# elmes ® electronic

# WIRELESS SIREN CONTROL MODULE - Elmes WSM    (EN)

Elmes WSM Module allows Elmes WSS Wireless Siren & Strobe device (as from ver.1.10) to be used with any hardwired alarm system. The module features two way communication interface between wireless siren and alarm control panel and supports all wired alarm functionality, in particular:

- independent control of audible and optical alarming of the siren;
- full anti-sabotage supervision of the wireless siren;
- supervisory transmissions with the siren;
- warning of wireless siren AC power supply and battery failure states.

In addition, the module extends functionality of wired alarm by adding optional key fob remote arming and disarming feature with action externally signaled by wireless siren & strobe.

## WSM Module Inputs Description.

**+** - power supply positive terminal – connects to +AUX power supply terminal of alarm control panel;

**-** - power supply negative/module ground terminal – connects to -AUX power supply terminal of alarm control panel;

**i1** - system arming/disarming signal input (state active when system armed);

**i2** - wireless siren's optical alarm control input – connects to optical alarm OUT terminal of control panel. When optical alarm timing is to be equal to audible then the input connects to input **i3**. When optical alarm lasts until system disarms then the input connects to input **i4**.

**i3** - wireless siren's audible alarm control input – connects to acoustic alarm OUT terminal of control panel;

**i4** - connects to wired alarm control panel "event memory clear" output – active when alarm occurred while in armed state. When remote arming/disarming function is used this input informs of alarm event while in armed state.

**NOTICE!** Active sensing level +12V or 0V (shorted to circuit ground) of module's inputs **i1..i4** is selected by jumpers **JP3** and **JPP**:

JP3 – set ON while **JPP** in position „**H**": standby level high, active sensing level is 0V;
JP3 – set OFF while **JPP** in position „**L**": standby level low, active sensing level is +12V.

## WSM Module Outputs Description.

The module features five below listed OC (open collector) transistor outputs with maximal current rating of **50mA (!).** The outputs short to ground when active and indicate status by LED. Outputs have the following meaning:

**1** - sabotage warning output – active (shorts to ground) if any of siren's sabotage contacts detect break-in. Operation mode of this output uniquely may be reversed by setting jumper **JP4** to OFF**,** so that output's active state is disconnection from circuit ground.

**2** - **low battery warning** – output active when wireless siren's battery voltage drops to 10,6V. Additionally, this failure is indicated by repeated module's LED triple pulse flashing.

**3** - **AC supply failure** warning – output active on wireless siren's AC power supply failure. Additionally, this failure is indicated by repeated module's LED double pulse flashing.

**4** - **communication failure** – output active on supervisory radio link with wireless siren failure. Additionally, this failure is indicated by repeated module's LED single pulse flashing.

**5** - alarm system control output used for remote arming and disarming of the alarm system with the use of Elmes made hand-held transmitter.

**TAMPER** – output terminals signaling opening of the module's case.

## WSM Module Operation & Functions.

1. **Alarming**. Alarm signal delivered to input **i2** of the module activates wireless siren's optical alarming (strobe flashes) lasting for as long as the signal is maintained. Alarm signal delivered to input **i3** of the module activates audible alarm of which maximal duration is limited to 5 minutes. Therefore, programming optical alarm duration in the control panel should not exceed 5 minutes.

2. **Sabotage protection**. Wireless siren's break-in detected by any of its sabotage contacts triggers siren's optical and audible alarming. In addition, output **1** of the WSM module is set active.

3. **Supervisory transmissions**. Periodically, the WSM module tests radio communication link with wireless siren. In case any test fails to complete, output **4** of the module is set active. Timing of the test is made according to directions described in point 5 of the Programming Procedures. The test transmissions may be permanently set off by setting jumper **JP2** to OFF.

4. **Siren's AC Power Supply** and battery voltage are checked by the WSM module. Detection of AC supply failure or battery voltage drop below 10,6V sets active outputs **3** and **2** respectively.

5. **Remote arming & disarming of alarm system – standard mode (example diagrams 1 & 2).** Providing input **i1** and output **5** of the module are connected to system control panel "system armed/disarmed status" output zone and "momentary keyswitch arm/disarm" input zone respectively, the alarm system arming and disarming may be performed remotely with the use of hand held transmitters and the events will be notified by the wireless siren – one signal pulse notification on system arming and two signal pulses on system disarming. In addition, if an alarm event occurred while in the absence of property management, the siren will produce 5 instead of 2 pulses notification on system disarming. This feature is valid only if control panel "event memory clear" signal line has been connected to input **i4** of the module and point 3 of the Programming Procedures has been performed with output **5** timing set to 1..2 seconds.

6. **Remote arming & disarming of alarm system – simple mode (example diagram 3).** Even if inputs **i1** and **i4** of the WSM module cannot be connected to alarm system control panel arm/disarm nor "event memory clear" outputs, e.g. the outputs are configured for other use, there is still a possibility of remote arming and disarming of the system. In that case, point 4 of Programming Procedures should be performed with output **5** of the module set bistable (on/off mode) and connected to "on/ off keyswitch arm/disarm" input zone type of the control panel. The system may now be armed or disarmed with the use of hand transmitter learned to the WSM module with siren producing one signal pulse notification on system arming and two signal pulses notification on system disarming. Also, the siren will produce 5 instead of 2 pulses notification on system disarming when alarm occurred while in the armed state.

7. **LED signaling armed/disarmed system status.** Bicolor LED installed in the WSM module signals alarm system status armed (shining red) and system status disarmed (shining green).

8. **Disabling sabotage protection in wireless siren.** In order to disable sabotage protection of wireless siren (e.g. battery change, maintenance), sabotage protection zone in the control panel to which output **1** of the WSM module is connected must be disabled and jumper **JP1** in the module set OFF. Now, opening wireless siren case does not actuate sabotage alarm.

## Functions of jumpers JP1..JP4:

**JP1** – setting jumper OFF disables optical and audible signalling of the wireless siren allowing maintenance service. NOTE! Wireless siren's sabotage (TAMPER) zone in the control panel should also be disabled.

**JP2** – setting jumper OFF disables supervisory test transmissions to wireless siren.

**JP3** – determines signal sensing level of the WSM module inputs **i1..i4** (see description of WSM inputs above).

**JP4** – determines active level of wireless siren sabotage protection signal at module's output **1** – grounded when set ON and ground-disconnected when set OFF.
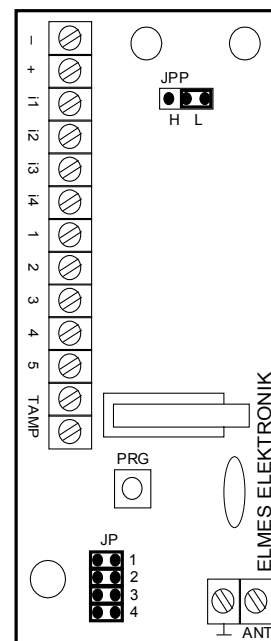
# PROGRAMMING PROCEDURES

Programming is made with the use of **PRG** switch on pc board. Module's bicolor LED indicates execution of subsequent programming steps. Slow flashing LED (2 flashes/second) in green color confirms correctly executed procedure. Fast flashing in red color signals programming error – the procedure must be repeated.

**1. Learning hand held transmitters to WSM module memory (maximum 39).**
   a) Press shortly PRG switch – module's LED changes color from green to red.
   b) Double press transmit button of the hand held transmitter.

**2. Learning wireless siren to WSM module memory (maximum 1).**
   a) Press shortly PRG switch – module's LED changes color from green to red.
   b) Actuate transmissions from the siren by switching on or off its AC power supply while with battery connected.

**3. Programming momentary SET ON time of output 5** (factory set to 2 seconds).
   a) Press module's PRG switch for more than 2 and less than 8 seconds, LED switches to red and again to green.
   b) Press hand transmitter button - LED switches to red and output activates. After required set on time has lapsed press transmitter button again, blinking LED confirms end of the procedure and the output is set off.

**4. Programming latched (on/off) mode of operation of output 5.**
   a) Press module's PRG switch for more than 2 and less than 8 seconds, LED switches to red and again to green.
   b) Press hand transmitter button consecutively three times with less than 2 seconds intervals.

**5. Programming siren's supervisory tests time interval** (factory set to 5 minutes).
   To calculate programming time (Tp) as fraction of actual supervisory tests time interval (Ti), the following equation should be used:
$$Tp = (Ti – 60s) / 8$$
   **Example:** If required supervisory tests time interval is required 10 minutes then programmed time equals: Tp = (10*60-60)/8 = __67 seconds__

   a) Press module's PRG switch for more than 2 and less than 8 seconds, LED switches to red and again to green.
   b) Press shortly PRG switch - LED switches to red and **Starts** interval time count. After required interval time has lapsed press PRG switch again – the interval time count **Stops.** After two seconds module's LED blinking green confirms end of procedure.

**6. Deleting external devices memory.**
   Press module's PRG switch for more than 8 seconds. Initially, the receiver's LED switches to red and after two seconds to green. After next six seconds the LED starts blinking. Release the switch. The external devices memory of the module is now cleared and the module will not respond to transmitters nor communicate with wireless siren.

**NOTE! Procedures 3 i 4 above can be performed with the use of hand transmitter learned to module's memory only.**

**WSM Module Installation.**
The module operates with majority of wired control panels on the market. In case of panels without remote arming/disarming input, only basic functionality of system alarming and failures signaling will be obtained, without the remote arming option.
Following, are example diagrams of wiring the Elmes WSM module to PC1565 control panel made by DSC(*) and CA10 control panel made by SATEL(**). When wiring the module to different control panels connection details contained in below example schematics should be followed.
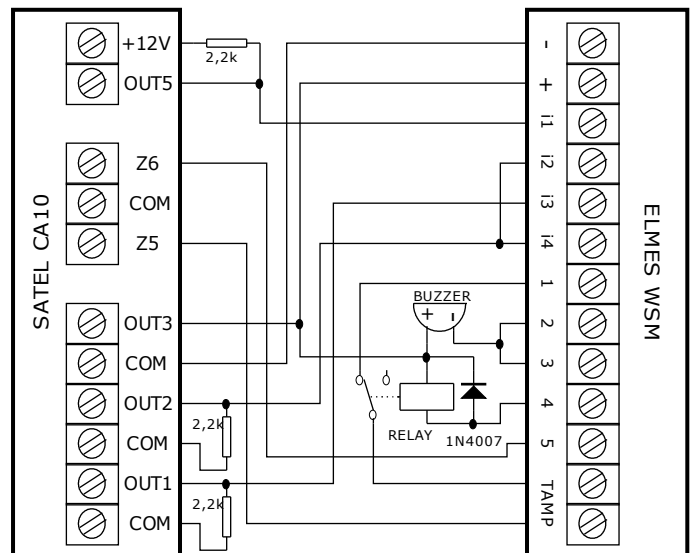
**Example 1. WSM Module connection to PC1565 control panel.**

1. Set momentary set on time at output 5 to 1..2 seconds (pt 3 of programming procedures).
2. Set panel input zones to 2EOL type.
3. Set panel zone Z5 type 11: "24h Burglary Zone" and disable the zone till end of programming to avoid sabotage alarm.
4. Set panel zone Z6 type 22: "Momentary Keyswitch Arm Zone".
5. Program panel output PGM1 option 05: "Armed Status" .
6. Program output PGM2 option 10: "System Event", attribute 01: "Burglary".
7. Set WSM module inputs i1..i4 active sensing level jumper JPP to "H" and jumper JP3 to OFF.
8. Set WSM module output 1 control jumper JP4 to OFF.
9. Set wire connections between PC1565 and WSM module as shown on side diagram. System failures such as loss of supervisory radio link, low battery or AC supply failure are warned by pulsing main LED and, as shown, by optionally installed buzzer. Other example of failure signaling is shown on diagram below. If the warning signals are needed in the control panel, an additional relay is necessary to reverse outputs 2,3,4 polarity (NO) to NC required by the PC1565 panel.
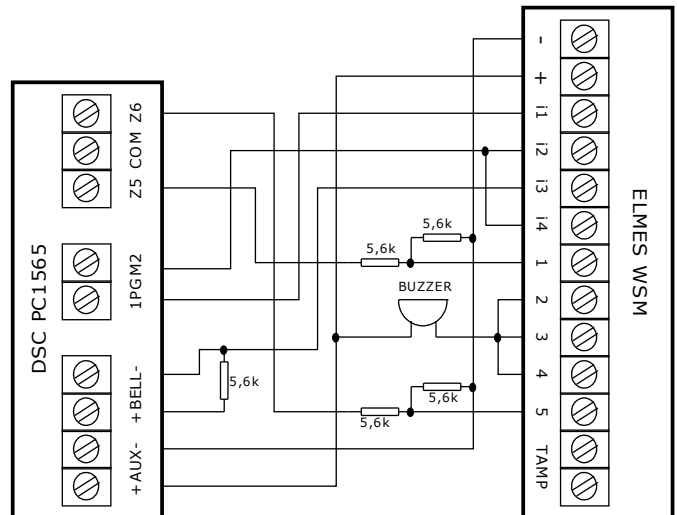


**Example 2. WSM Module connection to CA10 panel (recommended mode).**

1. Set momentary operating mode of output 5 to 1..2 seconds (pt 3 of programming procedures).
2. Set panel zone Z5 and Z6 type to NO.
3. Set panel zone Z5 function to 8: "24h audible" and disable the zone till end of programming to avoid sabotage alarm.
4. Set panel zone Z6 function to 16: "arming/disarming" with option 1 "priority" enabled therefore, selecting mode in which momentary violation of the zone arms or disarms alarm system.
5. Set panel OUT1 function to 1: "burglary alarm".
6. Set panel OUT2 function to 1: "burglary alarm" with programmed option 7 "signaled until cleared".
7. Set panel OUT3 function to 27: "power supply".
8. Set panel OUT5 function to 35: "power supply on armed mode" with option 8 set off: "polarity 0V when the output is active".
9. Select WSM module inputs i1..i4 active sensing level jumper JPP to "L" and JP3 to ON.
10. Select WSM module output 1 active-polarity to grounded by setting JP4 to ON.
11. Set wire connections between CA10 panel and WSM module as shown on side diagram. Low battery or AC supply failures are warned by pulsing main LED and optional buzzer. With optional relay installed as shown on diagram, radio link failure triggers sabotage alarm. If warning signals are needed in control panel, connections should be made to NO input zones of the panel.

**Example 3. WSM Module connection to CA10 control panel without the use of OUT2 and OUT5 (simplified mode).**

By analogy to this example, when using PC1565 control panel outputs PGM1
and PGM2 may be omitted.

1. Set latched (on/off) operating mode of output 5 (pt 4 of programming
   procedures).
2. Set panel zone Z5 and Z6 type to NO.
3. Set panel zone Z5 function to 8: "24h audible" and disable the zone till
   end of programming to avoid sabotage alarm.
4. Set panel zone Z6 function to 16: "arming/disarming"  with option 1
   "priority" disabled therefore, mode for as long as the zone is violated
   alarm system is armed.
5. Set panel OUT1 function to 1: "burglary alarm".
6. Set panel OUT3 function to 27: "power supply".
7. Select WSM module inputs i1..i4 active sensing level jumper JPP to "L"
   and JP3 to ON.
8. Select WSM module output 1 active-polarity to grounded by setting
   JP4 to ON.
9. Set wire connections between CA10 panel and WSM module as shown
   on side diagram. System failures such as loss of supervisory radio link, low
   battery or AC supply failure are warned by pulsing module's main LED and,
   as shown on diagram, optionally added buzzer. If the warning signals are
   needed in the control panel, connections should be made to NO type input
   zones of the panel.
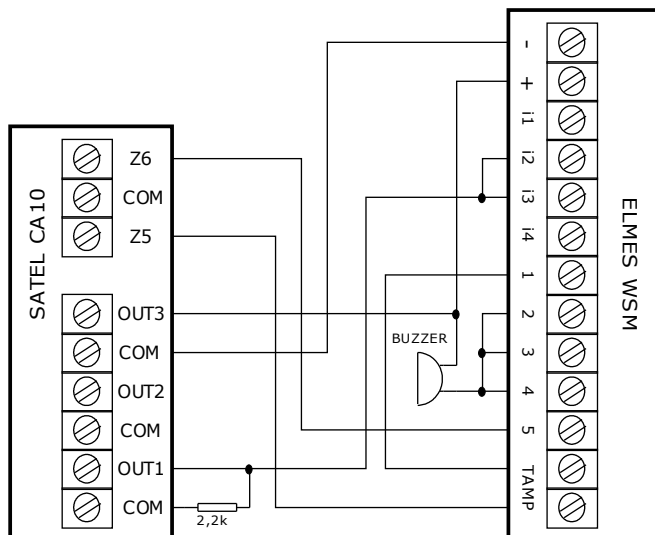
(*)DSC *is a registered trade mark of Digital Security Controls Ltd., 3301 Langstaff Road, Concord, Ontario, Canada.*
(**)SATEL *is a registered trade mark of SATEL Sp. z o.o., ul. Schuberta 79, 80-172 Gdansk, Poland.*

**Operating Range** of the WSM Module with wireless siren is within up to 100 meters radius circle in the open field. However, installing the set in buildings with multi-wall construction, iron-concrete structures or with screening and other metal devices may cause signal attenuation, interference and reduces operating range. In extreme difficult conditions, the operating range may be limited to few meters. Prior to firm installation, practical operating range of the wireless equipment must be experimentally tested individually for every suggested place of installation. In order to secure alarm system reliable operation, it is strongly recommended NOT to install the equipment on the edge of its maximal operating range.

### Specification

- Power supply: 19..16 VDC; maximal current: 40mA with all 5 outputs on; 25mA at standby.
- Transceiver CE 433,92MHz, sensivity: -105dBm, e.r.p. <10mW.
- Outputs OC type with maximum current rating of 50mA, shorted to circuit ground when active with possibility of reversing active state of output 1.
- Sabotage protection contact of module's case with NC type TAMP terminals output.
- Electronics circuitry board dimensions: 78x40x24mm; case external dimensions: 96x62x28mm.
- Strictly indoor operation within temperature range of 0 to +40ºC.

**Manufacturer**:  *ELMES ELECTRONIC, 54-611 Wroclaw, ul. Avicenny 2, tel. (071) 784-59-61, fax (071) 784-59-63*

**Manufacturer's Limited Warranty:** *this product carries two years manufacturer's warranty as from the date of purchase. The warranty is limited to the replacement of faulty original parts or repair defects of improper manufacture. Damage, faulty use or improper handling by the user or installer as well as any changes in product's hardware or software caused by the user violets the warranty and all due repair costs will be charged. Elmes Electronic shall not bear liability for any personal or material damage resulting from any of its products direct, indirect or partial failure to operate properly.*

*Confirmed date and place of product purchase…………………………………………………………*
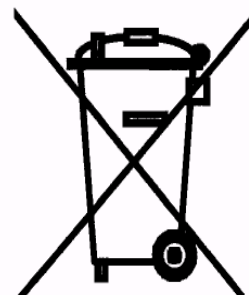
C E  Conformity Declaration

Product:  *Elmes WSM - Wireless Siren Control Module.*
The product is dedicated to use in electronic alarms and security systems
and operates in radio frequency band of 433,92 MHz
The product is manufactured in compliance with EU Directive:  **R&TTE 1999/5/EC**
In particular, the product complies with the following harmonized standards:
**EN 300 220-3:** EMC and Radio Spectrum Matters.
**EN 301 489-1:** EMC for Radio Equipment.
**EN 60950-1:2001** Electric Safety.
**Manufacturer:** Elmes Electronic, ul.Avicenny 2, 54-611 Wroclaw, Poland
Date of Signature: 31.07.2008
Director: *Mirosław Bińkowski*          Signature:

**IMPORTANT! The use of above symbol indicates that this product should not be treated as household waste. By ensuring this product is disposed of correctly you will protect the environment. For detailed information about recycling of this product, please contact your local authority, your household waste disposal service provider or organization the product has been purchased from.**