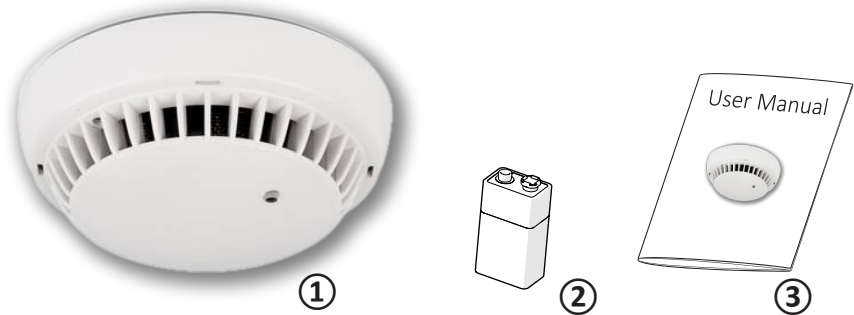# SMOKE
User Manual

Contents in an SMOKE kit

The list below shows the included parts in the package. If any part is missing or is defect, please kontakt your reseller or distributor.

#	Denomination
①	SMOKE with Adaptor board
②	9V Li Battery
③	This User Manual

We, NEAT Electronics AB, Varuvägen 2, 246 42 Löddeköpinge, SWE-DEN, hereby declare under our sole responsibility that this product, SMOKE, is in conformity with the directives:1999/5/EC, 2006/95/EC, 2004/108/EC, 2002/95/EC and conforms to the following product specifications:

| Safety	EN 60950-1:2006+A11:2009
EMC	EN 301 489-1 v1.8.1
Radio	EN 300220-1 v2.1.1, EN 300220-2 v2.1.2

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Managing Director

1   About SMOKE

SMOKE is a smoke detector with a radio adapter board and can be used with all NEAT radio receivers and is inteded to be used in warden facilities or in households.

This user manual is valid for SMOKE with ADAPTER board revision 2 or later, see "2 Adapter board".

When delivered SMOKE is configured by default to operate as Stand Alone, see "5 Stand Alone mode".
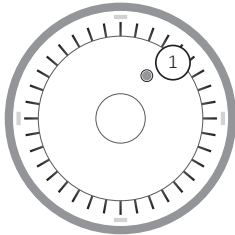
Picture 1.   The SMOKE detector

#	Denomination
1	SMOKE unit test button (B1)

Table 1.   SMOKE unit test button placing

1.1   Mounting

The smoke detector must be mounted at the ceiling preferably in the middle of the room. It can cover a room with maximum 60 m2 floor surface and at most 6 m room height. The minimum distance from the walls and other equipment (for instance light tubes and lamps) should be 0.5 m. In a hall way and narrow passages (up to 3 m wide) the detector covers 7.5 m to each side.

1.2   Installing

Use the accompanying screws and plugs to mount the socket at the ceiling. Connect the battery, ensure to get the correct polarity. Then connect the smoke detector to the socket by turning to the right. There is a distinct click when the detector part is locked to the socket.

SMOKE can not be installed unless the battery is mounted.

1.3   Testing

After a successful mounting the smoke detector should be tested. The alarm signal is very loud and can be harmful to your hearing so please keep a distance of at least 0.5 m when testing.

Press the SMOKE test button (B1), at least 2 s, the detector LED should be blinking and a loud tone should sound. Then the smoke detector is working properly.

If no alarm sound is heard, change the battery and push the test button again. If there is still no alarm sound, the device is defect and has to be replaced.

To test the link between units when units are in linked modes, keep the test button (B1) pressed at least 10 seconds.

2   Adapter board

The adapter board is equipped with a radio module and works with all NEAT radio receivers.
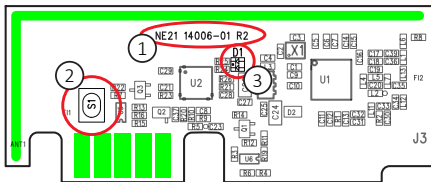
Picture 2.   PCB Outline of Adaptor board LINK

#	Denomination
1	Adaptor PCB Board Revision
2	Programming button (S1)
3	LED (D1)

Table 2.   Adaptor board main items

The PCB board revision is read from the last digits, in this case the "R2" is the current PCB revision.

The programming button (S1) is used for operating the adaptor board.

The adaptor board can be in two states:

• Stand by (default)

• Programming

2.1   Button operation

The programming button (S1) is used for operating the adaptor board. After each press type the LED (D1) responds with a light schedule to indicate action.

Press type	Action
1 short	Manual radio transmission
1 long (3 s)	Enter programming state
Double (i.e. 2 short)	Indicate group mode

Table 3.   Basic button (S1) operation

2.1.1   Manual Radio transmission

Pressing S1 shortly initiates a manual Radio Transmission. On the Master and Slave in Indvidual group mode this is indicated with a short red LED blink and when the unit recieves an ACK the LED blinks green.

On a Slave in Group mode there is no LED indication.

Unit mode	LED indication response
Stand alone	Short red blink (green ACK)
Group mode (master)	Short red blink (green ACK)
Group mode (slave)	No LED indication
Individual group mode	Short red blink (green ACK)

Table 4.   Basic button S1 operation LED indications

2.1.2   Enter programming mode

Press and hold S1 for more than 3 seconds to enter the Programming state. The red LED starts blinking and the unit stays in this state for 30 seconds after which it automatically returns to Stand by state.

The unit can be returned prematurely to Stand by state by pressing shortly on button S1 when in Programming state.

2.1.3 Indicate group mode

To indicate the unit's Group mode, double press button S1.

If the unit is in a Linked mode the green LED blinks either once or twice to indicate the current Linked mode.

If the unit is Stand alone mode, the green LED blinks either one or twice to indicate the current Linked mode, BUT followed by 10 rapid red LED blinks.

	Group mode	Indvidual group mode
Stand alone	1 green, 10 red	2 green, 10 red
Linked mode	1 green	2 green

**Table 5.** Group mode LED indications

3 Operation modes

The SMOKE operates in different modes, which is useful in different environments.

Available operation modes are:

- Stand alone (Mode 1), see "5 Stand Alone mode".
- Group mode (Mode 2), see "7 Group mode".
- Individual group mode (Mode 3), see "6 Individual group mode (recommended linked mode)".

The operation modes can be divided into two categories, Stand Alone mode and Linked modes.
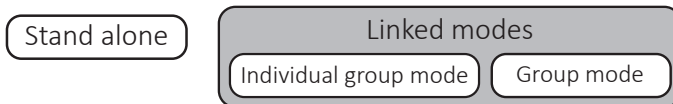
Picture 3. SMOKE operation modes

By default SMOKE is configured as Stand Alone. The first time SMOKE is configured as a linked unit it automatically enters Individual group Mode. When a linked unit is in either of the two linked modes, it's possible to toggle between the modes, see "9 Toggle between linked modes".

4 Adding a SMOKE to NEO

This is the recommended procedure for adding a SMOKE to a NEO.

1. Enter programming mode on NEO and select appropriate (first available) radio position. (For more information about how to enter programming mode in NEO, see corresponding NEO documentation.)

2. Press the Programming button (S2) on the adaptor board to activate the adaptor board.

3. Exit from programming mode in NEO and make a test alarm to the alarm central by pressing the SMOKE test button.

It is important that this procedure is followed since it transmits correct alarm types to the alarm central when testing.

All SMOKEs must be programmed to different radio positions.

5 Stand Alone mode

When a SMOKE is operating in Stand Alone mode, it operates as a single unit with no interconnection between other SMOKEs and communicates directy with the radio receiver, e.g a Care Phone NEO or a portable tranceiver TREX2G.

All alarms (user and technical alarms) are sent directly to the radio receiver and handled individually.
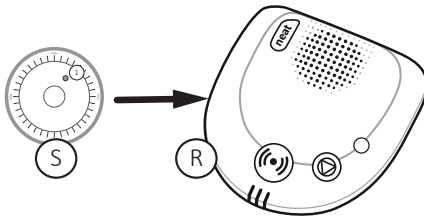
Picture 4. SMOKE in Stand Alone mode

Denomination

#	Denomination
S	SMOKE
R	Radio Receiver (in this example a Care Phone NEO)

Table 6. Part denominations in Stand alone mode

If several SMOKE in Stand Alone mode are used and are to be connected to the same radio receiver, each SMOKE must be added individually to that radio receiver.

A SMOKE in Stand Alone mode will NOT listen to any radio transmissions.

This mode is the preferred mode when only one SMOKE is used, e.g. in a single house hold.

5.1 Smoke alarm

In the event of fire the SMOKE starts sounding with the acoustical indication and the unit's Test button LED blinks red and a Smoke alarm is sent to the radio receiver.

5.2 Low battery

The built in logic checks the battery level and sends a Battery low alarm to the radio receiver well before the units starts to indicate by blinking its red LED and sounding acoustically.

6 Individual group mode (recommended linked mode)

In Individual Group Link Mode all units communicates directly with the radio receiver. Allthough all SMOKEs communicates directly with the receiver **R**, one SMOKE must be set as Master.

• All SMOKEs must be added individually to the radio receiver

• Correct alarm type MUST be assigned for each added SMOKE in the radio receiver

• All SMOKEs must be within radio range of the radio receiver.

*The radio range between a SMOKE and the radio receiver **R, can** be extended with REPO and/or REPO+ (optional accessories) but radio range can **NOT** be extended between SMOKEs.*
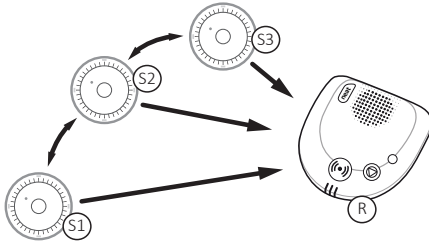
Picture 5. SMOKE units in Individual Group mode

When smoke is detected, e.g. by **S2,** the slave sounds with the acousti-
cal signal, the LED is flashing red and a smoke alarm is sent to the radio
receiver **R** (a Care Phone NEO). **S1** and **S3** also receives this smoke alarm
and starts sounding but without flashing its LED.

To reset a Smoke alarm, see "Resetting an alarm" on page 12.

To link the units, see "Linking/unlinking devices" on page 13.

6.1 Low battery

The built in logic checks the battery level and sends a Battery low alarm
to the radio receiver well before the units starts to indicate by blinking its
red LED and sounding acoustically.

7 Group mode

In Group mode, one SMOKE is set as Master and the other SMOKE
detectors are linked to this Master. This master is then connected to a
radio receiver, e.g. NEO or TREX2G.

In this mode only the Master is communicating directly with the radio
receiver and the slaves will work as repeaters for any other connected
SMOKE units in the installation.

To link the units, see "Linking/unlinking devices" on page 13.

7.1 Installation patterns

The linked units in Group mode can be installed in different patterns be-
cause the Slaves can act as repeaters for other SMOKE in the installation
and these patterns are mentioned Star pattern or Chain pattern.

7.1.1 Star pattern

In a typical setup the units are placed in a star pattern, i.e. the Master is in the center of the Slaves, see below.
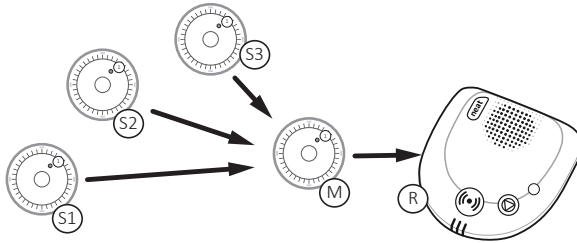
Picture 6. SMOKE units in a Star pattern setup

#	Denomination
M	Master
S1	Slave
S2	Slave
S3	Slave
R	Radio Receiver (in this example a Care Phone NEO)

Table 7. Part denominations used in this user manual

In this configuration all Slaves must be in radio range from the Master, which in turn must be in radio range from the Radio receiver. Radio range between the Master and receiver can be extended with REPO and/or REPO+ (optional accessory).

Example of star pattern

Look at the setup in Picture 6; "SMOKE units in a Star pattern setup" above.

When smoke is detected, e.g. by Slave **S2** the slave sounds with the acoustical signal, the LED is flashing red and a smoke alarm is sent. This smoke alarm is received by the Master **M** and relayed to the radio receiver **R** (a Care Phone NEO).

S1 and **S3** also starts sounding but without flashing its LED.

7.1.2 Chain pattern
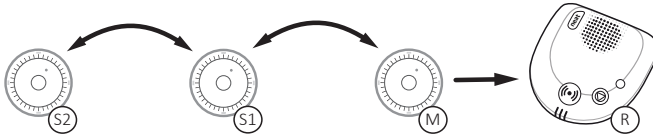
Picture 7. SMOKE in a Chain pattern set up.

In this configuration all units must be in radio range of each other, but it is not neccesary that all Slaves are in radio range of the Master since the Slaves relays radio messages to and from each other. Only the Master **M** must be in radio range of the radio receiver **R**.

> *There is a 7 second delay between units when configured as a chain. This means that a Smoke alarm sent from S2 takes approx. 21 seconds before it reaches the Radio receiver.*

Also here radio range between the Master and Receiver can be extended with REPO and/or REPO+ (optional accessory), see "7.1.1 Star pattern" on page 10.

Example of chain pattern

Look at the setup in Picture 7; "SMOKE in a Chain pattern set up." above.

When smoke is detected, e.g. by Slave **S2** the slave sounds with the acoustical signal, the LED is flashing red and a smoke alarm is sent. This smoke alarm is relayed to the radio receiver **R** (in this case a Care Phone NEO) via Slave **S1** and Master **M.** The slave **S1** also receives this smoke alarm and starts sounding but without flashing its LED.

7.2 Resetting alarms

To reset a Smoke alarm, see "Resetting an alarm" on page 12.

7.3 Low battery

The built in logic checks the battery level and sends a Battery low alarm to the radio receiver well before the units starts to indicate by blinking its red LED and sounding acoustically.

8   Resetting an alarm

Smoke alarms can be reset on two levels and is done by pressing the unit's Test button (B1). The levels are :

• Global reset, see below.

• Local mute, see below.

For both resets, the acoustical indication goes silent.

The originating unit automatically stop sounding and blinking and sends a reset alarm when the units no longer detects smoke.

8.1   Global reset

A Global reset is done on the originating unit, i.e. the SMOKE unit where the Smoke alarm originally was sent from and thus the unit sends out a Reset Alarm which will be recived by all linked units.

A Global reset may take approx. 30 seconds to go through all the linked units.

8.2   Local mute

A Local mute is done on a linked device (NOT the originating sender of the Smoke alarm) and will only mute that particular SMOKE unit. No Reset alarm is sent and the unit will not listen to any incoming radio transmissions for a period of 2 minutes.

9   Toggle between linked modes

• Enter Programming state on the unit

• Press the Programming button quickly three (3) times

• The green LED indicates the new linked mode

• The unit returns to stand by mode

Mode	Green LED Indication
Group mode (Mode 2)	1 blink
Individual group mode (mode 3)	2 blinks

If the unit is in Stand alone mode, the red green LED indicates mode according to above (1 or 2 blinks depending on mode) and then flashes rapidly 10 times.

10   Linking/unlinking devices

When linking new devices, the unit automatically changes operation mode from Stand Alone to Group Mode. If Individual Group mode should be used, each unit's mode must be toggled manually, see "Toggle between linked modes" on page 13.

10.1   Linking devices

Linking devices requires one unit to be the Master, regardless of the linked operation mode.

• Open and place all devices on a table. Determine which unit should be Master.

• Enter programming state on all devices.

• Press and hold the Master's test button for at least 7 seconds. The Slaves receives data and confirms the reception by lightning the green LED for 5 seconds and then automatically returns to Stand by state.

10.2   Unlinking

When unlinking a device it returns to Stand Alone mode.

• Enter programming state

• Press the programming button for 3 seconds.

• The Unliked unit flashes rapidly 8 times and the goes into Stand by state.

When unlinking the unit it automatically stores the last linked operation mode, so in the event of re-linking the unit, the last linked mode is used.

11   Use and maintenance

11.1   Safety notes

- Read instructions prior to use.
- Always test the system per instructions prior to use.
- The product may not be suitable for all persons.
- Check device regularly and replace when necessary.
- Always check the function of the product after making adjustments.
- Our units are NOT intended for any life support device, thus intending a device whose malfunction may result in damage to a life.

11.2   Use

- Use only original parts.
- Do not expose to direct sunlight.
- Keep away from dust, moist and dirt.
- Do not drop, knock, twist or shake the device.
- Do not warm up the device or use it near fire.
- The SMOKE may not be painted.
- For repairs, contact a NEAT dealer.

11.3   Cleaning

- Clean the device with a soft cloth, dampened slightly with mild soapy water.
- Do not clean the device with harsh chemicals, solvents or other corrosive substances.

11.4   Recycling

- Dispose of properly. The worn out product must be returned to a recycling facility for proper disposal or returned to NEAT Electronics.

Appendix A   Technical data

Data	Value
Measures with socket (Ø x H)	100 mm x 51 mm
Dimensions (W x H x D)	35 x 44 x 11 mm
Weight	X g
RF Frequency	869.200-869.250 MHz (Social alarms)
RF Frequency$_{Link}$	868.2125 MHz
Battery life time	Approx. 2 years
Battery	9V Lithium
Protection (EN 60529)	IP 43
Temperature range	-10 C° to +60 C°
Detector principal	Optical scattering chamber
Alarm indication	Optical and acoustic
Coverage	60 m^2 and <6 m in height
Action indication	Red LED
Signal tone	>85 dB(A) @ 3 m
Satisfy regulation	ISO 12239
Drill hole distance	28 mm <> 56 mm
Case/colour	ABS/White

Table 8.   SMOKE technical data