The AC-160-DIN Wireless multipurpose relay for DIN rails

The AC-160-DIN wireless multipurpose relay (MFR) is a bi-directional component of the JABLOTRON 100 system. The MFR copies the status of selected PG outputs when enrolled to the JA-10xK control panel.

The MFR can also be used as a stand-alone device, then it follows status of up to 64 one-way communicating detectors of the JA-15x series and keyfobs of the JA-15xJ MS and JA-16xJ. The MFR then switches accordingly to the selected mode (modes: extended copy, impulse, change of status, always switches off and block the relay). It has galvanically and securely isolated relay contacts for switching a power load 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 also be controlled manually by the button (3) on the front panel. In stand-alone mode the button serves for enrolling devices and setting the module properties.
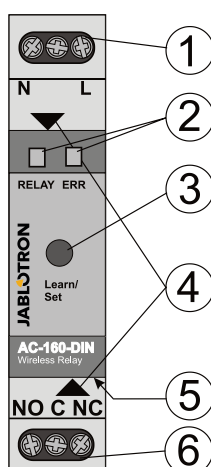
Installation

⚠ **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 on a DIN rail. 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: 1 – mains power terminals 230 V AC; 2 – LED indicators; 3 – Learn / Set button; 4 – cover tabs; 5 – connector for AN-868 external antenna; 6 – relay output terminals

1. Install the relay onto the DIN rail.
2. Connect the power wires (230 VAC) to the terminals (1), and turn the power on.
3. Proceed according to the control panel installation manual. Basic procedure:
   a. When the MFR has been turned on, the 'RELAY' indicator lights green. The yellow LED (2) lights permanently to indicate the MFR has not been enrolled to the system yet and that no detector has been enrolled to the MFR.
   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** (3) button longer then 3 s (until the yellow LED starts flashing) the relay sends the enrollment signal to the control panel. Enrolling to the control panel is confirmed when the yellow LED turns off.
4. Test the MFR function by pressing the button (3). After approximately 0.5 s the output relay is actived. A switched relay is indicated by a red LED ('RELAY').
5. Connect the controlled device to the terminals (6).

Notes:

– The relay goes to standby mode, when the power is disconnected or communication with the control panel is lost 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 a permanent yellow 'ERR' 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, the interval is 9 minutes)

– The MFR doesn't maintain periodical communication with keyfobs.

– It is also possible to 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 side of the relay. All digits in the code are required (example: 1400-00-0000-0001)

– JA-18x detectors are not compatible 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 press of the Learn/Set button the MFR changes its status after 0.5 s, as well as when a signal is transmitted or while entering the MFR'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 control: Enabled: a short press of the Learn/Set button (3) changes the relay state (switches ON/OFF). Manual control is always 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 the associated detector. This parameter serves for setting the timing of the switching impulse of an impulse detector or a keyfob. 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 your own time in the F-Link software (from 1s to 23h 59min 59s).

Enrolled devices: This window includes 64 positions to detectors and keyfobs. There are two options to them to the relay: the first 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 keyfobs** 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 on-line mode. That´s why it is not possible to enroll devices via F-Link SW 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 keyfobs 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 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 keyfob button is pressed. Up to 60 seconds maximum.

– **Change status:** detector activation or pressing the configured keyfob button changes the MFR's status

– **Always switching off:** detector activation or pressing the configured keyfob 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 keyfob 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.

Note: 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.

FW upgrade

1. A FW upgrade can be performed by a user with Service authorisation.
2. The **F-Link** SW is needed to perform the upgrade.
3. Using a thin tool (screwdriver) slightly press the tab (4) and take off the relay front cover. It allows access to the Micro USB connector.
4. Connect the PC to the relay using a Micro USB cable. A FW upgrade can be performed with a connected control panel or offline with only the MFR connected.
   The MFR can be powered by 230 V AC, the USB circuits are galvanically isolated. A power supply is not required as the relay is powered via the USB cable from the PC.
5. The relay's BOOT mode is indicated by flashing the green / red 'RELAY' LED.
6. Then continue as if you are doing an upgrade via **F-Link** software: **Control panel → Upgrade Firmware →** the FW upgrade file pack (it is a part of the F-Link installation pack, or it can be independently

published for downloading, file type *.fwp). If Automatic updates are enabled, the FW pack will be selected automatically.
7. F-Link shows a window with a device listing, select USB.
8. Then press **OK** and perform the upgrade for the selected device (the relay).
9. Disconnect the cable and attach the relay front cover.
10. Check the settings via the **F-Link** software*.*

Note: *The MicroUSB cable (required for FW upgrade) is not supplied with the MFR.*

Stand-alone mode

Up to 64 one-way communicating detectors of the JA-15x series and keyfobs of the JA-15xJ MS and JA-16xJ series can be enrolled in the MFR. EnrollmentEnrolment and setup of the detector and keyfob modes is done by the Learn/Set button (3). The relay can recognize 3 lengths of pressing:

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 keyfobs

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 (3) 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 device 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) Switch on /Switch off (with keyfobs)
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 1s*

3. Enrolling a detector - Insert the batteries into the detector – it sends an enrollment signal.
4. Enrolling a keyfob – long press 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 keyfob 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 (3) 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 (3) select the mode when the red LED lights and regularly fades out.
3. Insert the batteries into the detector or long-press a keyfob 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 been finished, the relay goes back to its normal operating mode.

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

Common timer setup

1. Perform a long press of the Learn/Set button (3) 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 (3) 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. The 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 * * * *	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)

4. Confirm the selected value by pressing the button for 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.

Operation 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

Resetting the relay

A full relay reset and complete erasing of all enrolled devices is performed by pressing the button for more than 6 s (3). 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

Operational power	230 V/50 Hz
Own power consumption for 230 V AC (min / max)	0.5 W/1.7 W
Communication band	868.1 MHz, Jablotron protocol
Antenna	Internal/optional external antenna type AN-868

MFR 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 65529), IP-40 (with a front panel)
Dimensions	18 x 90 x 64 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, EN 50581
Can be operated to	ERC REC 70-03

JABLOTRON ALARMS a.s. hereby declares that the AC-160-DIN 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 - 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.