# The AC-160-C Wireless multifunctional relay

*The AC-160-C wireless multifunctional relay (MFR) is a bi-directional component of the **JABLOTRON** 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 reacts to activation from up to 64 one–way detectors of the JA-15x series and JA-15xJ MS and JA-16xJ key fobs. MFR works according to the selected mode for a particular detector/controller (Modes: extended copy, impulse, on / off, 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.*

*The output relay can be controlled manually by a button (1) on the front panel. In the stand-alone mode, the button serves to enrol devices and configure their functions.*

***Compatibility with specific control panels can be verified using the QR code at the end of the manual.***

## Installation

**The device can only be connected to mains electricity by a person who has an adequate electrotechnical qualification.**
**It provides single pole switching and doesn't provide safety isolation.**

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

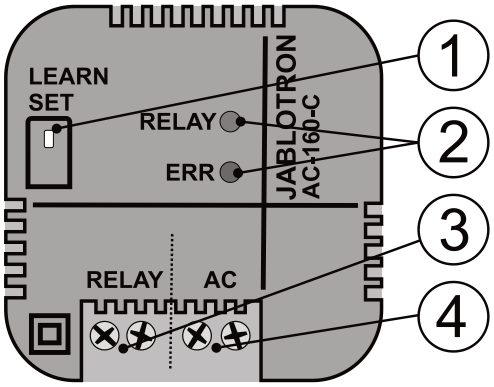



*Figure: **1** – Learn (enroll) / set button; **2** – LED indicators; **3** – Relay output terminals; **4** – Mains power terminals 230 V AC*

1. Connect the power wires (230 V AC) to the terminals (4) and turn the power on.
2. Follow the control panel installation manual. Basic procedure:
   a. When the relay has been turned on, the 'RELAY' LED switches to green and 'ERR' switches 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 MFR sends an enrolling signal to the control panel. Enrolling to the control panel is confirmed when the yellow LED turns off.
3. Test the MFR function by pressing the button (1). After approximately 0.5 s the output relay is activated. A switched relay is indicated by a red LED (RELAY).
4. Connect the controlled device to the terminals of the MFR (3).

***Notes:***

- The relay goes to standby mode, when the power is disconnected, or communication is lost with the control panel for more than 1 minute. When the MFR has lost communication with an enrolled device then the restoration interval is 20 minutes. Loss of communication is indicated by permanent lighting of the 'ERR' yellow LED).
- When the mains or communication with a control panel is restored, the MFR 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).
- The MFR doesn't maintain periodical communication with key fobs.
- It is also possible to enroll the MFR to the system by entering the production code via the F-Link software. A sticker with the production code is on the rear of the MFR. All digits of the code are required (example: 1400-00-0000-0001)
- JA-18x detectors are not compatible with the MFR
- Multiple-input detectors such as the JA-150M are always to be enrolled in one position and the relay is only triggered by the first input of the detector.
- After each pressing of the Learn/Set button the MFR changes its status after 0.5 s, as well as when an enrollment signal 'LEARN' 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 MFR properties

The module properties can be set in the ***Devices*** tab of the ***F-Link*** software. Click on ***Internal settings*** option at the module's position to open a dialogue window where you can set the following options:

***Manual relay controlling:*** Enabled: a short press of the Learn/Set button ***(1)*** changes the relay state (switches ON/OFF). Manual control is possible even in a situation when the MFR doesn't communicate with the control panel. Manual control can be completely disabled.

***Reacts to PG(s):*** Enables activation of the MFR by one or more control panel PG outputs.

***Common timer:*** Determines the period of time during which the output relay will be switched ON. The function differs according to the pre-set mode of an enrolled device. This parameter serves for setting the timing of the switching impulse of an impulse detector and a key fob. A status-mode type of detector with an "extended copy" reaction 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 your own time in the F-Link software (from 1s up to 23h 59min 59s)

***Enrolled devices:*** This window includes 64 positions to enroll detectors or key fobs. The first of two options to enroll them is to enter the production code into the *production code* field. The second is enrolling them via the Learn/Set button which is described in the **Enrolling the detectors and key fobs** chapter. In this case it is recommended to use the internal menu only to check on or maintain the modes of the enrolled detectors.

**The MFR internal settings do not work in online mode. That´s why it is not possible to enroll devices via F-Link SW by sending an enrollment signal. It is only possible by entering the serial number and saving the settings.**

***Mode:*** This option determines how the MFR will react to the activation of an enrolled device.

- **None:** the device has no function
- **Extended copy:** This reaction is only for the detectors. The MFR will be switched ON for as long as the detector is activated. After the detector goes to standby mode, the MFR extends activation with time set by the "common timer" function.
- **Switch On/Switch Off:** This reaction is only for key fobs of the JA-15xJ and JA-16xJ series. The A(C) button switches the MFR on and the B(D) button switches it off.
- **Impulse:** detector activation or pressing a configured key fob button will switch ON the MFR for a pre-defined time given by the Common timer. The MFR can be kept switched on as long as the configured key fob button is pressed. Up to 60 seconds maximum.
- **Change status:** detector activation or pressing the configured key fob button changes the MFR's status
- **Always switching off:** detector activation or pressing the configured key fob button always switches off the MFR if there's no active selected PG output in the control panel or a status detector with extended copy mode.
- **Block:** A particular active status-mode detector blocks switching the MFR by other detectors for its whole activation period. The A(C) button on an enrolled key fob blocks the MFR on and the B(D) button unblocks it. When blocking is over, the relay is activated again as long as there is a request to switch on the MFR by any status-mode detector or a PG output. Blocking is indicated by the flashing green LED. Blocking during other detector activation is indicated by alternate flashing in green / red of the 'RELAY' LED.

***Notes:*** *The highest priority of the relay is blocking, next is triggering a status detector or a PG output and then everything else (timer, switch on/off, status change), so that a switched on relay can't be switched off by, for example, a PG output.*

## Stand-alone mode

Up to 64 one-way communicating detectors of the JA-15x series and key fobs of the JA-15xJ MS and JA-16xJ series can be enrolled to the MFR. Enrollment and setup of detector and key fob mode is done by the Learn/Set button (1). The relay can recognize 3 lengths of pressing:

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| | |
|---|---|
| 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 |

## Enrolling the detectors and key fobs

First of all select the mode in which the device 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 device, 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 done by repeatedly briefly pressing the button.

| No. of red LED flashes. | Mode |
|---|---|
| 1x * * * * | Copy extended (with detectors)<br>Switch on/Switch off (with key fobs) |
| 2x ** ** ** ** | Impulse |
| 3x *** *** *** | Change status |
| 4x **** **** | Always switches off |
| 5x ***** ***** | Block |
| 1x longer lit, short pause | Mode for deleting detectors |

***Note:*** Extended copy and Impulse – minimum switching time is 1 s

3. Enrolling a detector - insert the batteries into the detector – it will send an enrollment signal.
4. Enrolling a key fob – long pressing of a selected button – The MFR will react to this button being pressed. Each button can be individually enrolled to the MFR's positions. A 4-buttton key fob can take 4 MFR positions with different relay switching modes. Enrolling by pressing a pair of buttons at the same time is possible
5. Enrolling is confirmed by alternate flashing of the LED in red and green.
6. When the enrollment procedure has been done correctly, the MFR goes back to its normal operating mode – the green LED is ON. If you want to enroll the next device, you must repeat the whole enrollment procedure.

## Erasing a device

1. Perform a long press of the Learn/Set button (1) until the yellow LED starts flashing. Now release the button, 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 and regularly fades out.
3. Insert the batteries into the detector or long-press a key fob button which is to be erased from the MFR.
4. Erasing a device from the MFR is confirmed by alternate flashing of the red / green LED indicators.
5. When the erasing procedure has finished, the MFR goes back to its normal operating mode.

***Notes:*** *Erasing is also possible by deleting a production code in the internal setting of the MFR located in the F-Link software.*

## Common timer setup

1. Perform a long press of the Learn/Set button (1) until the yellow LED starts flashing. Now release the button. 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 start flashing. The number of flashes determines the pre-set period of the Common timer.
   By repeated pressing of the button (1) select the required time of the common timer. Table shows 5 default options. Those values cannot be changed in stand-alone mode. When it is pre-set by F-Link to a different time (not to predefined/default values), the green LED lights and regularly fades away.

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

4. Confirm the selected value by pressing the button (1) for more than 6 s until the red/green LED indicators start flashing. Settings are saved.

***Notes:*** No activity for longer than 1 minute terminates the setup/ enrollment mode, saves the changes and goes to 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 in one of the devices |
| **RELAY** (red/green) | RED LED ON | Relay ON |
| | GREEN LED ON | Relay OFF |
| | GREEN flashes 4/1 | Blocking when OFF |
| | GREEN/RED flashes 4/1 | Blocking when ON |

## Reset MFR

A full MFR reset and complete erasing of all enrolled devices is done by pressing the button (1) for more than 6 s. It is indicated with the alternate flashing of red/green of the 'RELAY' LED simultaneously with a permanently lit 'ERR' LED. The Learn/Set button must be then released within 3 s and then (also within 3 s) briefly pressed again. The MFR 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. Resetting doesn't erase an enrolled control panel which is currently in service mode (in this case the yellow LED will not be lit).

## Technical specifications

| | |
|---|---|
| Nominal voltage range | 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 |
| MFR Contact rating - protection class II: | |
| - Maximum switching voltage | 250 V AC |
| - Resistive load (cos φ = 1) | max.16 A |
| - Inductive, capacitive load (cos φ = 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 °C to + 40 °C, |
| relative humidity | 75 % RH, non-condensation |
| Complies with | ETSI EN 300 220-2, EN 50130-4, EN 55032, EN 62386-1, EN IEC 63000 |
| Can be operated to | ERC REC 70-03 |

JABLOTRON a.s. hereby declares that the AC-160-C is in a compliance with the relevant Union harmonisation legislation: Directives No: 2014/53/EU, 2014/35/EU, 2014/30/EU, 2011/65/EU. The original of the conformity assessment can be found at www.jablotron.com - Section Downloads.

*Note: Disposing of this product correctly will help save valuable resources and prevent any potential negative effects on human health and the environment, which could otherwise arise from inappropriate waste handling. Please return the product to the dealer or contact your local authority for further details of your nearest designated collection point.*

Compatibility table