The JA-84P wireless motion detector with built-in camera

The JA-84P is a component of Jablotron's Oasis 80 alarm system. It provides human body movement detection including visual alarm verification. The detector's camera is equipped with a flash to take photos in the dark. The camera is capable of taking monochromatic pictures with a resolution of 160x128 pixels. A sequence of 4 photos is taken when movement is detected. It is stored in the detector's internal memory and it is also transmitted wirelessly to the control panel to be sent to an alarm receiving center and/or to the owner's mobile phone display. The battery-powered detector communicates via the OASIS radio protocol.

Recommended control panel configuration

To transfer photos from the protected premises, the control panel should be equipped with a suitable communicator (model JA-80Y = GSM/GPRS software version XA61006 or higher or JA-80V = LAN/PSTN software version XA64004 or higher) and with the JA-80Q data processing module connected to the communicator's internal bus cable.

The communicator allows for the programming of an IP address to which the photos will be transferred (see the corresponding communicator installation manual). As a factory default, Jablotron's photo server (IP address 195.39.77.154, port 7070) are preprogrammed which corresponds to the URL http://img.jablotron.cz. This server allows the logging into and display of the photos free of charge. It can also notify you by SMS message when a new photo arrives, providing a link to view the photo on the phone display. The server can also forward the photos to a desired e-mail address.

If the control panel is not equipped with a suitable communicator and data processing module (JA-80Q), photos will only be stored locally in the detector's internal memory (last 61 shots).

Multiple camera detectors can be enrolled to the control panel. If more of the detectors take photos within a very short period of time, the detectors will transfer the photos to the control panel in the same order as the detectors were triggered.

Installation and testing of the motion detector

Installation should only be undertaken by technicians holding a certificate issued by an authorized distributor. The detector can be installed on a flat wall or in the corner of a room. Avoid objects rapidly changing in temperature, such as electrical heaters, gas appliances etc. being positioned within its detection area. Moving objects with a temperature close to that of humans such as curtains moving above a radiator, and pets should also be avoided. Detectors should not face windows or spotlights or be near fast-moving air e.g. near ventilation fans or open windows or doors. There should also be no obstacles blocking the detector's "view" of the protected area. Keep the detector away from metal objects which could interfere with radio communication.

1. **Open the detector cover** by pressing the tab and disconnect the camera's flat cable (pulling from the connector by the batteries)
2. **Remove the PCB** which is held by an internal tab. Avoid touching the PIR element
3. **Punch screw holes through the rear plastic cover.** At least one screw should penetrate the tamper-sensitive section (be careful not to break the tamper sensitive section out).
4. **Screw the rear cover to the wall,** about 2 meters above the floor (vertically, with the tab down).
5. **Replace the PCB** to its original position.
6. **Leave the battery disconnected and the cover open** (camera disconnected) and then follow the control panel manual to enroll the detector. The basics of enrollment are:
   a. Enter enrollment mode on the control panel by pressing "1" while in Service mode.
   b. Install batteries into the detector to activate enrollment.
   If the detector's batteries have already been connected, first disconnect them , press and release the tamper switch and then reconnect the batteries
   c. Exit enrollment mode by pressing "#"
   d. Leave the control panel in SERVICE mode.
7. **Connect the camera cable and close the detector's cover.** If the red LED is permanently lit, it means that the motion detector is warming up (it usually takes about 100 sec. after the batteries are connected). If the red LED is flashing, the detector has not been enrolled yet (see point 6).
8. **After the red LED turns off** test the motion sensor by walking in the covered area (detected movement is indicated by red LED flashes). Also test the detector's radio signal strength – see the control panel installation manual for details. Testing is only possible within 15 minutes of closing the detector's cover. After this period the red LED is switched off.
9. If the detector is not in test mode, it ignores frequent movements (see the following section).

5 minute / 1 minute sleep time

To save battery energy, the detector switches to battery-saving mode 15 minutes after its cover is closed. The detector still watches for movement during battery-saving mode.

The first movement detected is instantly transmitted to the control panel, and **for the next 5 minutes the detector ignores** any further **movement**.

After these 5 minutes, the detector then returns to watching out for movement until it is re-triggered. The sleep time can be shortened to 1 minute by pressing the tamper switch during battery installation. Not pressing the tamper switch gives a sleep time of 5 minutes.

Camera testing

Switch the control panel to SERVICE mode and have an RC-80 key-fob ready.

1. Open and close the detector's cover again. Its **green indicator will turn on** for 10 sec (enrollment mode to enroll the key-fob as a remote trigger for testing the camera)
2. Enroll the key-fob by pressing any key (a green LED flash confirms enrollment)
3. Use the key-fob to take photos: **= snap without flash**, = **snap with flash**
4. Camera test mode lasts for 15 minutes then the key-fob is automatically erased from the detector. If you want another 15 minutes testing, repeat the above procedure starting from 1.

After it has been taken the **photo is transmitted** to the control panel - indicated by **green LED flashing**. Successful transmission is confirmed by a long green flash (2 sec). Unsuccessful transmission is indicated by a series of rapid green flashes at the end. The transmission is also indicated on the JA-80Q data module (same logic).

After the photo is received by the control panel, the data module transfers it to the server (via the communicator). This transfer is indicated by a red LED flashing on the JA-60Q module. Successful transfer is confirmed by a long red flash (2 sec). Unsuccessful transfer is indicated by a series of rapid red flashes at the end.

The total average time to transfer the photo from the camera to the server is about 20 sec. In the case of radio signal interference the transfer can be longer (damaged data are repeated). Each photo also contains a date and time stamp.

If the photo transfer was not successful, the photo will only stay in the detector's internal memory.

Normal camera operation

15 minutes after closing the cover, the detector changes from test mode to normal operational mode (the test key-fob is erased and the red LED turns off).

If the control panel is unarmed (unset), the detector ignores movements and takes no photos.

During the exit delay the detector reports movements but takes no photos.

During the entrance delay the detector – when triggered – not only reports a movement but also instantly takes one photo without a flash.

The photo is then stored in memory. For the next 5 seconds from the moment of taking the photo shot, the detector goes to sleep mode. After that the detector returns to watching out for movement. Any further detection of movement is reported and responded to according to whether the system is in an entrance delay state and/or alarm condition. If an entrance delay is still occurring, the detector will not take or store pictures any more. If an alarm state is indicated, the detector will take photos the same way as if a movement had been detected in an instant loop (see below). If an alarm triggered due to an entrance delay has expired (so that no other detectors have been triggered), then the memorized photo taken during first movement detection is transmitted.

Instant-loop movement detection is reported to the control panel and captured by a series of 4 photos taken by the camera. The first photo is taken instantly without a flash. The following 3 pictures are taken at one second intervals, each with a flash. After that any movement in the detection area is ignored and the pictures are transferred to the control panel. The detector's inactivity period ends 5 seconds after finishing picture transmission.

Alarm verification and flash functions

The main task of the built-in camera is to verify real alarms caused by human body movement (to recognize false alarms).

The detector's built in flash illuminates the scene, but it also has another important functions patented by Jablotron:

a) **An unexpected flash attracts the intruder to look** at the detector and this significantly increases the probability that the next shot will show the **intruder's face**

b) A flash also clearly **indicates, to the intruder that he was detected**, possibly making him run away. If not and (s)he tries to damage the detector, a tamper alarm is triggered. The tamper alarm will verify the intruder's presence even faster than photo transmission does.

Viewing photos from the detector's internal memory

The detector stores the last 61 photos in its internal memory. The photos can be viewed by a PC:

1. Switch the control panel to SERVICE mode
2. Open the detector and disconnect the camera module's cable
3. Take the cover with the camera to the PC and use the cable (provided with the JA-80Q data module) to connect it to the PC USB port
4. The camera module is accessible as a removable mass storage device. Photos are stored in BMP files. Use a suitable viewer (i.e. "Windows photo and fax viewer") to view the photos.
5. After viewing the photos reinstall the camera module in the detector and switch the control panel to normal operational mode.

Detector DIP switches

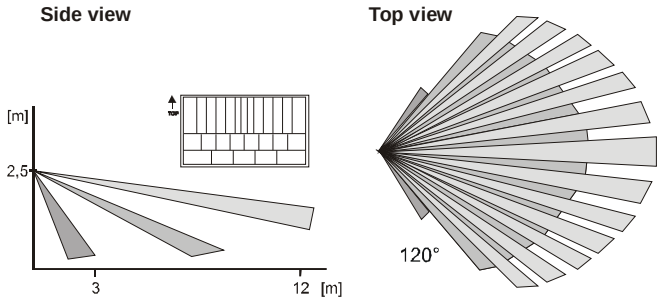
There are 4 DIP switches to select the desired features:

1	**OFF** = **delay reaction** (exit & entrance delay provided) ON = instant reaction (no exit & entrance delay) *This switch only has an effect if the detector's address has a NATUR reaction programmed in the control panel*
2	**OFF** = **standard immunity** for the motion sensor ON = increased immunity for the motion sensor (slower reaction)
3	OFF = flash disabled (except for testing) **ON** = **flash enabled** (second to fourth shots with flash)
4	OFF = photos stored only in the camera (not transmitted) **ON** = photos stored **in the camera memory and also transmitted wirelessly** to the control panel

Bold = factory default setting

Motion detector coverage

The detection characteristics of the PIR detector lens does not affect the detector's camera components. The default lens supplied covers an angle of 120° and a distance of 12 metres. The area is covered by three beams as shown in the following diagram.



The characteristics can be changed by using optional lenses:

JS-7904	Suitable for long corridors. The middle beam covers 20 meters**.**
JS-7906	Only employs an upper beam with a 120° angle and a 12 metre range. Ignoring the floor helps eliminate the effect of the movement of small pets.
JS-7901	Has a vertical beam forming a wall-like detection barrier which triggers the detector if someone walks through it.

Note: After changing the lens, test that the desired area is protected. Incorrect installation of the lens can disable detection.

Battery replacement

The detector monitors the voltage of its batteries and if too low, a transmission is sent to the control panel to inform the installer or user. The detector continues to function and shows each detected movement with a flash of its red LED. Battery replacement should not be delayed by more than a couple of days. This should be done by a qualified technician with the control panel in Service mode.

After battery replacement, the detector needs about 100 sec to stabilise during which its red LED lights continuously. After the LED has stopped indicating, test that the detector is functioning (it will be in test mode for 15 minutes).

Always use new batteries and replace both of them. Be careful not to mix used and new batteries (even a nearly discharged lithium battery has 3V so it is not simple to recognize a discharged battery).

Expired batteries should not be thrown into the garbage, but disposed of according to local regulations.

Removing the detector from the system

If a detector is removed, the control panel reports its removal. The detector has to be deleted from the control panel before intentional removal.

Technical parameters

Voltage:	*2x Lithium battery type CR14505 (AA 3.0V)*
Typical battery lifetime:	*approx. 3 years (max. 80 photo sequences)*
Communication band:	*868 MHz, Oasis protocol*
Communication range:	*max. 300m (open area)*
Recommended installation height:	*2.0 to 2.5 m above floor level*
PIR detection angle/detection range:	*120° / 12 m (with basic lens)*
Resolution of the camera	*160 x 120 pixels, B&W*
Internal memory photo format	*bit map (BMP)*
Format of the photos transmitted to server	*JPG*
Horizontal camera capture angle	*50°*
Range of the flash	*max. 3 meters*
Typical photo transmission time to the control panel	*12 sec*
Typical photo transfer time from the system to server	*8s/GPRS (JA-80Y)* *2s /LAN (JA-80V)*
Operational environment according to EN 50131-1	*II. internal space*
Operational temperature range	*-10 to +40 °C*
Dimensions	*110 x 60 x 55 mm*

EN 50131-1,CLC/TS 50131-2-2, EN 50131-5-3 classification: grade 2
Complies with ETSI EN 300220, ETS 300683, EN 60950

FCC ID: VL6JA84P

Jablotron Ltd. hereby declares that the JA-84P is in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC. and complies with part 15 of the FCC rules. Operation is subject to the following two conditions: 1. This device may not cause harmful interference, and 2. This device must accept any interference received, including interference that may cause undesired operation.

CE ***CAUTION:*** Changes or modifications no expressly approved by Jablotron could void the user´s authority to operate the equipment. 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.

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