Flashes 1/s	Low Battery from detector(s)
RELAY (red/green)	RED LED ON	Relay ON
	GREEN LED ON	Relay OFF
	GREEN flashes	Blocking when OFF
	GREEN/RED flashes	Blocking when ON

Reseting the relay

A full relay reset and complete erasing of all enrolled devices is performed by very long pressing (more than 6 s) of the button (1). It is indicated by alternate flashing in red/green of the RELAY LED simultaneously with permanent lit of the ERR LED. The Learn/Set button must be then released (within 3 s) and then shortly pressed again (also within 3 s). The relay reset is confirmed by quick alternate flashing in red/green of the RELAY LED with a yellow ERR LED. After this only the green and yellow LED stays lit. A reset doesn´t erase an enrolled control panel currently in service mode (in this case the yellow LED will not be lit).

Technical specifications

Operational power	100-230 V / 50-60 Hz
Own power consumption for 230 V AC (min / max)	0.2 W / 0.7 W
Communication band	868.1 MHz, Jablotron protocol
Antenna	Internal

Contact rating - protection class II:

Maximum switching voltage	250 V AC
Resistive load (cosφ=1)	max.16 A
Inductive, capacitive load (cosφ=0,4)	max. 8 A
Halogen lights	max. 1000 W
Minimum switching DC power	0.5 W

Recommended connection wires:
max. 2 x 1.5 mm^2; max. 1 x 2.5 mm^2

IP covering
IP-20 (according to EN 60529), IP-40 (with a front panel)

Dimensions	49 x 49 x 26 mm
Weight	65 g

Operational temperature range
-10 to + 40°C, relative humidity 75% no condensation

Complies with ETSI EN 300 220-1, EN 50130-4 EN 55022, EN 60950-1

Can be operated to ERC REC 70-03

The AC-160-C complies with the essential requirements of: Directive 1999/5/EC, 2012/65/EU, when used for its intended purpose. The original of the conformity assessment can be found at www.jablotron.com, Technical Support section.

Note: Although this product does not contain any harmful materials we suggest you return the product to the dealer or directly to the producer after use.