



Fire Products & Solutions

Panasonic

Technical Manual Wireless Equipment

Rev 0



WIRELESS EQUIPMENT

**PHOTOELECTRIC SMOKE DETECTOR 4611AU,
ADDRESSABLE BASE STATION 4620AU AND
WIRELESS SNIFFER 4613AU**

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1 General Description

1.1 System Overview

The wireless detector system consists of an Addressable Base Station for wireless units, type 4620 and Wireless photoelectric smoke detectors, type 4611. Each Base Station can communicate with up to 16 Wireless detectors. Up to four Base Stations can be connected to each COM loop in FT1020G3 or FT128 system. The Base Station communicates on a selected channel with each Wireless detector every two minutes.

- One transmission channel (0, 1, 2 or 3) is set for each Base Station
- One transmission channel (0, 1, 2 or 3) is set for each Wireless detector (0-15), depending on which Base Station it shall communicate with.
- The transmission channel (0, 1, 2 or 3) is set on the DIP-switches in the Addressable base station and the Wireless detector respectively, see [section 2.1.3 Set the Transmission Channel](#) for Wireless Base and [2.2.3 Set the Transmission Channel](#) for Wireless Detectors .

Note: Wireless devices used in the Australian & NZ markets has the suffix "AU" due to the frequency change requirement. For simplicity, we use the standard product code of the devices.

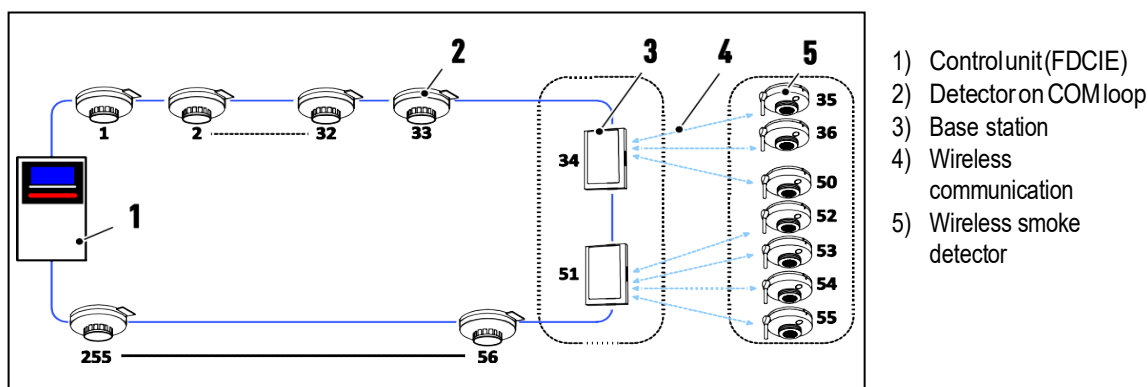


Figure 1 Two or more Base Stations on One Loop

Figure 1 above shows two Wireless detector systems on one COM loop. The Base stations no. 0 and no. 1, are set to transmission channel 0 and 1 respectively.

1.1.1 Transmission Channel (0-3)

- Up to 4 Base Stations 4620 can be connected to a COM loop, each base station must be set to a transmission channel 0, 1, 2 and 3 respectively.
- In order to have the wireless detector to communicate with its Base Station, the **transmission channel (0, 1, 2 or 3) must be set to the same transmission channel in the detector (0, 1, 2 or 3).**

Note: The distance between the Base Stations and Wireless detectors using a different transmission channel has to be more than 2 meters. The same is valid for the distance between the Base Stations or the distance between the Wireless detectors using a different transmission channel.

1.1.2 Backup Channels (4-7)



















Changes in the installation / building could affect the communication between the Base Station and its Wireless detectors. If the Base Station does not receive a proper answer, it will start

communicating on all the four backup channels (4 – 7) as well. The Wireless detector will then answer on the channel with the best signal.

On the next communication cycle, it will communicate with the selected channel again and in case of an incorrect answer, the "backup" channels will be used again and so on.

If the Base Station does not receive a proper answer when it is communicating on all the five channels, the Base Station will directly make a new attempt repeatedly. After approximately 5 minutes, if no proper answer is received, a "no reply" fault will be generated and displayed in the FDCIE.

1.1.3 Communications Between Wireless Devices and FDCIE

Wireless detector 4611	Base Station 4620	FDCIE
Fire alarm 		Fire alarm Zone-Address
LED on/off		Detector LED on/off
Sounder on/off		Detector sounder on/off
Detector removal (tamper switch activated) 		Fault: Detector xxx-xx / yyyyyy removed
IR LED fault 		Fault: Loop unit xxx-xx / yyyyyy
EEPROM fault 		
Battery fault (voltage <2.8 V) 		Fault: Battery xxx-xx / yyyyyy
Wireless signal stop (voltage <2.3 V) 		Fault: No reply xxx-xx / yyyyyy
	No Detector data 	
Sensor compensation value >2.0 % per m >18 h 		Service signal xxx-xx / yyyyyy
	EEPROM trouble Base Station yyyyyy 	Fault: Loop unit yyyyyy

xxx-xx = Presentation number

yyyyyy = Technical address

Note: Due to the Base Station's internal priority order, if more than one fault is generated "at the same time", it's dependent on the type of faults which will be presented in the FDCIE.

1.1.4 Temporary Disturbances

If the Base Station doesn't receive a proper answer, it will start to communicate on "backup" channels (4 – 7) as well. The Wireless detector will answer on the channel with the best signal, either the selected channel or one of the backup channels.

On the next occasion when the communication starts, it will be on the selected channel again and in case of an incorrect answer, the "backup" channels will be used again, and so on.

If the Base Station does not receive a correct answer when it is communicating on all the five channels, the Base Station will directly make a new attempt repeatedly. After approximately 5 minutes, if no correct answer is received, a fault will be generated and displayed in the FDCIE.

1.1.5 Fire Alarm State

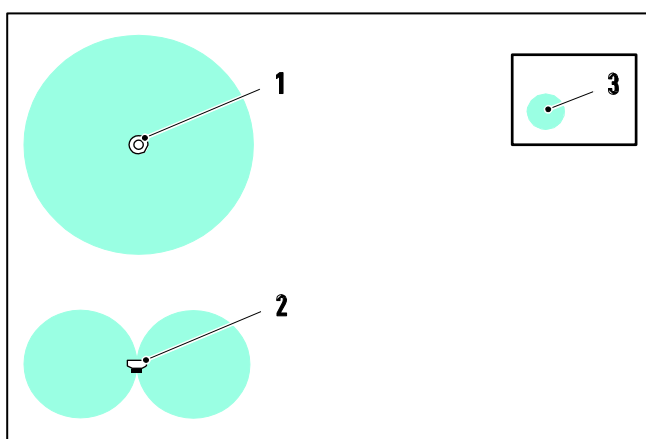
When a Wireless detector is in fire alarm state it will directly send this information to the Base Station. The Base Station will send the fire alarm information to the FDCIE, "Fire alarm" will be activated and displayed in the FDCIE and a signal will be sent to the Wireless detector (via the Base Station) to turn on the detector LED and the built-in sounder. The Wireless detector sounder can be programmed for high, medium, and low priority.

The sound of the three priorities must be different, one of the following sounds can be selected for each priority:

- **High priority:** Steady (continuously); 3 kHz
- **Medium priority:** 1 Hz (0.5 s ON / 0.5 s OFF); Sweep from 2.8 to 3.2 kHz (**T3**)
- **Low priority:** 1 Hz (0.5 s ON / 0.5 s OFF); 3 kHz

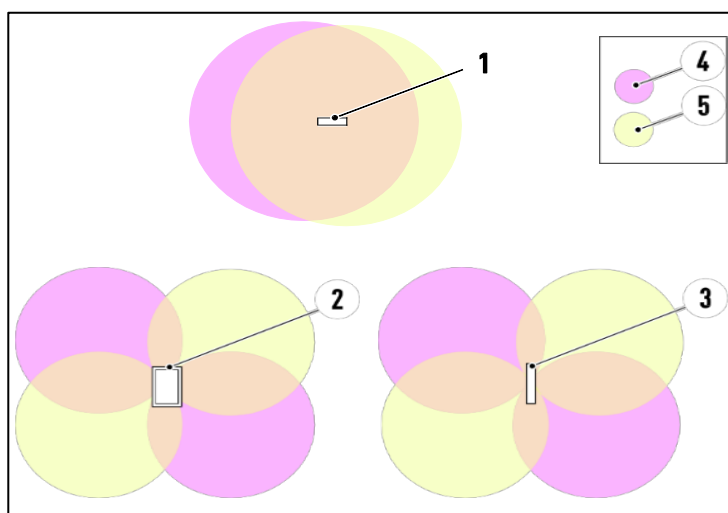
1.1.6 Directional Characteristics

Wireless Photoelectric Smoke Detector 4611



- 1) Wireless detector top view
- 2) Wireless detector side view
- 3) Directional pattern

Addressable Base Station 4620



- 1) Base Station top view
- 2) Base Station front view
- 3) Base Station side view
- 4) Directional pattern antenna 1
- 5) Directional pattern antenna 2

1.1.7 Transmission Range

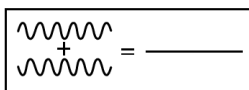
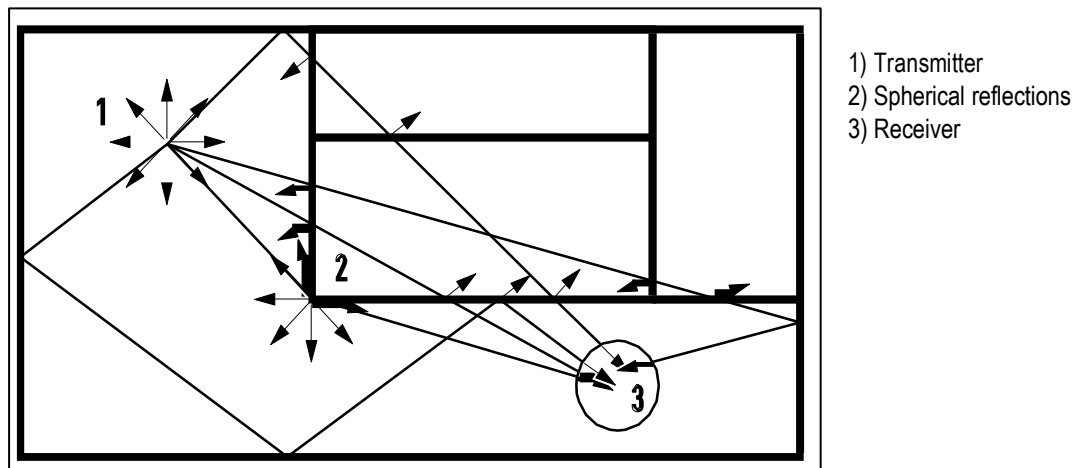
According to AS7240.25, the transmission signal has to be valid in both directions, including an additional 30 dB "security margin". This is automatically checked during the registration procedure for the wireless detector.

The transmission distance is up to 170 meters in open air.

Note: Open air between the wireless detectors and the Base Station is required for the maximum transmission distance. Radio signals are affected by both reflection and attenuation.

1.1.8 Reflection

Walls and objects between or close to the wireless detectors and the Base Station, as well as the type of material, will affect the radio signal. Reflection of radio waves caused by walls or objects in the building can result in an increase or a reduction of the signal. The resulting signal is impossible to calculate. Tests on site are required. The worst result is no signal at all.



The resulting signal is impossible to calculate. Tests on site are required. The worst result is no signal at all.

During the registration procedure, the detector LED will indicate if the signal is OK or not. See section [2.3.2 Register A Wireless Detector](#)

1.1.9 Attenuation

If the following items are between or close to the wireless units, the transmission distance will be affected:

- Metal or material including metal, for example reinforced concrete or glass wool with aluminium foil.
- Wireless station for TV, radio.
- Home electric products or office automation high frequency equipment, such as microwave oven or PC, closer than 2 meters.
- Mobile phone or other wireless systems.
- Human body.

Table 1 Approximate Attenuation for Different Materials

Obstructive material	Attenuation
Thick wet brick walls, reinforced concrete ceiling / floor	30-40 dB
Steel reinforced concrete wall	30 dB
Light concrete wall / ceiling	20 dB
Indoor walls (sand/limestone, brick, wood, plaster etc.)	10-15 dB
Light indoor walls, dividers, etc.	1-5 dB

The exact attenuation for different materials is not possible to calculate in advance, because it is dependent not only on the material itself but also the thickness of this material. An approximate attenuation is given on Table 1.

The attenuation of the wireless signal in open air is approximately 16 dB when you double the distance.

Example:

10 m	24 dB
20 m	40 dB
40 m	56 dB
85 m	72 dB
170 m	88 (90) dB

As indicated above, the maximum attenuation must be less than 90 dB.

MORE EXAMPLES:

The following two examples are showing the approximate attenuation for different distances and materials:

Example 1: The distance between the Base Station and a wireless detector is 20 m (72 dB) and an indoor wall (10 dB) gives an approximate attenuation of 82 dB, which is < 90 dB = OK.

Example 2: The distance between the Base Station and a wireless detector is 10 m (56 dB) and a reinforced concrete ceiling (40 dB) gives an approximate attenuation of 96 dB, which is more than 90 dB = not OK.

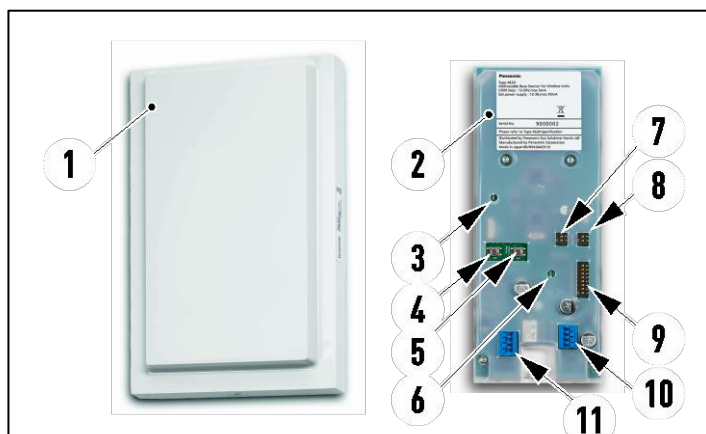
Note: The examples above are theoretical and rough calculations that have to be verified in the actual installation on site. Also note that movements and activities inside the building can affect the wireless signal. The result could vary during the different hours of the day.

Because of the large attenuation by reinforced concrete in ceiling / floor, it is recommended to have a minimum of one Base Station per level / floor.

A Wireless sniffer is highly recommended to be used, to check the background noise as well as the signals between a Base Station and its Wireless detectors. See Chapter [4 Wireless Sniffer 4613 page 33](#)

1.2 Addressable Base Station 4620 for Wireless Units

1.2.1 Basic Information



- 1) Cover
- 2) Base Station – open
- 3) Blue LED
- 4) Setting button (Register)
- 5) Clear button (Unregister)
- 6) Red LED
- 7) Mode DIP
- 8) Channel DIP
- 9) Address DIP
- 10) Main power terminal
- 11) COM loop terminal

The Addressable Base Station consists of a printed circuit board mounted in a plastic cover (1). It has two fast connector terminals to terminate the COM loop (11) (in / out) and Main power (10) wiring.

1.2.2 Limitations

- Each Base Station can support up to 16 Wireless photoelectric smoke detectors type 4611.
- Up to 4 Base Stations can be connected to each COM loop.

It is recommended to mount the Base Station vertical, since the Base Station's two built-in antennas will then be in their most favourable position. The Base Station shall have a central place relative to the Wireless detectors. Take into account various materials in the walls and obstructions around the Base Station e.g. a steel cabinet in front of the Base Station.

1.2.3 Short Circuit Isolator

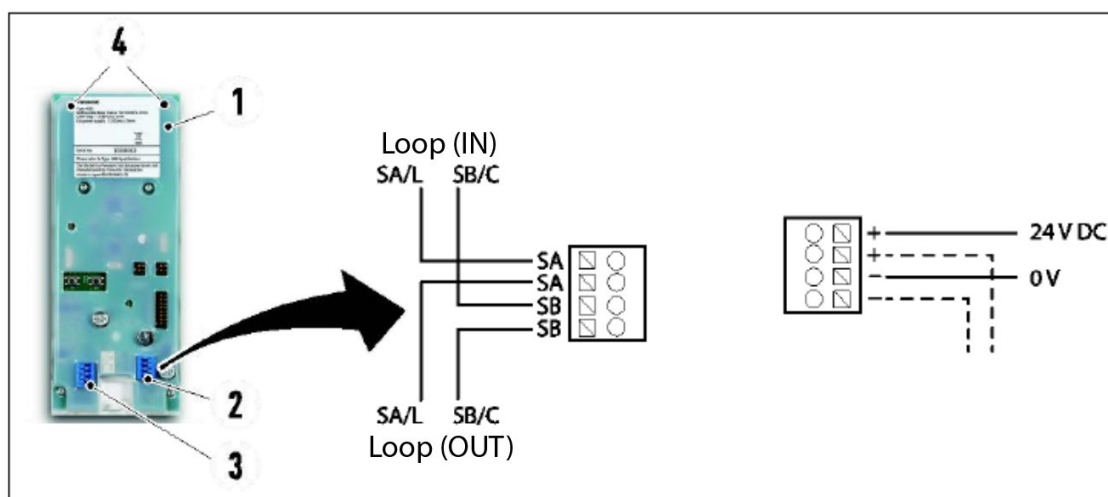
As an extra feature, the Base Station has a built-in short circuit isolator that requires no separate COM loop address. Like any other short circuit isolator, it has to be given an individual sequence number in the COM loop A-direction when registered in EBLWin.

1.2.4 Connections of 4620

The Base Station has two fast connector terminals. The Main power terminal (2) and the COM loop terminal (3).

Use stranded cable Ø 1.2 mm (approximately 0.28 – 1.13 mm²)¹.

- Main power: 24 V DC (in / out) respectively. Maximum 40 mA is required.
- COM loop: COM loop current consumption is max. 6 mA.



- 1) Base station – open
- 2) Main power terminal
- 3) COM loop terminal
- 4) Built in antennas

Figure 2 Terminals on Wireless Base Station

Note: It is recommended to have the cable inlets close to the Main power terminal (2) and the COM loop terminal (3), since the antennas (4) are located on the upper part of the base station, the antennas must not be hidden in the cable.

¹ If 1.5mm stranded cable is used, conductor cross section must be reduced to approximately 1.2mm

1.2.5 Related Topics

[1.1 System Overview](#)

[1.2.4 Connections](#)

[2.1.1 Set the COM Loop Address - EBLWin Programming](#)

[2.1.2 Set the Address DIP-Switch on the Base Station](#)

[2.1.3 Set the Transmission Channel](#)

[2.3.1 Set 4620 to Register Mode](#)

[2.4.2 Set to Install Mode](#)

[2.5.1 Mode DIP](#)

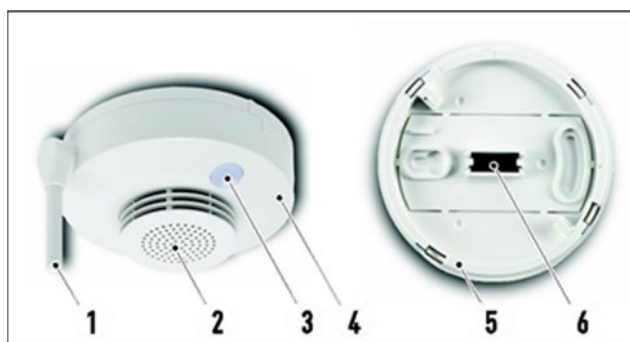
[2.5.2 Register with Mode DIP](#)

[2.6.1 Set 4620 to Unregister Mode](#)

[2.6.3 Unregister All Wireless Detectors](#)

1.3 Wireless Photoelectric Smoke Detector 4611

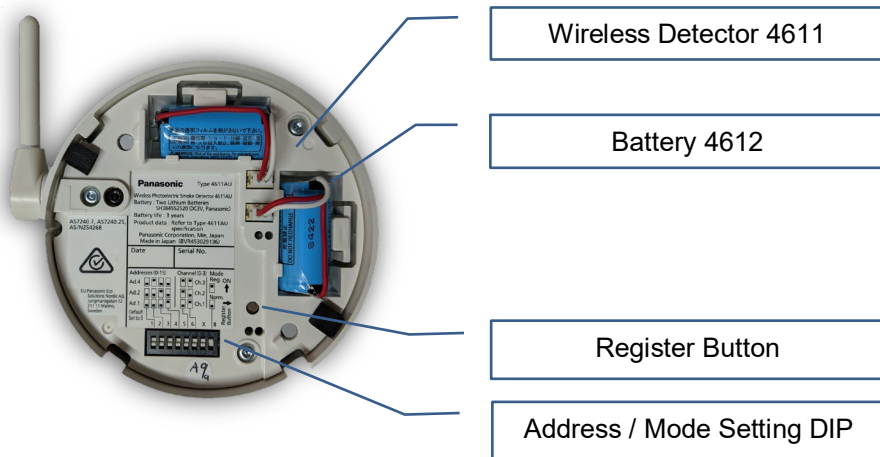
1.3.1 Basic Information



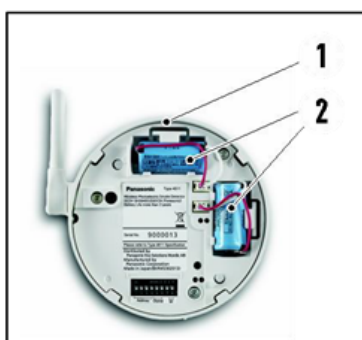
- 1) Adjustable antenna
- 2) Sounder
- 3) Detector LED and signal check button
- 4) Detector
- 5) Detector base
- 6) Tamper switch magnet

Figure 3 Wireless Photoelectric Smoke Detector (4611)

- 4611 consists of a detector (4), which is plugged in a supplied base (5). It must be mounted in the ceiling.
- The detector has an external adjustable antenna (1). The detector shall be mounted with the antenna in the direction towards the Base Station.
- The built-in sounder (2) has three priority levels. The sounder is programmed as an output via EBLWin.
- The signal check button (3) has an LED for fire alarm indication. For more information on the detector led and signal check button, see section [2.4.1 Manual Signal Check \(4611\)](#).
- On the detector base (5) there is a tamper switch (6) for detector removal signal. Removal of the detector (4) will give a fault message in the FDCIE.



1.3.2 Batteries (4612)



- 1) Wireless detector inside
- 2) Batteries

The Wireless detector is powered by two pieces of supplied 3 V Lithium batteries (Type number 4612). A battery voltage less than 2.8 V will generate a fault in the FDCIE. The detector will turn off the wireless signal when the battery voltage is less than 2.3 V, since the function cannot be guaranteed at such a low voltage. A "no reply" fault will then be generated in the FDCIE. Batteries 4612 are available as spare parts.

The batteries (4612) used in 4611 has six years of service life, in normal operation.

Note: When replacing the batteries, remove both batteries for 2 seconds to force a restart of the detector (The battery fault is latched so a restart is necessary to clear the fault).

1.3.3 IR Led

The smoke detection chamber consists of an IR LED and a photodiode. Reflection of the infrared light is used to detect smoke. The smoke enters the smoke chamber through an insect filter and an optical labyrinth. This construction improves the smoke inflow and also causes steam to condense on the outer surfaces, to prevent false alarms. The condition of the IR LED is checked every 30 minutes. If the IR LED condition is not OK, a fault will be generated in the FDCIE after three fault readings. That is after 3 x 30 (=90) minutes.

1.3.4 Fire Alarm

The detector performs a fire alarm check every 5.1 second, which changes to 1 second when the value is over the fire alarm threshold level, which is 3.5 % obscuration per meter. In order to reduce false alarms, three values/readings over the alarm threshold level are required before a fire alarm message can be sent to the FDCIE. The FDCIE will then send back a message to turn on the indication LED on the Wireless detector. The FDCIE will also send a message to turn on the built-in sounder if a control expression is programmed for High, Medium and/or Low priority.

1.3.5 Sensitivity Compensation Due to Contamination

Every hour the detector's average smoke density value is checked. If the value is > 2.0 %/m during 18 hours, 2.0 %/m will automatically be subtracted from the smoke density value before checking if it's over the fire alarm threshold level (3.5 %/m) or not.

1.3.6 Related Topics

[1.1 System Overview](#)

[2.2.1 Set the Com Loop Address - EBLWin Programming](#)

[2.2.2 Set the Wireless Detector Address](#)

[2.2.3 Set the Transmission Channel](#)

[2.3.2 Register A Wireless Detector](#)

[2.4.1 Manual Signal Check](#)

[2.5.2 Register with Mode DIP](#)

[2.6.2 Unregister One Wireless Detector](#)

2 Setting Up the Wireless System 4620 - 4611

2.1 Setting up Base Station 4620

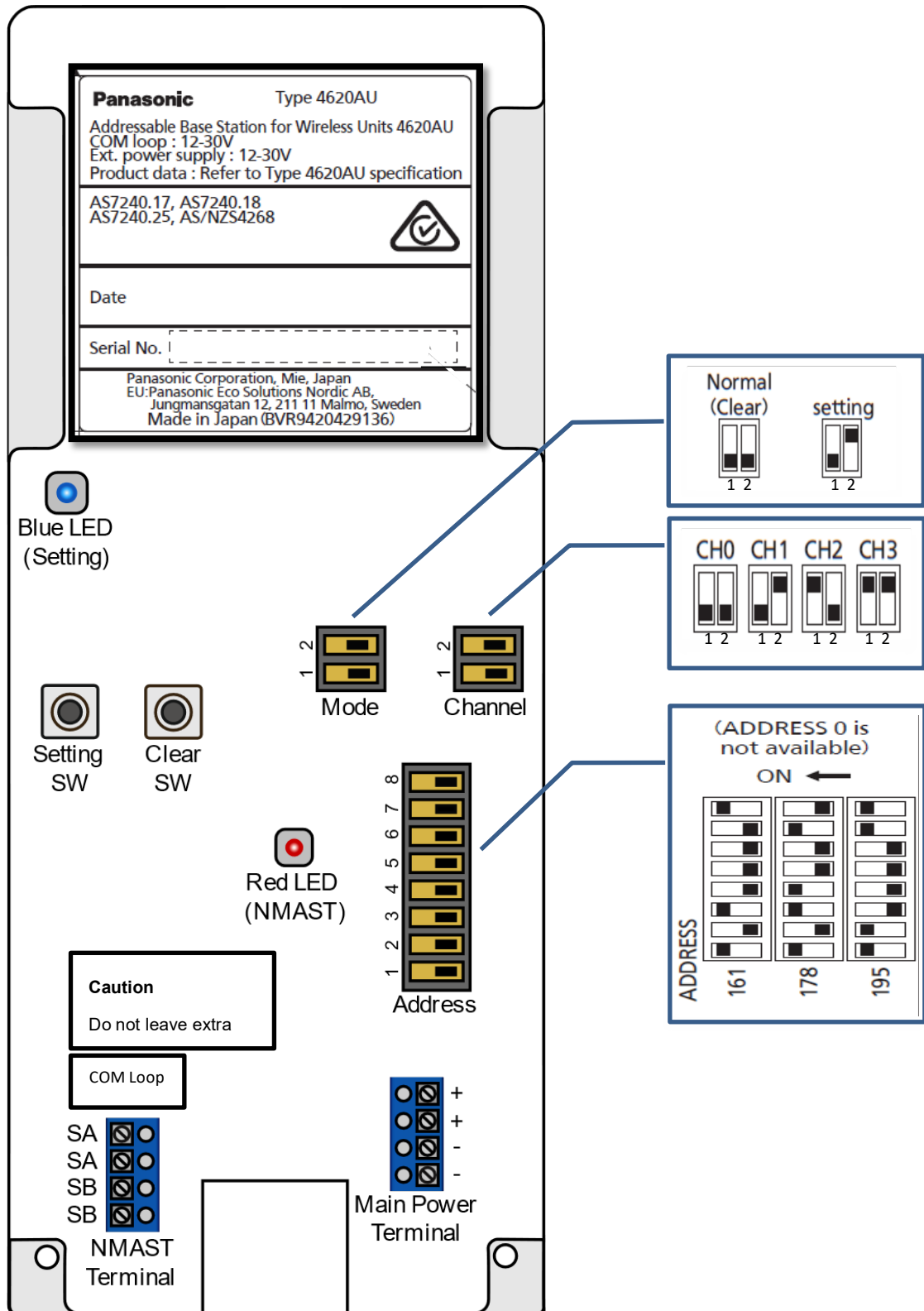


Figure 4 Wireless Base Station DIP switches

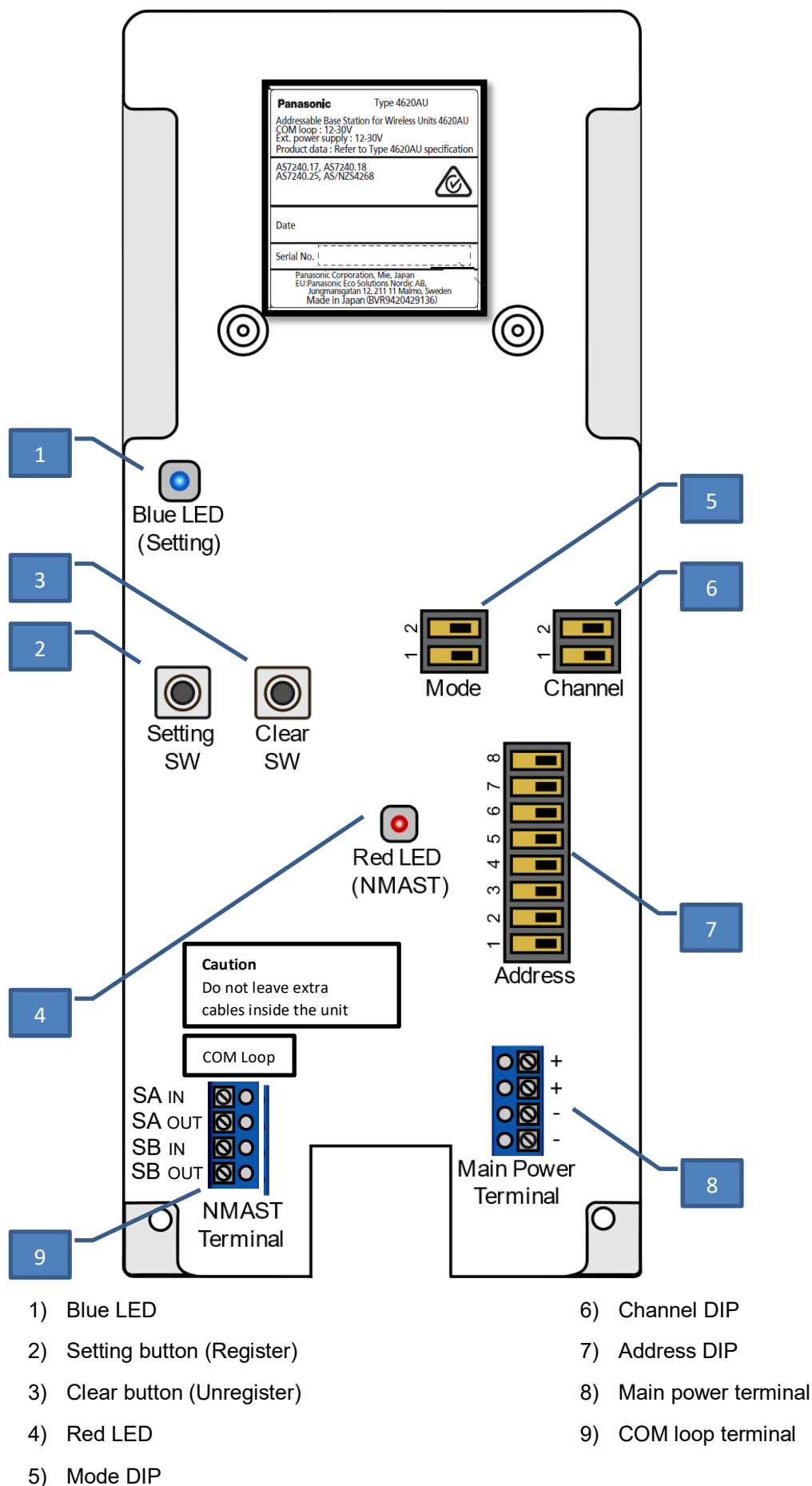


Figure 5 Wireless Base Station Rear View

Figure 1 and Figure 2 above show the typical label on the rear of 4620 cover.

2.1.1 Set the COM Loop Address - EBLWin Programming

The Base Station has to have a COM loop address, 1-255. The Base Station is programmed via the PC program EBLWin.

Up to 4 Base Stations can be connected to each COM loop in an FDCIE.

Note: If a Base Station is used to interface to 16 Wireless Detectors, the highest possible COM loop address for the Base Station is $255-16=239$.

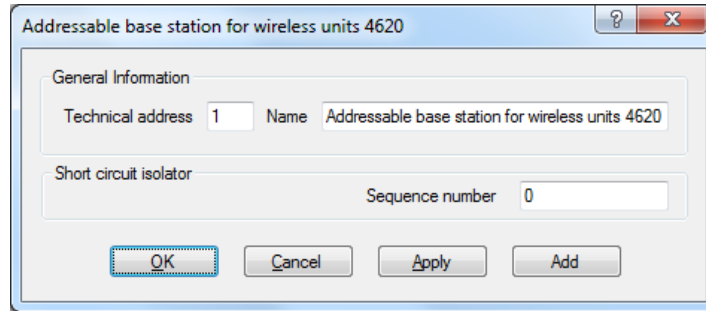
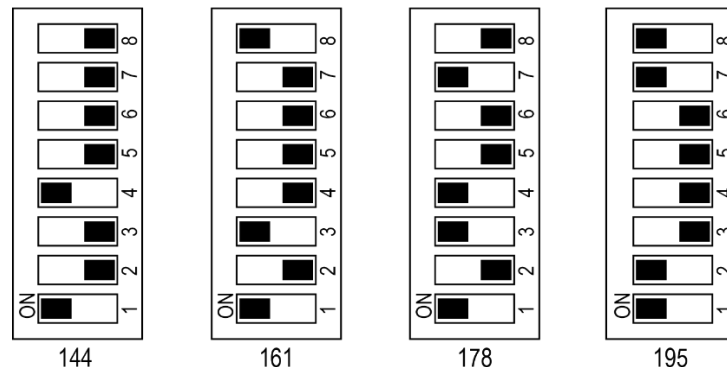


Figure 6 EBLWin dialog box for Addressable Base Station 4620

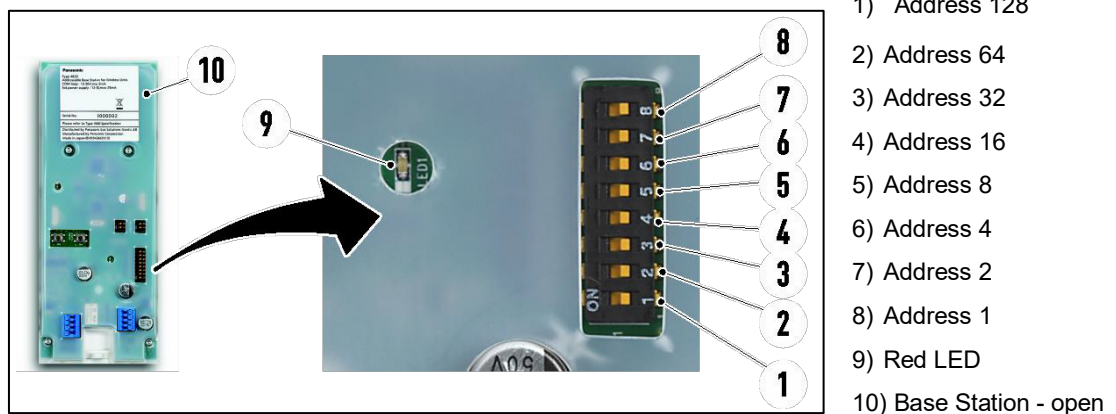
To be able to auto address the loop or connect the highest possible number of wireless units, the Wireless base stations 4620 must have address **144, 161, 178 or 195**.

Set the DIP-switches according to the arrangement shown below.



2.1.2 Set the Address DIP-Switch on the Base Station

Note: Due to static electricity, it is not recommended to use any conductive tool e.g. don't use metal screw driver to set the DIP-switches.



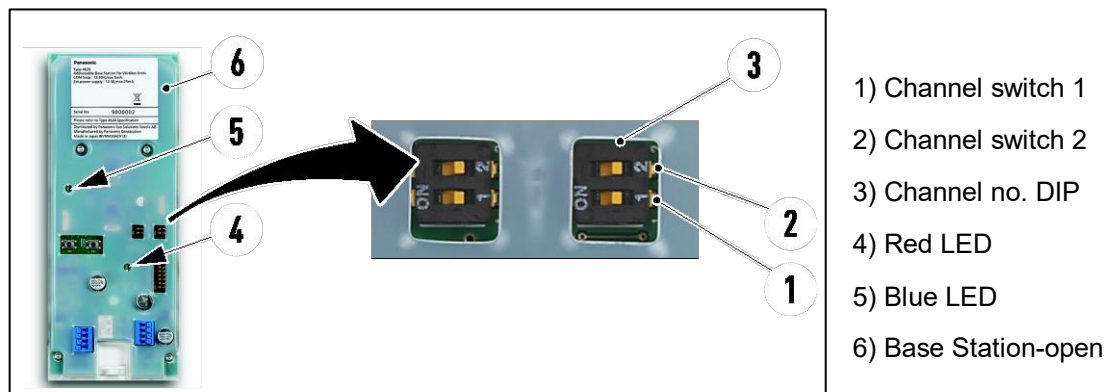
- All switches (1-8) OFF = 0²
- Switch "8" ON = 1 (COM loop address 001.)
- Switch "8" OFF and Switch "7" ON = 0+2 = 2 (COM loop address 002.)
- Switch "8" ON and Switch "7" ON = 1+2 = 3 (COM loop address 003.)

...and so on...

Example: Switches "8", "7", "6", "5", "4", "3", "2" and "1" ON = 1+2+4+8+16+32+64+128 = Address 255. After setting the addresses, the Base Station will do an automatic restart, indicated by the Red LED (9) flashing once.

2.1.3 Set the Transmission Channel for Wireless Base

To set the transmission channel of a wireless base 4620, refer to section 1.1.1 Transmission Channel (0-3) page 3 and the table shown below.



0 = OFF 1 = ON

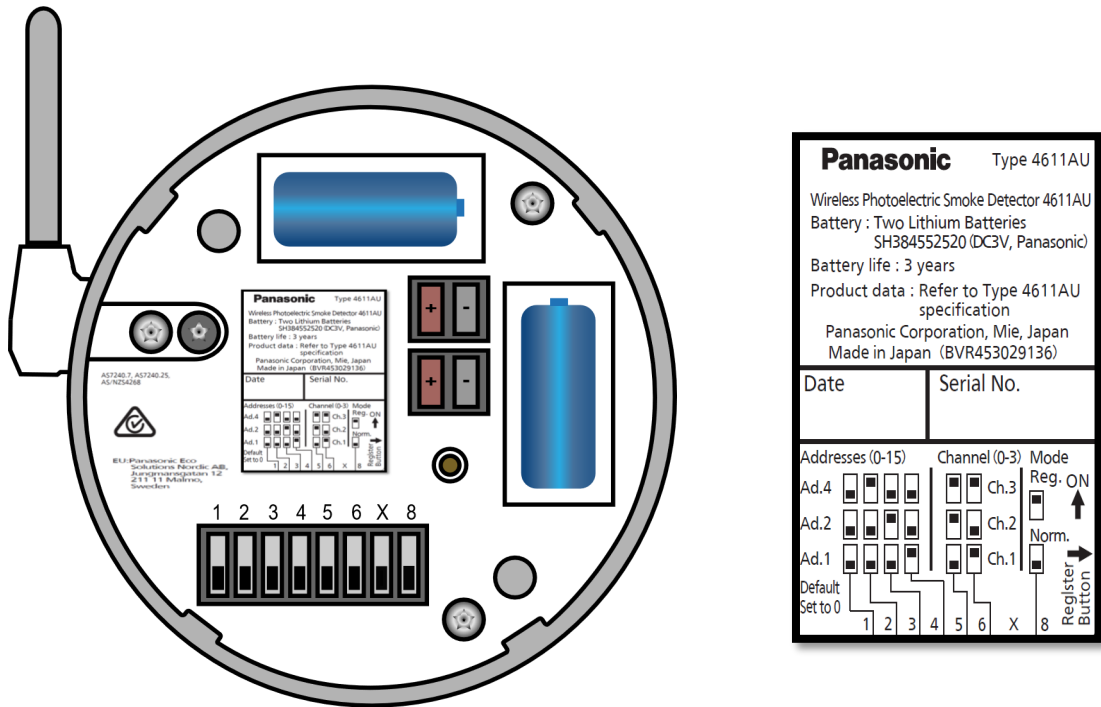
Transmission channel	Switch 1	Switch 2
0	0	0
1	0	1
2	1	0
3	1	1

Note: After changing the transmission channel, the Blue LED (5) will blink 3 times and then the Base Station will do a restart. The restart is indicated by the Red LED (4) blinking once.

Note: After changing transmission channel, all data about any registered detector will be erased. All the wireless detectors have to be registered on the new transmission channel.

² "0" is not a valid COM loop address.

2.2 Setting up Wireless Photoelectric Detector 4611



2.2.1 Set the Com Loop Address - EBLWin Programming

Each Wireless Detector requires one COM loop address, or Technical address in EBLWin. The detectors address will be the Base Station's COM loop address +1, +2, up to +16.

Note: All the addresses of detectors have to be in sequence and follow the base station's address.

Example: If the COM loop address of a Base Station is 12, the first wireless detector should be assigned with COM loop address $12+1=13$ and last detector $12+16=28$ as shown in Figure 8.

The address is set by the detectors DIP switches and is called "Wireless detector number", ranging from 0 to 15

The EBLWin dialog box to configure the wireless smoke detector 4611 is shown in the example in Figure 7 .

Each Wireless Detector has to be programmed in EBLWin, it must have presentation number (Zone-Address), alarm text, priority sound, etc.

Control expressions for each sounder priority to be also programmed as follow:

- **High priority:** Steady (continuously); 3 kHz
- **Medium priority:** 1 Hz (0.5 s ON / 0.5 s OFF); Sweep from 2.8 to 3.2 kHz (**T3**)
- **Low priority:** 1 Hz (0.5 s ON / 0.5 s OFF); 3 kHz

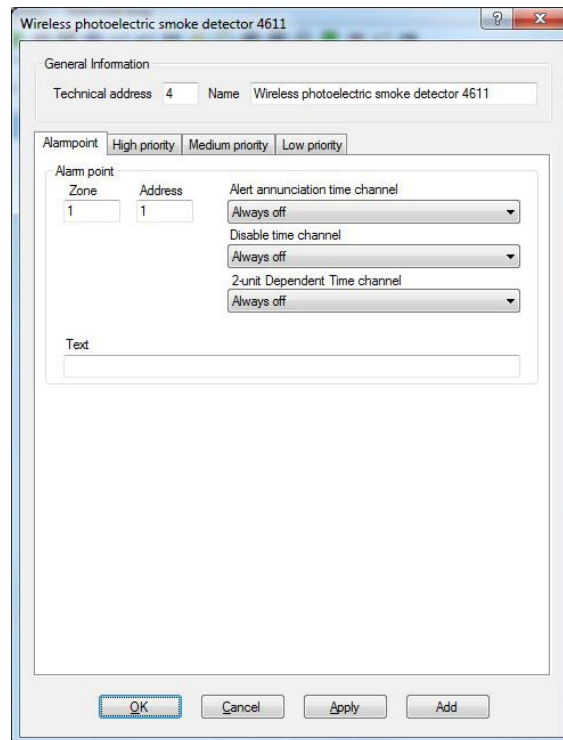


Figure 7 Dialog box of 4611 in EBLWin

Example: Base station COM loop address is 102.

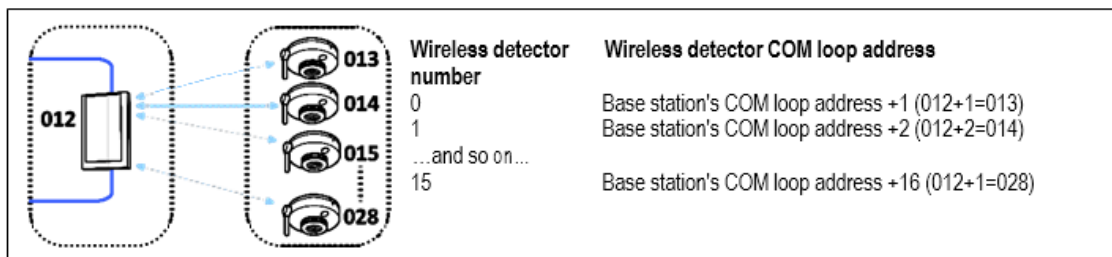


Figure 8 Example: The Base Station's com loop address is 012

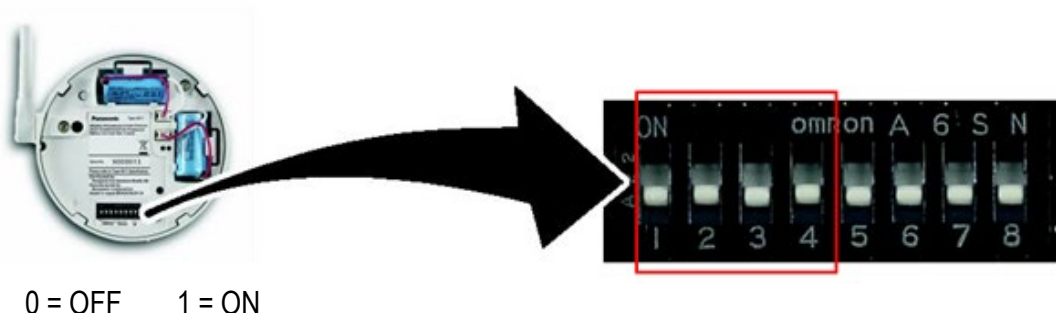
2.2.2 Set the Wireless Detector Address

Note: Due to static electricity, it is not recommended to use any conductive tool, for example a metal screw driver, to set the DIP-switches.

Each Base Station can support up to 16 wireless detectors.

The Wireless Detector Numbers (0-15) have to be set for each wireless detector respectively.

Note: The wireless detector address, set with the DIP switches, is always 0 for the first detector connected to a base station as shown in *Table 2* below. **All the detectors have to be in sequence.**



0 = OFF 1 = ON

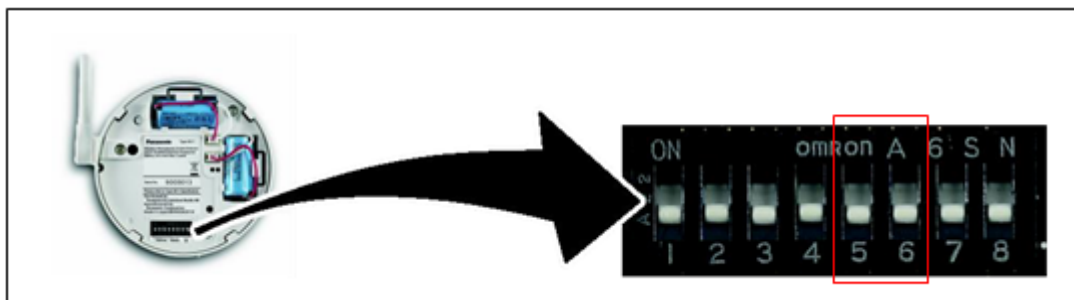
Table 2 Wireless Detector 4611 Addressing

Wireless Detector Number	Switch 1	Switch 2	Switch 3	Switch 4
0	0	0	0	0
1	0	0	0	1
2	0	0	1	0
3	0	0	1	1
4	0	1	0	0
5	0	1	0	1
6	0	1	1	0
7	0	1	1	1
8	1	0	0	0
9	1	0	0	1
10	1	0	1	0
11	1	0	1	1
12	1	1	0	0
13	1	1	0	1
14	1	1	1	0
15	1	1	1	1

Note: After changing the address, a power reset is required. **Disconnect and re-connect both batteries.**

2.2.3 Set the Transmission Channel for Wireless Detectors

To set the transmission channel of a wireless detector 4611, refer to section [1.1.1 Transmission Channel \(0-3\)](#) page 3 and the table shown below.



0 = OFF

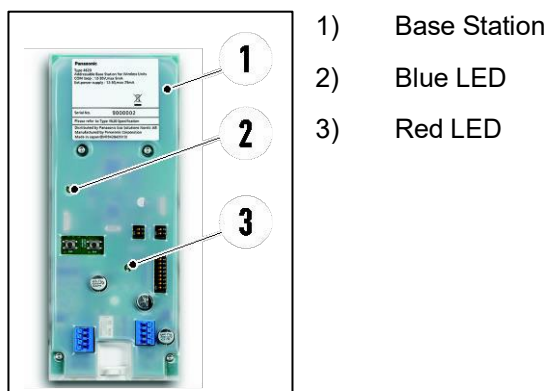
1 = ON

Transmission channel	Switch 5	Switch 6
0	0	0
1	0	1
2	1	0
3	1	1

Note: After changing the transmission channel, a power reset is required. **Disconnect and re-connect both batteries.**

2.3 Linking Wireless Detectors with Base Station (Register Mode)

2.3.1 Set 4620 to Register Mode



- Set the Base Station (1) to "Register mode" from the FDCIE menu H5/A8 for FT1020G3 or H5/A9 for FT128.
- The change of mode is confirmed by the Blue LED (2), which is lit with a fixed light.

Note: If the Base Station is set in Register mode from the FDCIE it remains in this mode until manually terminated from the FDCIE or automatically after 10 hours.

2.3.2 Register A Wireless Detector

Note: It is recommended to carry out the registration procedure as close as possible to the final mounting position of the wireless detectors.

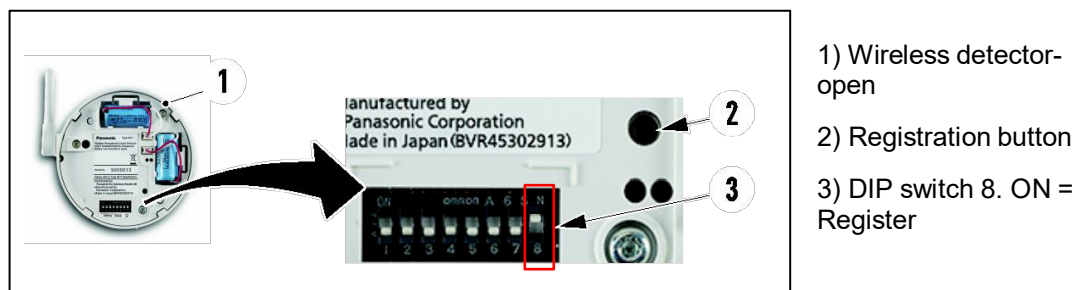


Figure 9 Wireless Detector DIP Switch for Registering

The following procedures must be followed to register a wireless detector:

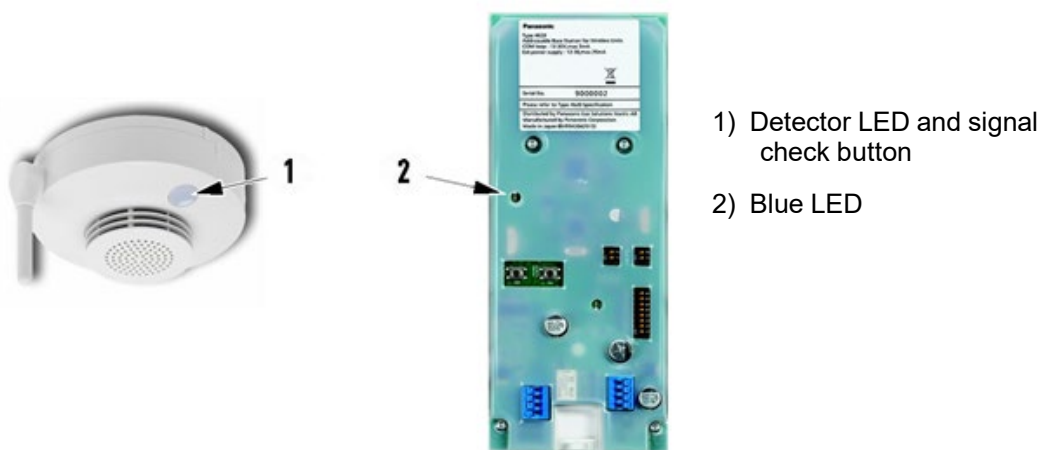
- Set the Base Station to "Register" as per section 2.3.1 Set 4620 to Register Mode above.
- Set DIP switch 8 (3) to ON.
- Mount and connect two pieces of batteries 4612. See Figure 9 above.
- Press the Registration button (2).
- Terminate the "Register mode" in the FDCIE for the correct Base Station.
See the following section 2.3.3 Terminate the Register Mode for Base Station.
- Verify the registration according to section 2.3.4 Check Registration.

2.3.3 Terminate the Register Mode (4620)

- When the detectors are registered, terminate the "Register mode" in the FDCIE for the relevant Base Station:

- In FT1020 G3; go to menu H5/A8
- In FT128; go to menu H5/A9
- b) This is confirmed by the Blue LED (2), which is turned off.
- c) The Red LED (3) flashes once, indicating the restart of the Base Station.
- d) The Base Station will now be synchronized with all its wireless detectors. This can take up to 5 minutes.
- e) When the synchronization is ready, correct if there are any faults in the FDCIE

2.3.4 Check Registration



If the Registration is successful:

- The Blue LED (2) on the Base Station is flashing 3 times.
- The Detector LED (1) is flashing 3 times and the detector sounder beeps once.
- If the registration is OK, plug the wireless detector in its base.

If the Registration is unsuccessful:

- The Blue LED (2) on the Base Station will not flash.
- The Detector LED (1) does not flash and there is no sound.
- The Wireless detector and/or Base Station have to be moved to another position and/or replace the batteries, before a new registration procedure can be started.
- If the position of the Base Station has changed, all detectors are affected. The registration procedure has to be repeated for all detectors.

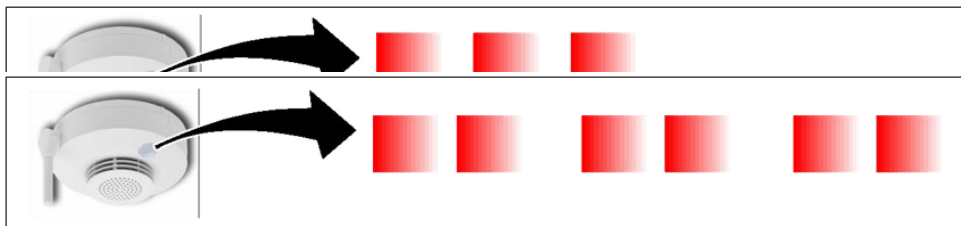
2.4 Testing the Wireless System

2.4.1 Manual Signal Check (4611)

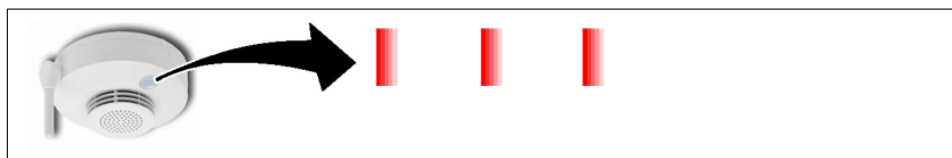
When the wireless system is working in "normal" mode, the communication between the Base Station and a Wireless detector can be checked as follows:

- a) Press the Signal check button on the Wireless detector. The detector LED flashes for 5 seconds.
- b) Check the detector LED after those 5 seconds:

- If the LED is flashing 3 times (1s ON/0.5s OFF) it is indicating that the Wireless detector communicates with its Base Station and the AS7240.25 requirements are fulfilled.



- If the LED is flashing 2 times x 3, it is indicating that the Wireless detector communicates with its Base Station but the AS7240.25 requirements are not fulfilled.
- If the LED is flashing 3 times (0.25s ON/1.25s OFF), it is indicating that the transmission signal is too low. The Wireless detector and/or the Base Station have to be moved to another position.

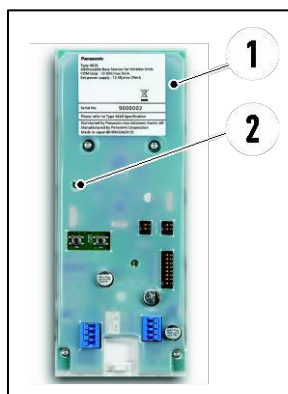


- If the LED is not flashing (OFF) it is indicating that the wireless detector is not communicating.

2.4.2 Set to Install Mode (4620)

Normally the Base Station communicates with its wireless detectors every 2 minutes.

In "Install mode" the communication will be every 5 seconds. This mode can be used while collecting data for the sniffer and the log, so that the data will be collected faster than normal.



- 1) Base Station
- 2) Blue LED

- a) Set the Base Station (1) to "Install mode" from the FDCIE menu H5/A8.
- b) The change of mode is confirmed by the Blue LED (2), which is steady lit.

Terminate the "INSTALL MODE"

- c) After operation, terminate the "Install mode" in the FDCIE for the correct Base Station:
 - In FT1020 G3; go to menu H5/A8
 - In FT128; go to menu H5/A9

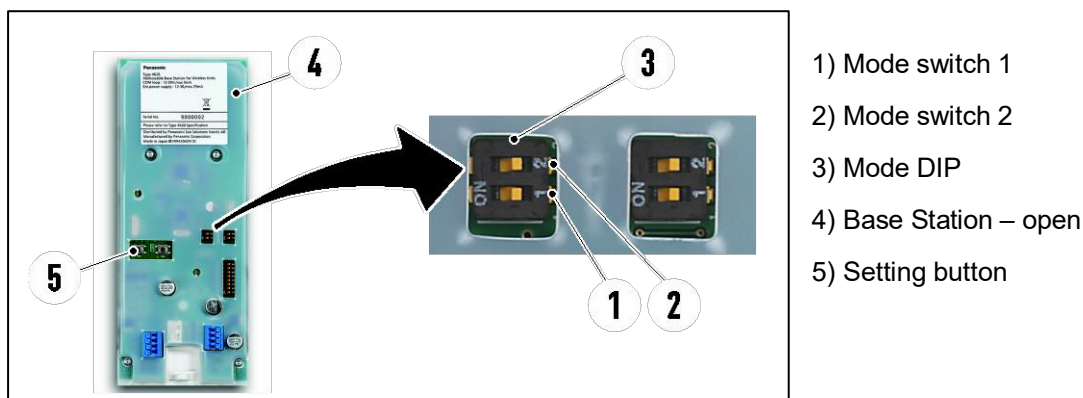
Note: When the Base Station is set in "Install mode" from the FDCIE, it remains in this mode until manually terminated from the FDCIE or automatically after 10 hours.

Note: In “Install mode”, the Wireless detectors will not work normally. The fire alarm cannot be activated and the manual signal check function will not work.

2.5 Additional Registration Options

2.5.1 Mode DIP

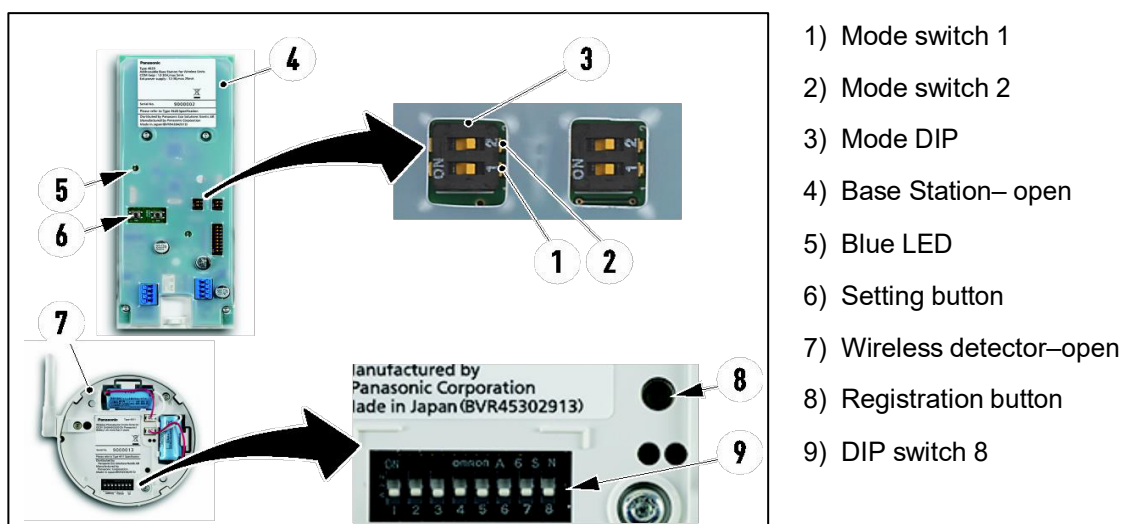
The function of the Mode DIP (3) can be used for registration of Wireless detectors without connecting the Base Station to the FDCIE, only 24 V connection for the Base Station is required. Therefore, this function is ideal when the registration takes place off site.



0 = OFF 1 = ON

MODE	Mode switch 1	Mode switch 2
Normal mode	0	0
Setting mode	0	1

2.5.2 Register with Mode DIP



The following procedures can be used to register wireless detectors with base station without connection to FDCIE:

- Connect 24 V to the base station according to section [1.2.4 Connections](#)
- Set the transmission channel for the base station as per section [2.1.3 Set the Transmission Channel for Wireless Base](#)

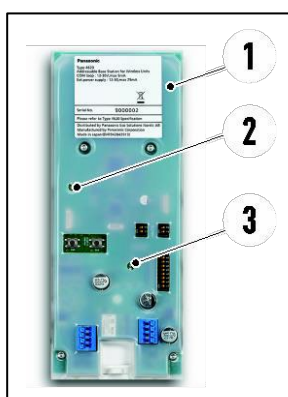
- c) Set the transmission channel for the detectors as per section 2.2.3 Set the Transmission Channel for Wireless Detectors
- d) Set the detector address as per 2.2.2 Set the Wireless Detector Address
- e) Set the Mode DIP switch (3) to Setting mode. See table in section 2.5.1 Mode DIP.
- f) Set the DIP switch 8 (9) to ON position.
- g) Mount and connect one piece of battery 4612 into the detector.
- h) Press and hold the Setting button (6) in the Base Station. The blue LED (5) turns on.
- i) Press the Registration button (8) on the detector.
- j) Verify the registration according to section 2.3.4 Check Registration
- k) Release the Setting button (6). The blue LED (5) turns off.
- l) Disconnect the battery from the detector.
- m) When all detectors have been registered, disconnect 24 V from the Base Station

2.6 Set Wireless System to Unregister Mode

One registered wireless detector can be individually unregistered.

All wireless detectors registered in one Base station can be collectively unregistered in that Base station.

2.6.1 Unregister Wireless Base 4620



- 1) Base Station
- 2) Blue LED
- 3) Red LED

The following procedures are used to unregister a wireless base station:

- a) Set the Base Station (1) to "Unregister" from the FDCIE menu H5/A8.
- a) The change of mode is confirmed by the Blue LED (2), which is lit with a fixed light.

Terminate the "Unregister Mode"

- b) When the detectors become unregistered, terminate the "Unregister mode" in the FDCIE for the correct Base Station:
 - In FT1020 G3; go to menu H5/A8
 - In FT128; go to menu H5/A9
- c) This is confirmed by the Blue LED (2), which is turned off.
- d) The Red LED (3) flashes once, indicating restart of the Base Station.
- e) The Base Station will now be synchronized with all its wireless detectors. This can take up to 5 minutes.
- f) When the synchronization is ready, correct if there are any faults in the FDCIE

NOTE! If the Base Station is set in Unregister mode from the FDCIE it remains in this mode until ended from the FDCIE or automatically after 10 hours.

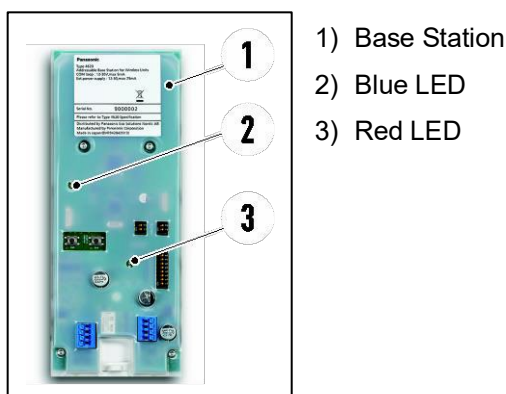
2.6.2 Unregister One Wireless Detector



To unregister one wireless detector, the following procedures to be followed:

- Set the Base Station to “Unregister” according to section [2.6.1 Set 4620 to Unregister Mode](#).
- Set the Detector DIP switch 8 (3) to the OFF position.
- Press the Registration button (2).
- Verify the deregistration according to section [2.3.4 Check Registration](#)
- Terminate the “Unregister mode” in the FDCIE for the correct Base Station. See [2.6.1 Set 4620 to Unregister Mode](#) on the Base Station.

2.6.3 Unregister All Wireless Detector



To unregister all wireless detectors, do the following:

- Set the Base Station (1) to “Unregister” from the FDCIE menu H5/A8.
- The change of mode is confirmed by the Blue LED (2), which is lit with a steady light.

Terminate the “Unregister Mode”

- When the detectors are deregistered, terminate the “Unregister mode” in the FDCIE for the correct Base Station:
 - In FT1020 G3; go to menu H5/A8
 - In FT128; go to menu H5/A9
- This is confirmed by the Blue LED (2), which is turned off.
- The Red LED (3) flashes once indicating a restart of the Base Station.

- g) The Base Station will now be synchronised with all its wireless detectors. This can take up to 5 minutes.
- h) When the synchronization is ready, correct if there are any faults in the FDCIE

Note: If the Base Station is set in Unregister mode from the FDCIE it remains in this mode until manually terminated from the FDCIE or automatically after 10 hours.

2.6.4 Unregister All Wireless Detectors



- 1) Addressable Base Station – open
- 2) Blue LED
- 3) Clear button

To unregister all wireless detectors, the following procedures to be followed:

- a) Set the Base Station to “Unregister” according to section 2.6.1 Set 4620 to Unregister Mode.
- b) Press the Clear button (3) on the Base Station for 5 seconds.
- c) If the deregistration is successful, the Blue LED (2) on the Base Station is flashing 3 times.
- d) The blue LED (2) turns off and the base station restarts. When communication between the FDCIE and the base station has been established again, the FDCIE will set the base station to unregister mode.
- e) Terminate the “Unregister” mode in the FDCIE for the correct Base Station. See section 2.6.1 Set 4620 to Unregister Mode for the Base Station.

3 Quick Start Guide

Base station 4620

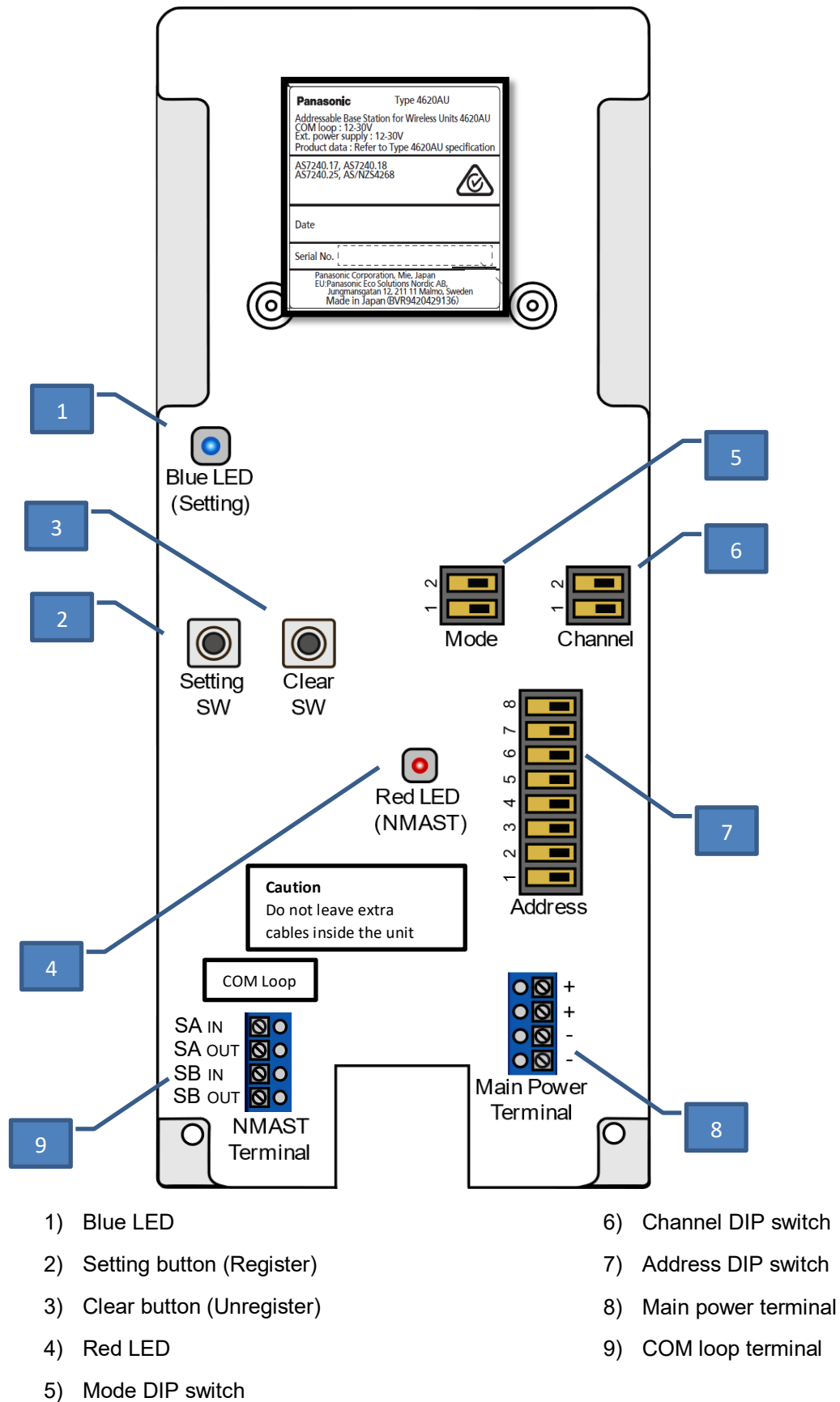


Figure 10 Wireless Base Station

Step 1:

Connect Base station 4620 to 24Vdc. See Figure 10, Main power terminal (8)

Step 2:

Set the Transmission channel on Base station. See Figure 10, Channel DIP (6)

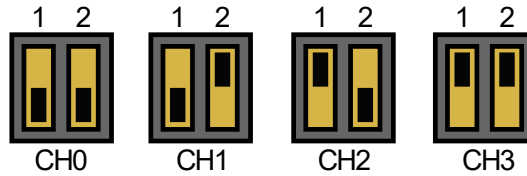


Figure 11 Channel settings for DIP switches on Base station 4620

Step 3:

Set the Mode on Base station to 'Setting'. See Figure 10, Mode DIP (5)

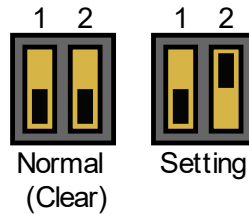
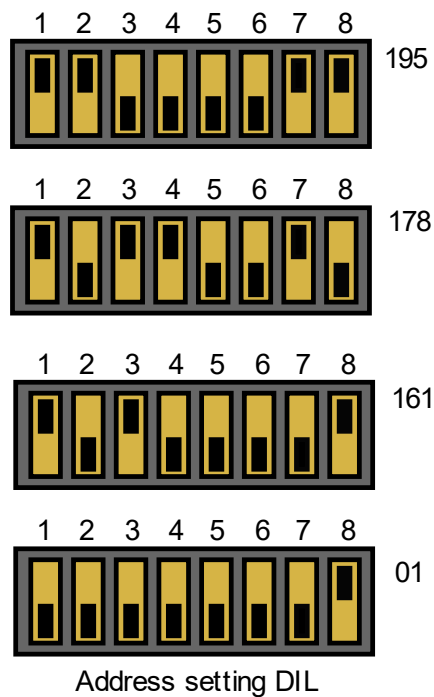


Figure 12 Mode setting using DIP switches on Base station 4620

Step 4:

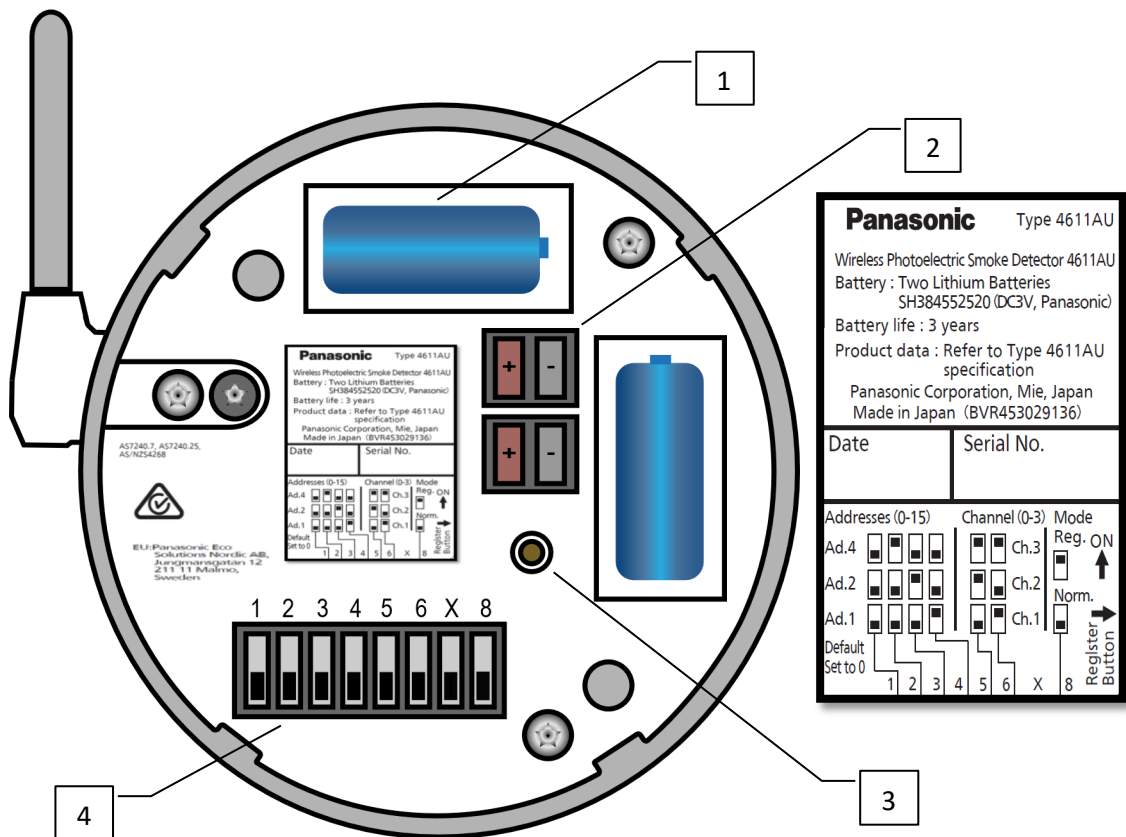
Set the Address on Base station. See Figure 10, Address DIP (7)



Address setting DIL

Figure 13 Setting address for base station 4620

Wireless Detector 4611



- 1) Batteries Type 4612
- 2) Connector terminals for batteries
- 3) Register button
- 4) Address/Channel/Mode setting DIP

Figure 14 Wireless Photoelectric Detector 4611

Note: After a change to the settings of the Wireless detector, a power reset is required. **Disconnect and re-connect both batteries.**

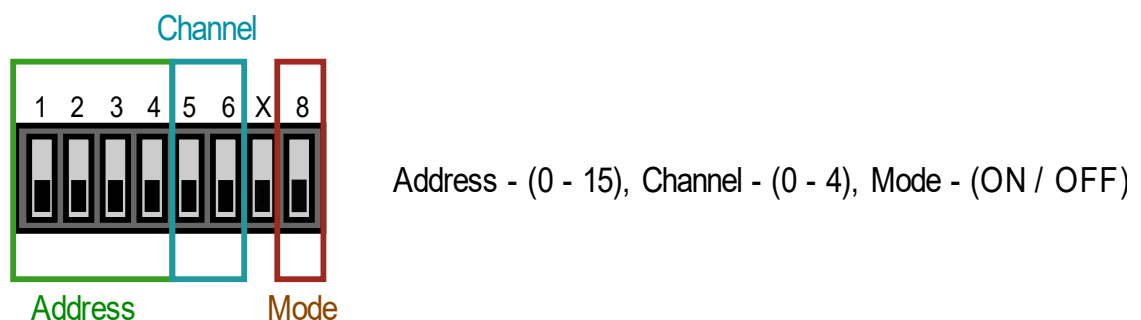


Figure 15 Address / Channel / Mode DIP (4611)

Step 5:

Set the Transmission channel on Wireless Detector. See Figure 16.

The group of detectors associated with the corresponding Base Station must be on the same channel.

Tip: It would be better to set the Transmission Channel for all wireless detectors corresponding to the base station at this stage, which would be helpful when doing registration (Step 10).

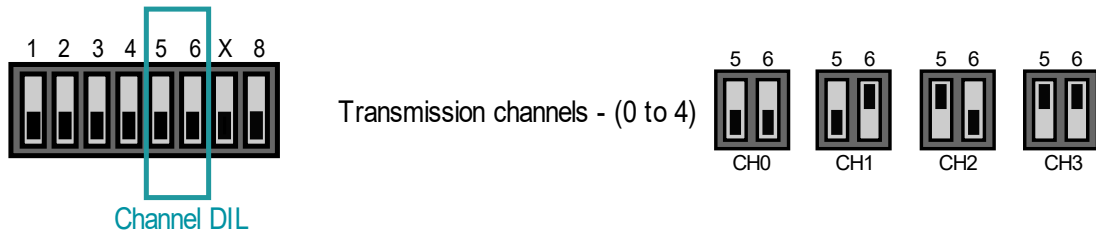


Figure 16 Channel DIP 4611

Step 6:

Set the detector address for the Wireless Detectors. See Figure 17.

Tip: It would be better to set the address for all wireless detectors corresponding to the base station at this stage, which would be helpful when doing registration (Step 10).

Please note that the detector address set in this step is not the 'Technical address' or the 'COM loop' address. For more information see section [2.2.1 Set the Com Loop Address - EBLWin Programming](#)

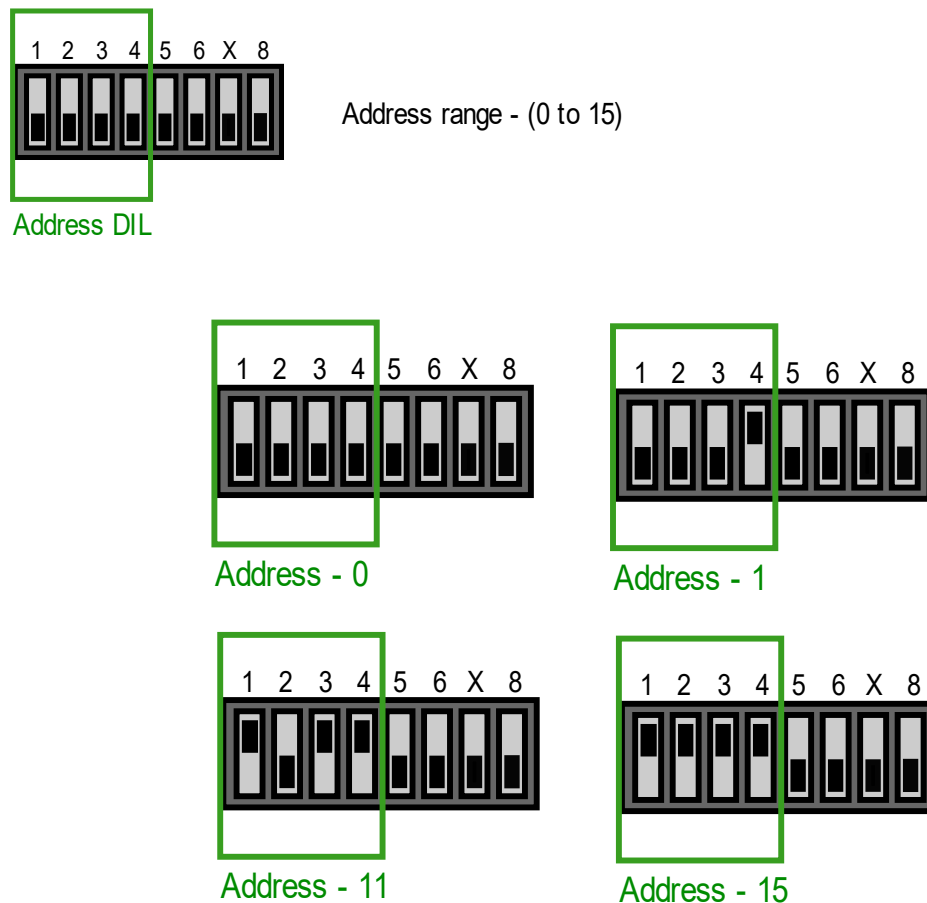


Figure 17 Address DIP switches (4611)

Step 7:

Set the Mode DIP switch to ON position (Register Mode) on the Wireless Detectors. See Figure 18.

Tip: It would be better to set the Mode for all wireless detectors corresponding to the base station at this stage, which would be helpful when doing registration (Step 10).

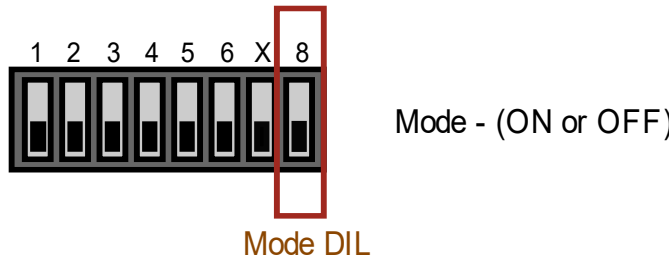


Figure 18 Mode DIP switch (4611)

Step 8:

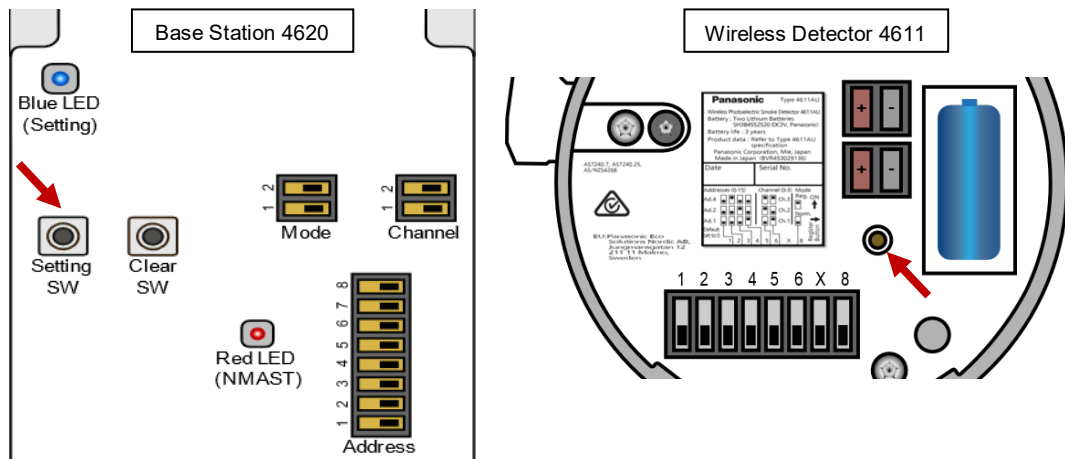
Mount and connect one piece of battery 4612 into the Wireless Detectors. See Figure 14 (1 and 2)

Step 9:

Press and hold the Setting button in the Base Station. The blue LED turns on. See Figure 10, Blue LED (1) and Setting button (2)

Step 10:

While holding the 'Setting button' in the Base Station, press the 'Register button' on the Wireless Detector. See Figure 10, Setting button (2) and Figure 10, Register button (3)



Step 11:

Repeat 'Step 10' until all Wireless Detectors are paired with the Base Station corresponding to the same Transmission Channel

Step 12:

Verify the registration.

If the Registration with the Base station and the Wireless detector is successful:

The Blue LED on the Base Station will flash 3 times.

The Detector LED will flash 3 times and the detector sounder beeps one time.

If the registration was successful, plug the Wireless detector in its base.

Step 13:

Release the Setting button from the Base station, the blue LED turns off. See Figure 9, Blue LED (1) and Setting button (2).

Step 14:

Disconnect the battery from the detector.

Step 15:

When all detectors have been registered, disconnect 24 V from the Base Station

Step 16:

Add the base station and detectors to the SSD file by configuring them in EBLWin.

Step 17:

Download the SSD file.

Registering The Wireless Base Station With FT1020G3 and FT128

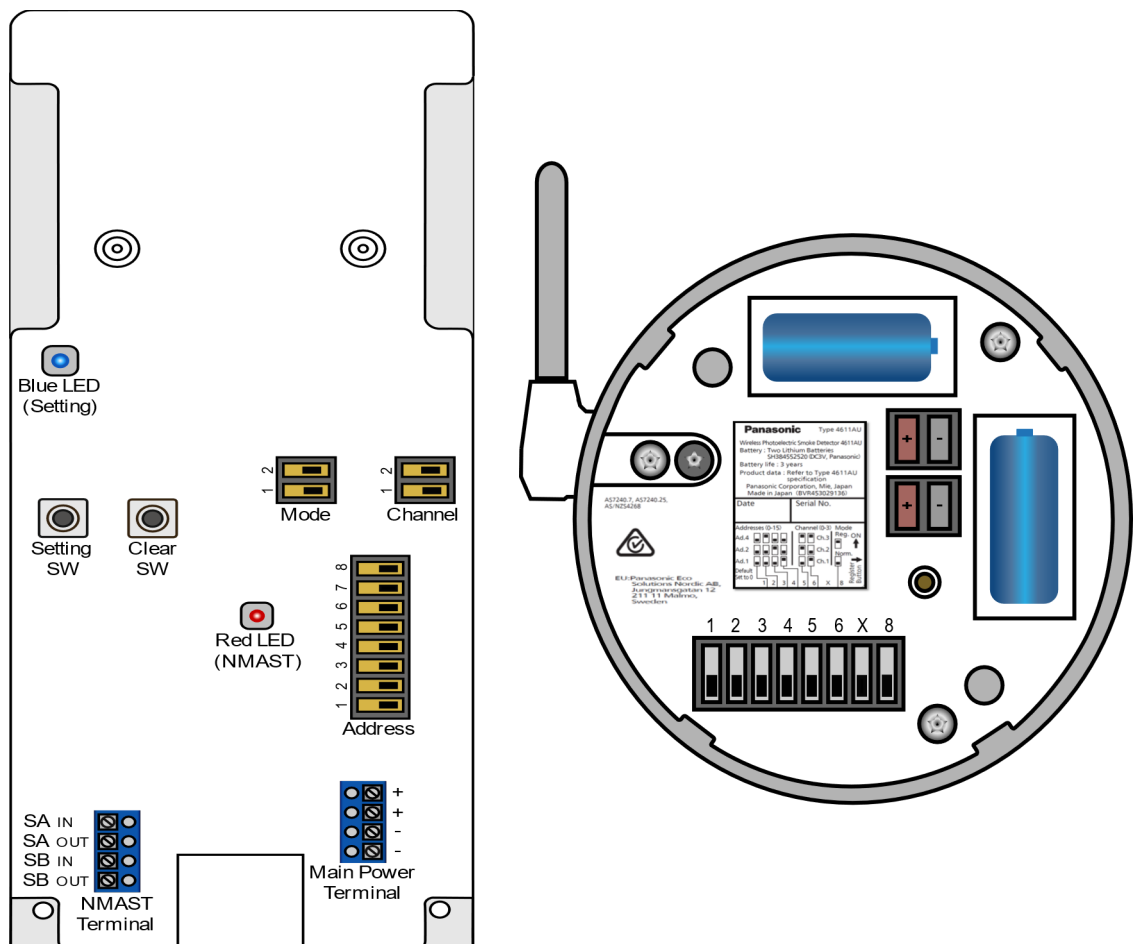


Figure 19 Base station (4620) and Wireless Detector (4611)

Step 18:

Set the Panel to 'Register Mode' from menu H5/A8 for FT1020G3 or H5/A9 for FT128.

When asked for 'Set Base Station', key in the technical number.

Example. 001128 (1st 2 digits are control unit number (00-30), third digit is for the loop number and the last 3 digits for the technical address. Then select 'Register' on the menu and press ↵ (this should take no more and 2 seconds).

If successful, Blue LED on the base station should flash 3 times after registration.

Step 19: Return the Mode DIP to Normal mode on the Base Station, see Figure 10 and on the detectors, see Figure 14.

4 Wireless Sniffer 4613

4.1 Basic Information



To assist selecting the correct location of the wireless detectors during installation and commissioning, a Wireless sniffer can be used to check if the signals between a Base station and all its wireless units are Good, Acceptable or Bad.

Also, the background noise can be checked. It is highly recommended to do a check on site, prior to the final installation.

The sniffer is a USB device with an antenna. The device is plugged in a PC (laptop) and is used together with the EBLsniffer PC program. The PC program is used on site to check and present:

- The background noise.
- The signals between a Base station and its wireless detectors.

Note: Since the PC itself can affect the sniffer, it is highly recommended to use a USB extension cable between the PC and the sniffer when checking the background noise. The cable should be at least 2 meters. The cable is not included with the sniffer.

Notes: To use the program in the PC, an EBLWin key (dongle) 5094 is required.

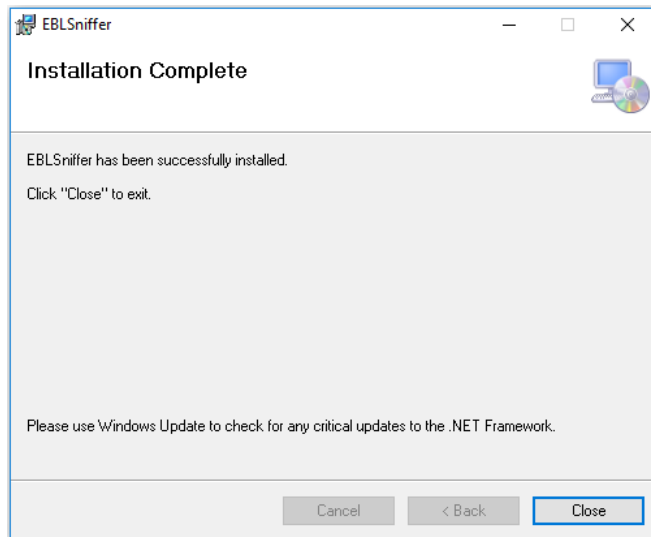
4.2 EBLSniffer Software Installation

The PC program EBLSniffer communicates with the physical EBLSniffer via USB. Normally, your PC will identify the USB driver for the EBLSniffer

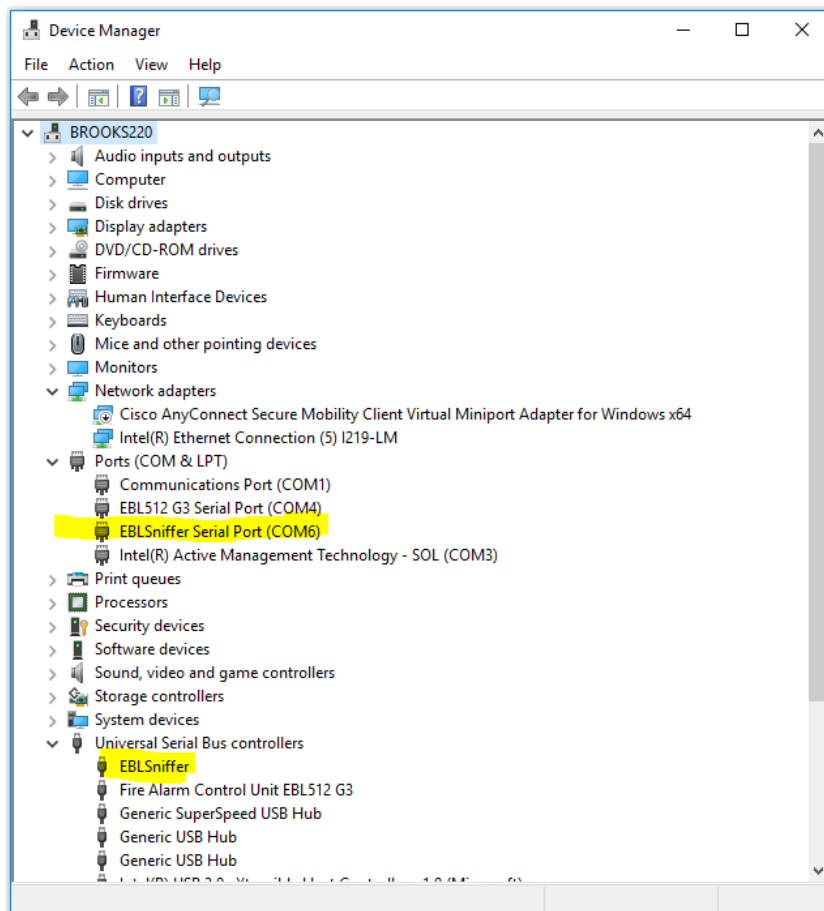
The EBLSniffer will be installed as two devices; one USB controller and one USB serial port.

Software Installation procedures

1. Obtain the EBLSniffer software from Brooks head office or from any of the regional offices and save in a folder in your PC after unzipping the file.
2. Install the software "EBLSniffer setup"
3. If the installation is successful, the following window displays:



4. Plug-in the EBLSniffer USB device in to a spare USB port in the PC, ensure the software key (dongle) is also plugged in your PC.
5. Open "Device Manger" in your PC, the following window will now display:



Two entries are shown (highlighted yellow) in the device manager

- USB serial port (in this case COM6)
- USB serial bus controller

4.3 USB Connection Setup

Two important issues are good to know about the USB connection.

4.3.1 Drivers

The EBL512 G3 control unit (FT1020G3) and the EBLSniffer contains a standard USB-to-serial port chip. The same chip is used in many USB-to-serial port dongles. This is the reason why some of the driver files may already be on the computer even if EBL512 G3 / EBLSniffer drivers have not been installed. Or, if a USB-to-serial port dongle is installed in a PC after the EBL512 G3 / EBLSniffer drivers are installed the same message about some files already on the computer may occur. In any case, always select to either install or keep the newest files.

4.3.2 COM-port number

EBL512 G3

The standard procedure in Windows is to handle each USB device as a new unit even if it is of the same type as installed before. This would have caused all EBL512 G3 control units to get unique COM-port numbers which would not be very practical for a technician.

To override this feature all EBL512 G3 control units have the same USB serial number set in production. This way Windows thinks that it is always the same control unit as before that is connected and it will always assign the same COM-port number. The downside with this approach is that it is not possible to connect more than one EBL512 G3 control unit to a PC at a time.

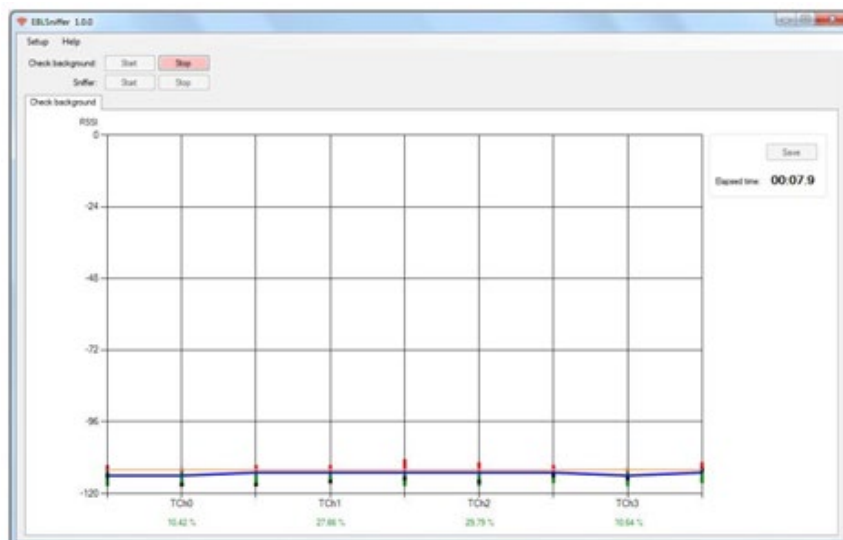
EBLSniffer

EBLSniffer uses the standard Windows procedure to handle each USB device as a new unit. This is because sometimes it is necessary to connect several sniffers to the same PC.

4.4 Check the Background Noise

The background noise is caused by units other than the Wireless and Base stations. If the signal levels on the same frequencies used for the wireless units are too high, they can affect the wireless units.

- a) Set up the EBLsniffer PC program, with an USB extension cable between the PC and the sniffer. See notes under section 4.1 *Basic Information*
- b) Click the **Setup/Open serial port**. Select any channel. It doesn't matter which master channel or sub channel that is open. Background check uses only one sniffer that scans the whole frequency band of interest.
- c) Click the **Check background/Start** button. The Check background tab opens.
- d) Click the **Check background/Stop** button. The check will stop.
- e) Click the **Save** button. The diagram will be saved as a .jpg image.



Example:

In this example the blue line is beneath the orange line. The background noise is acceptable. The % value shall be less than 50% and the lower the better.

Red dots: Radio signal levels that could be a potential danger for the detectors and Base Station.

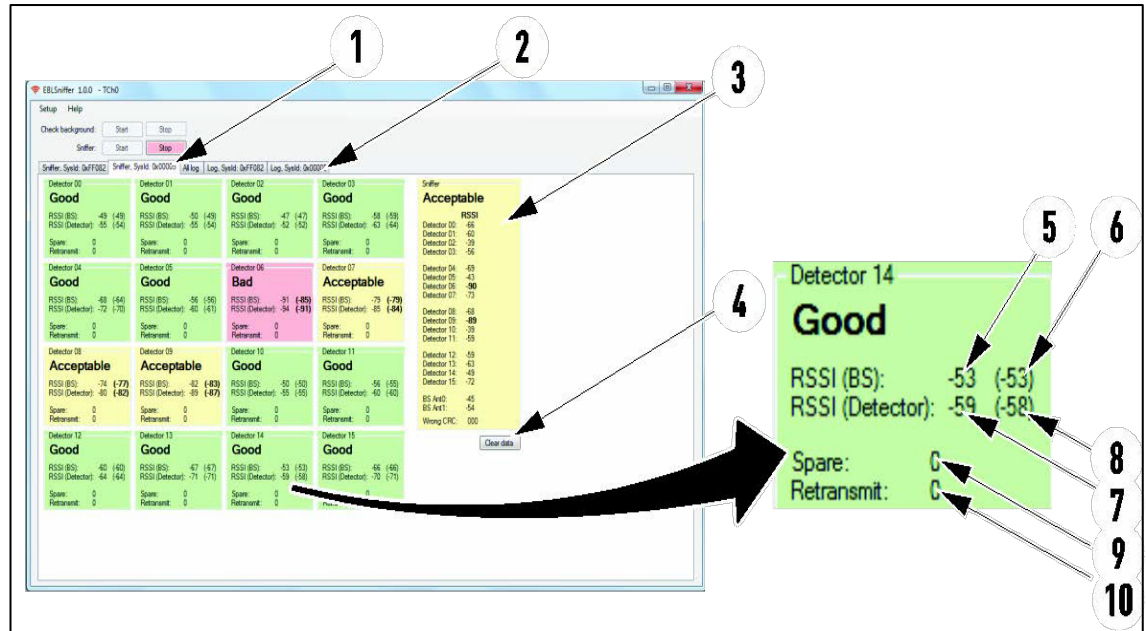
Green dots: Radio signal levels that are not a potential danger for the detectors and Base Station.

Blue line: Shows the red and green dots' average value and has be on or beneath the orange line. (The blue line will never be shown beneath the -120 line.)

4.4.1 Check the Communication

Check the communication value of the Base Station and detectors after installation. The sniffer helps to optimize the position of the wireless units.

- Launch the EBLsniffer PC program.
- Set the Base Station to "Install mode". See section [2.4.2 Set to Install Mode](#)
- Click the **Setup/Open serial port** and choose which transmission channel (TCh0-TCh3) you want to listen to. Designate a sniffer to the selected transmission channel. (Optional: If you want to listen to backup channels, designate a sniffer to each backup channel you want to listen to.)
- Click the **Sniffer/Start** button. The sniffer and log tabs open, wait for communication.
- Click the **Sniffer/Stop** button. The check will be stopped.
- Click the **Save** button. The diagram will be saved as a .jpg image.



Example: Two systems, both communicating on transmission channel 0. The Tab for system "0x00005" is open.

1. Sniffer tab
2. Log tab
3. Sniffer square RSSI: The signal level in the sniffer for each wireless detector and the Base Station.
4. Clear data: Clear all detector and sniffer data and resets average. Click when detector is moved to new position.
5. Latest value of RSSI (BS): The signal level in the Base Station
6. Average value of RSSI (BS): The signal level in the Base Station
7. Latest value of RSSI (Detector): The signal level in the wireless detector
8. Average value of RSSI (Detector): The signal level in the wireless detector
9. Spare: Number of messages sent in 'Spare' frame
10. Retransmit: Number of retransmitted messages

DETECTOR SQUARE - EXPLANATION OF THE COLOURS

Good: Both the average value for the Base Station and the detector are over -75. AS7240,25 is fulfilled.	Acceptable: At least one average value for the Base Station or a detector is between -90 and -75. AS7240.25 is not fulfilled.	Bad: At least one average value for the Base Station or a detector are beneath -90. Change positions of Base Station and/or Detector.	All data is not received yet or the detector stopped answering (nothing received in 5 minutes).
---	--	--	---

This means that if AS7240.25 shall be fulfilled, all detector squares have to be green.

SNIFFER SQUARE - EXPLANATION OF THE COLOURS

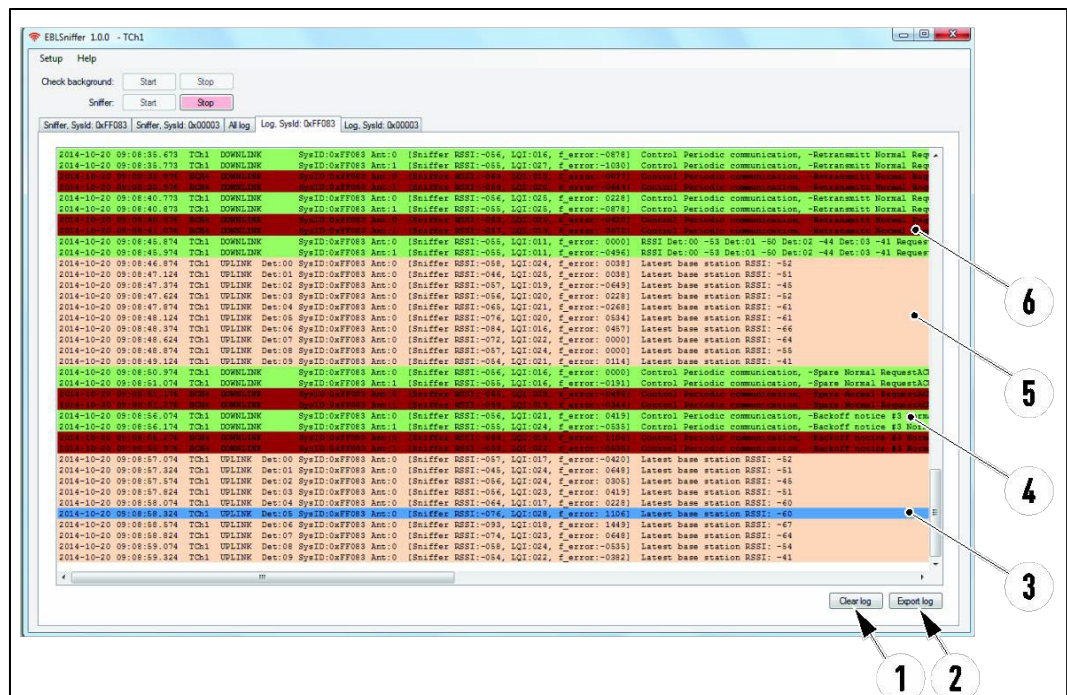
Good: No RSSI value beneath -75	Acceptable: No RSSI value beneath -90.	Bad: One RSSI value beneath -90.	All data is not received yet or the detector stopped answering (nothing received in 5 minutes).
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These values show if the sniffer position, compared with the Wireless detectors and Base Station positions, is good, acceptable or bad. If necessary, move the sniffer to an acceptable or good position.

LOG TAB

The "Log tab" for a system shows the communication between the Base Station and the Wireless detectors.

This log and the information shown are primarily intended for research and development purposes.



1. Clear log: The log will be cleared.
2. Export log: The log will be exported to Excel.
3. Blue row: Shows the selected event.
4. Green row: (DOWNLINK) shows the communication from the Base Station to one or several detectors.
5. Peach row: (UPLINK) shows the communication from the detectors to the Base Station.
6. Brown row: (DOWNLINK or UPLINK) shows the communication on sub channels.

In case of needed support and analyses of the log, do as follows:

- a) Choose the Log tab.
- b) Click on Export log. The sniffer program will create an Excel document.
- c) Save the Excel document: Choose File/Save as.

5 Commissioning the Wireless System

This chapter describes the correct sequence to install, set and check your wireless system.

Note: Make sure to read this manual before commissioning the system.

PREPARATIONS AND MOUNTING

- a) Check the background noise with the Wireless sniffer according to section 4.2 EBLSniffer Software Installation
- b) Mount the Base Station on the wall. See section 1.1.7 Transmission Range
- c) Mount the bases for the wireless smoke detectors in the ceiling, so that the detectors will have the antenna in the direction towards the Base Station.

CONNECTIONS

- d) Set the transmission channel for the Base Station according to section 2.1.3 Set the Transmission Channel. Also read section 1.1.1 Transmission Channel (0-3).
- e) Connect the Base Station to the COM loop and 24 V DC according to section 1.2.4 Connections.

PROGRAMMING IN EBLWIN AND DOWNLOADING SSD

- f) Do the programming in EBLWin. Set the COM loop address for the Base Station according to section 2.1.1 Set the COM Loop Address - EBLWin Programming and for the Wireless detectors according to section 2.2.1 Set the Com Loop Address - EBLWin Programming.
- g) Download the Site Specific Data (SSD) to the Control unit.

REGISTER

- h) Set the Base Station to "Register mode" according to section 2.3.1 Set 4620 to Register Mode
- i) Set the transmission channel for each wireless detector according to section 2.2.3 Set the Transmission Channel.
- j) Set the detector address for each wireless detector according to section 2.3.2 Register A Wireless Detector.
- k) Connect both batteries into the wireless detectors.
- l) Register all the Wireless detectors that required to be registered to the same Base Station. Those detectors have the same transmission channel as the Base Station. Register according to section 2.3.2 Register A Wireless Detector.
- m) Make sure to terminate the register mode for the Base Station according to 2.3.1 Set 4620 to Register Mode c) to g).

CHECK

- n) Mount the detectors in their bases.
- o) Make a manual signal check according to section 2.4.1 Manual Signal Check (4611).
- p) Check the communication with the Wireless sniffer according to section 4.4.1 Check the Communication.

6 Specifications

Note: All current consumptions are valid by nominal voltage and by 25 °C.

6.1 Transmission Data – Valid For 4611 And 4620

Transmission distance:	Up to 170 in open air.
Transmission / Modulation method	TDMA / FSK
Transmission power:	10mWerp
Frequency band:	926.6125MHz (Channel 0) 926.6375MHz (Channel 1) 926.6625MHz (Channel 2) 926.6875MHz (Channel 3) 926.3125MHz (Backup Channel 4) 926.3375MHz (Backup Channel 5) 926.3625MHz (Backup Channel 6) 926.3875MHz (Backup Channel 7)

6.2 Wireless Photoelectric Smoke Detector – 4611

Detector battery:	2.5 / 3 / 3.5 V DC
Min. / Norm. / Max.	Battery = 2 x 3 V Lithium battery, type 4612
Current consumption:	30 µA (Normal average)
Sensitivity:	3.5 ~ 4% /meter (Smoke density)
Sensitivity (obscuration; %/m)	3.5
Detection cycle (sec.)	5.1 (but when over the fire alarm threshold level: 1.)
Sensitivity compensation (%/m)	2.0 (when the average smoke density > 2.0)
Compensation cycle (hour)	18
Sounder:	More than 85 dB/meter
Address:	0 ~ 15 (DIP-switch)
System:	Up to 16 Wireless units (type 4611) per Base Stations (type 4620)
Material:	
Cover and Base:	ABS
Body and Button:	PC - Modified polycarbonate
Ambient temperature:	
Operating	-10 to +55 °C
Storage	-15 to +60 °C (Without batteries)
Ambient humidity:	Maximum 95, % RH (Non condensing)
Ingress protection rating:	IP 50
Weight:	165 g (including batteries)
Size:	
Ø x H	100 x 45 mm (antenna excluded)
Antenna length	55 mm
Colour:	White (10Y9/0.5, Munsell colour code).

6.3 Addressable Base Station for Wireless Units – 4620

Voltage: Allowed Normal	External power supply 12-30 V DC 24 V DC	COM loop 12-30 V DC 24 V DC
Current consumption at normal voltage:	External power supply Max. 40 mA	COM loop 4.5 mA (max. 6)
Short circuit isolator	Built-in	
Address:	1~255 (DIP-switch)	
System:	Up to 16 Wireless units (type 4611) per Base Stations (type 4620)	
Material: Cover and Base:	ABS	
Ambient temperature: Operating Storage	-10 to +55 °C -15 to +60 °C	
Ambient humidity:	Maximum 95, % RH (Non condensing)	
Ingress protection rating:	IP 50	
Size: H x W x D	240 x 150 x 31 mm	
Weight:	345 g	
Colour:	White	

6.4 Wireless Sniffer – 4613

Connection	USB device
Frequency band:	926 MHz
Ambient temperature: Operating Storage	-10 to +55 °C -15 to +60 °C
Ambient humidity:	Maximum 95, % RH (Non condensing)
Ingress protection rating:	IP 50
Size: H x W x D	23 x 14 x 190 mm
Weight:	30 g
Colour:	Black

6.5 Approvals

Applicable directive	Applicable standards		Notified body
	Wireless Detector	Base Station	
CSIRO	AS7240.25 (RF) AS7240.7 (smoke detector)	AS7240.25 (RF) AS7240.17 (Short circuit Isolator) AS7240.18 (I/O unit)	ActivFire Listed
Austest	AS/NZS 4268:2017		CSIRO
R&TTE	EN300-220-2 (RF) EN301 489-01 (EMC) EN301-489-3 (EMC)		Telefication (Self declaration)
EMC	EN61000-6-3 (Emission) EN50130-4 (Immunity)		PES (Self declaration)

7 Guarantee

If the product has any defect due to faulty workmanship or material it is to be returned to Brooks freight paid. Brooks will, at its sole discretion, repair or replace the item free of charge.

On returning a component or complete product, proof of purchase will be required. If returning the complete product all accessories and documentation **MUST** be returned.

This guarantee does not cover damage caused to the product or its components as a result of incorrect installation, accident, neglect, misuse, unauthorised dismantling or contamination howsoever caused, careless handling or where repairs have been made or attempted by others. Onsite warranty repairs will be carried out at the discretion of the manufacturer.

No other guarantees written or verbal are authorised to be made on behalf of Brooks. All other conditions and warranties whether expressed or implied are, to the extent permitted by law, hereby excluded.

As Brooks has no control over the system's design, installation to the relevant Australian Standard or maintenance, the Company and its agents take no responsibility for any damage, consequential loss or injury caused to any equipment, property or persons resulting from the use of Brooks wireless equipment.

Brooks guarantees the wireless equipment for a period of three years from the date of purchase the equipment.

8 Revision History

Issue	Date	Description	Written By	Checked By
0	6/3/2019	Rewritten Panasonic's manual	T. Lawrence	A. Shenouda

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