

SCORPIO

Indoor wireless IR detector for intrusion detection systems



Addressee for this information:  User |  Installer

1 DESCRIPTION

SCORPIO is a passive infrared wireless detector. The device detects IR energy change generated by the passage of a person inside the controlled area.

Infrared section (IR): digital PIR sensor with temperature compensation and lens with white light protection.

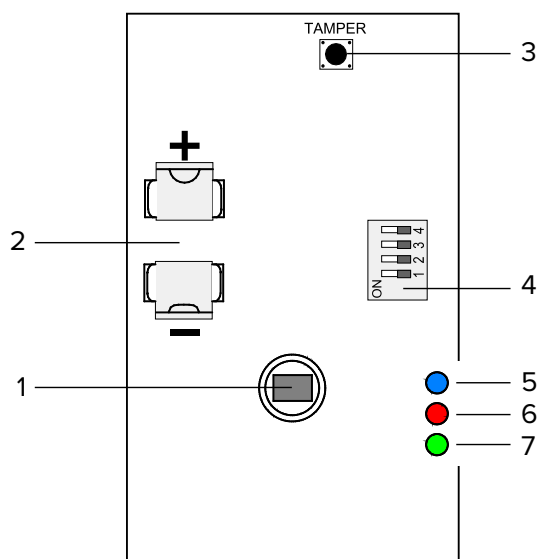
LEDs indicate device working activity.

SCORPIO can be set with board dip switch.

Optional joint available.

SCORPIO is compatible with control units or radio concentrators with Helios or Villeggio protocols.

2 PCB



- 1 PIR sensor
- 2 Battery slot
- 3 Tamper button
- 4 Dip switches
- 5 Blue LED
- 6 Red LED
- 7 Green LED

3 TECHNICAL DATA



Model		SCORPIO	
Identification			
Technology		IR	
Coverage type		Volumetric	
IR section			
PIR sensor number		1	
IR max range		15 (1) m	
Pulse count		10 s	
Opening		81° (1) °	
No. of IR sensitive zones		18 on 4 levels (1)	
General features			
Operating voltage	Power supply	3,6	V
	Compatible battery	3,6V 1,2Ah 1/2AA type ER14250 or LS14250	
	Minimum power supply	2,4	V
Timers	Power-on stand-by	10	s
	Walk test	8	min
	Post-alarm inhibition time	In walk test mode: 30 s; in operating mode: adjustable (30 s / 5 min)	
	Supervision	26	min
Consumption at power voltage	Inactive mode	28,0	µA
	Transmitting	16	mA
Radio connection range (2)		150	m
Max power in transmission mode		10	mW
Transmission frequencies		434,525	MHz
Autonomy		2 years with H protocol; 2.5 years with V protocol (3)	
Working temperature		-10 / +45	°C
Humidity		93% r.h.	
Protection class		IP3x	
Conformity		EN 50131-5-3, EN 50131-2-2: grade 1	
Environmental class		2	
Dimensions and weight		W65 × H111 × D48 mm, 120g with battery	

- (1) with standard lens SML/15
 (2) in open field
 (3) with 20 TX/day

Parts supplied

Screws, inserts, S4 screw and insert for microswitch against removal, ER14250 battery, technical manual

Optional accessories

SN/D99 joint.

4 PRECAUTIONS BEFORE DEVICE MOUNTING

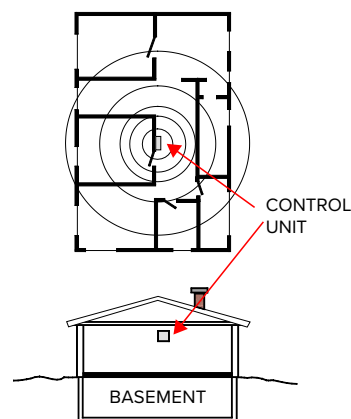


The table of contents and general warnings are at the end of this manual.

Before installing the product, please read the following indications carefully.

4.1 General considerations

- Make sure the device operating field is free and devoid of zones darkened by obstacles.
- Do not install the device near swaying or vibrating metal objects (ex. fridge/refrigerators groups, window blinds, metal roller shutters).
- Avoid installation near heat sources or drafts.
- Do not touch PIR sensor silicon filter.
- For a better reception we recommend installing intrusion detection control units in the central area of the building to protect and over the ground level.



The electronic board of the detector may be damaged by electrostatic discharges. The installer must completely avoid any presence of electrostatic discharges.

4.2 Environment limits

The use of some building materials may reduce the detector wireless signal strength.

Example:

- plywood and honeycomb walls: 90-100% of full strength;
- solid / hollow brick walls 65-95% of full strength;
- concrete walls or metal sheet and plaster: 0-70% of full

strength.

Metal grids, metal gates, and glasses may also affect (i.e. diminish) detector strength.

4.3 Definition of installation position

Choose installation position taking into account coverage ranges shown in the following diagrams.

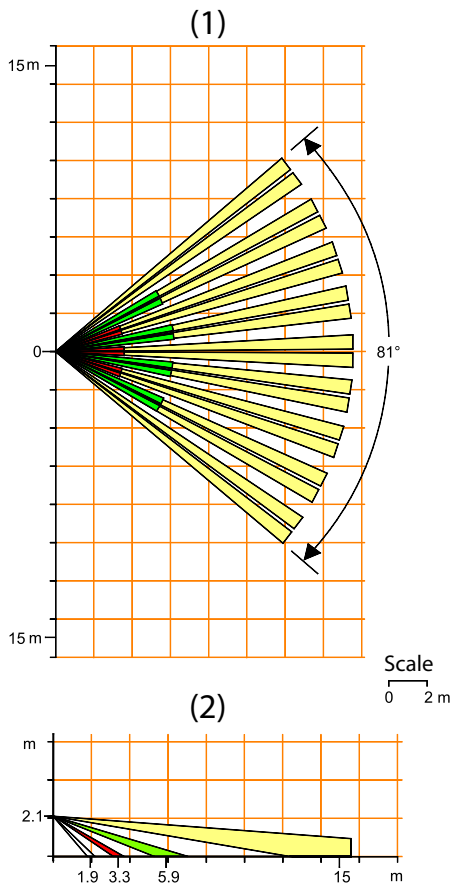
- **Standard lens SML/15**

Diagrams refer to detectors mounted at 2.1m height.

Range: 15 metres

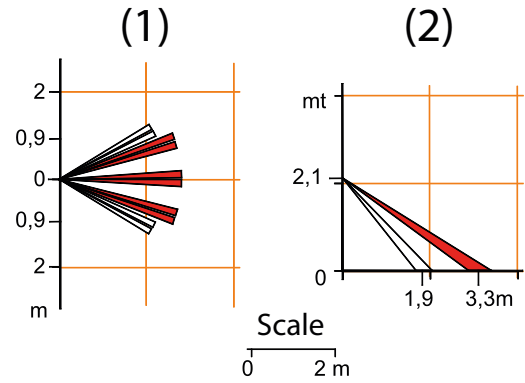
Coverage: volumetric, aperture 81°

Beams arrangement: 18 zones on 4 levels



- 1 Top view
- 2 Side view

Details



- 1 Top view
- 2 Side view

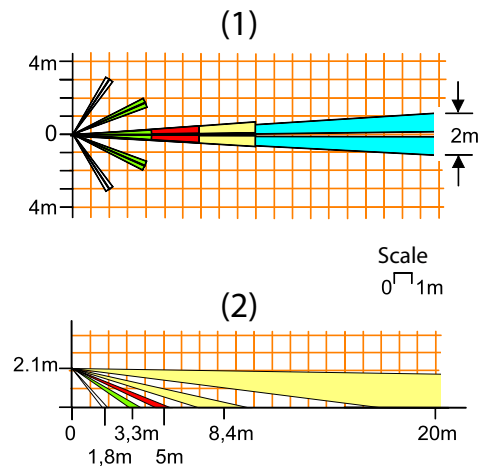
- **Optional lens SML/20**

Diagrams refer to detectors mounted at 2.1m height.

Range: 20 metres

Coverage: long distance

Beams arrangement: 10 zones on 5 levels



- 1 Top view
- 2 Side view

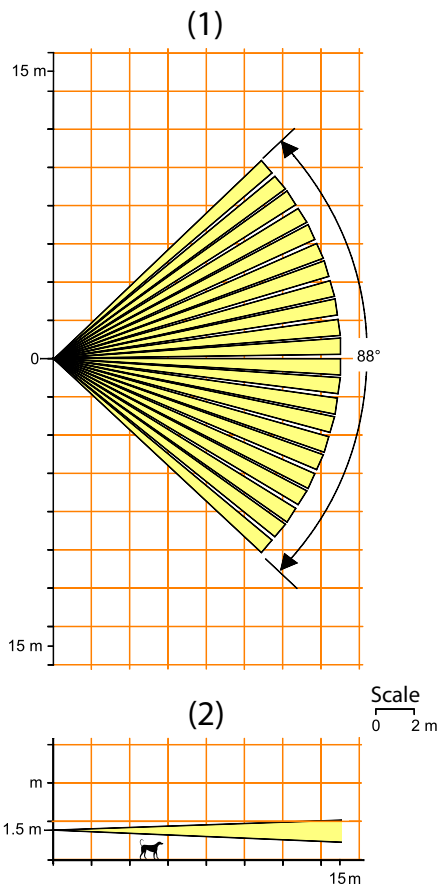
- **Optional lens SML/TO**

Diagrams refer to detectors mounted at 1.5m height. Set detector height according to protection to realise.

Range: 15 metres

Coverage: aperture 88°

Beams arrangement: horizontal curtain



1 Top view
2 Side view

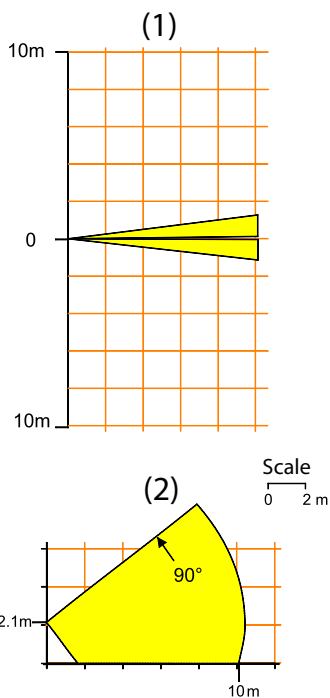
• **Optional lens SML/PP**

Diagrams refer to detectors mounted at 2.1m height.

Range: 10 metres

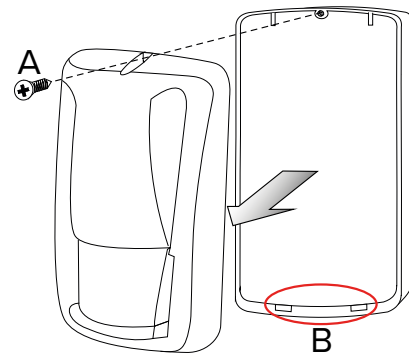
Coverage: aperture 90°

Beams arrangement: vertical curtain



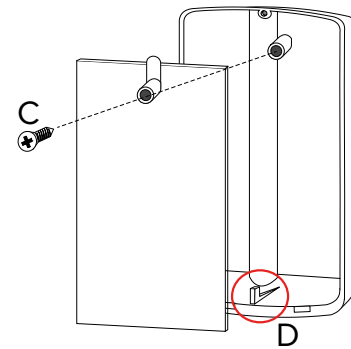
1 Top view
2 Side view

• **Opening the housing**



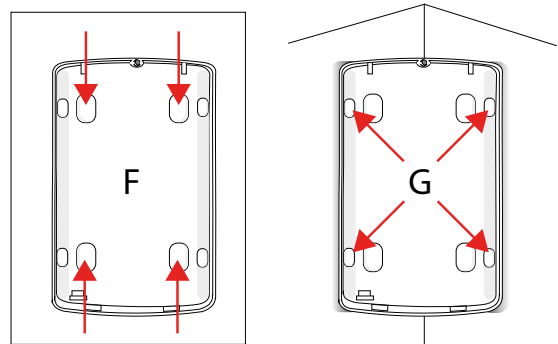
- unscrew cover fixing screw
- separate the front cover by pulling it away from the stops (B)

• **Removing the electronic board**



- remove the screw fixing the board to the base (C)
- remove the board from the lower hook (D)

• **Base wall mount**



- using a screwdriver, open the 4 pre-drilled areas of the support suitable for flat mount (F) or corner (G) mount
- In case of corner mount, move the lever against removal from wall as indicated in paragraph 5.1 p. 5
- insert a screw with the supplied S4 dowel where the microswitch against removal is located
- adjust the depth level of the screw so that the lever will keep the switch pressed

! *The lever is not active in case of mounting onto the optional swivel. Disable the tear-protection function as indicated in the following chapter.*

– fix the base to the surface using screws and dowels

! *In case of corner mount, to ensure the right value of max range, it is necessary to tilt the detector suitably by inserting a 2-3mm-thick shim under the two upper fixing holes.*

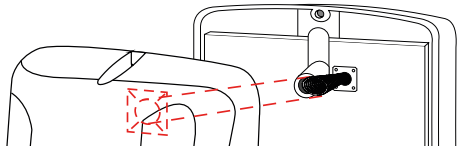
• Board positioning

Disconnect the battery following the steps above in reverse order: position the electronic board under the lower hook then fix it with the screw.

• Device setup

Now proceed with detector setup (see following chapter).

• Closing the housing



– position the front cover on the base making sure the tamper protection spring fits correctly to its place

! *The wrong housing closing will trigger a tamper alarm for all supervision transmissions.*

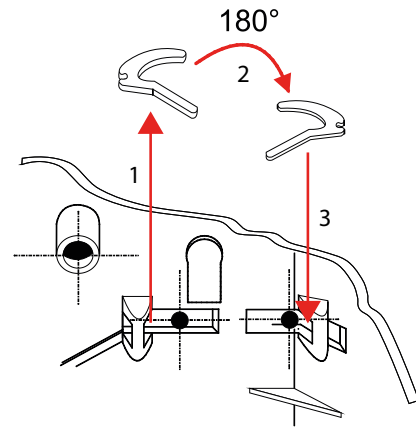
– hook the cover to base stops again
– fix the cover with the screw

5.1 Protection against removal for corner mount

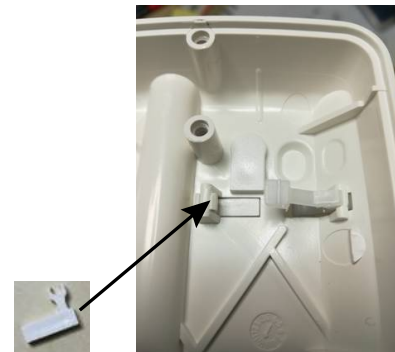


In case of corner mount, in order to ensure protection against removal from wall, move H lever (acting on the microswitch on the rear of the board) to the position of the plastic plug I that closes the detector angle.

Proceed as follows (images show the internal view of the detector base):



– detach the lever from the rotation pin
– detach the plastic plug that closes the detector angle
– rotate the lever by 180°
– insert the lever where the plug was, firmly attaching it to the pin

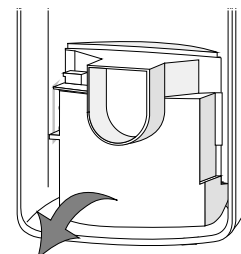


You can close the gap where the lever was before using the second plastic plug provided.

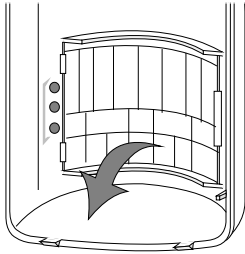
5.2 Lens replacement

To replace the lens, follow this procedure. Following images show the internal side of the detector cover.

• Lens removal

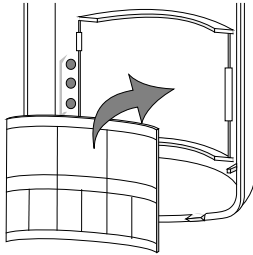


– unhook side slots
– remove the protective cap

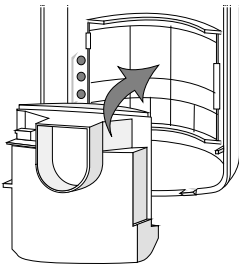


- remove LEDs guide and keep it in a safe place
- remove the lens to be replaced

• **Lens positioning**



- place the lens with the rough side towards the internal side of the cover and placing it in place with the largest number of sectors face up
- position LEDs guide



- put the protective cap back in place

6 STARTING THE DEVICE



6.1 Communication protocol setup

To ensure the correct communication with the control unit, set the correct protocol using Dip 2 (see paragraph 6.4 p. 6).

Villeggio Protocol	Villeggio units with firmware higher than version 5.0.0.
Helios Protocol	Villeggio units with firmware lower than version 5.0.0. All control units are compatible with Helios protocol

! *If the device is to be learnt to a RIVERRF concentrator, set Helios protocol regardless of the unit model used.*

6.2 First power up

- open the cover and position the battery
- press and release 3-4 times Tamper button
- reset any discharged battery memory on control unit or compatible receiving device

! *If the battery is new or has not been used for long time, a wrong message of discharged battery may be displayed. Such problem depends on Lithium Thionyl Chloride battery chemical specifications and can be solved by carrying out the procedure illustrated above. If the battery has been exposed to low temperature, it is advisable to keep it at room temperature before installation.*

6.3 Device learning to control unit

Before starting learning procedure, remove the front cover (as illustrated in mounting procedure) to be able to access Tamper button.

! *Verify that the battery is charged otherwise the device will not be learnt.*

Device learning procedure:

- on control unit keypad, enter installer code followed by **OK** to go to setup menu
- use arrow keys **↑** or **↓** to go to LEARN RADIO DET. option
- press **OK**
- use arrow keys to go to the zone to which learning the first channel of the device
- press **OK**
- press key 1 (saved to control unit)
- go to the detector
- press and release Tamper button to generate a transmission
- exit control unit setup menu. When required, press **OK** to save the setup

6.4 Use of dip switch selectors

Detector functions can be set using board dip switch.

▼ Protection against removal excluded

Dip 1	Function
ON	Protection against removal disabled
OFF	Protection against removal enabled

▼ Protocol selection

Dip 2	Protocol
ON	V - Villeggio
OFF	H - Helios (default)

▼ Sensitivity adjustment

Dip 3	Sensitivity
ON	High (2 IR pulses), max range
OFF	Low (3 IR pulses), range reduced by 30%

▼ Inhibition time setup

dip 4	Inhibition time setup
ON	30 s, display of alarms on blue LED enabled
OFF	30 s, display of alarms on blue LED disabled

! With 30 s inhibition time the detector autonomy will be reduced by 15%.

7 OPERATING MODE

The detector detects motion inside the covered area.

7.1 Operating sequence

1. Stabilisation

After power on, the device takes around 10 s to stabilize.

2. Walk test

The device remains in walk test mode for 8 minutes.

The blue LED will signal IR pulses detected and if it receives the number of pulses set as **Sensitivity** within 10 seconds it will generate an alarm transmission, otherwise it will go back to standby mode.

After an alarm event is transmitted in walk test mode the device will remain inhibited for 30 seconds.

3. Standard operating mode

When walk test is finished (8 minutes) the device enters operating mode.

Detection mode is the same as in walk test, except that pulses are not signalled but only alarms transmission is signalled.

When operating, after an alarm transmission, the device will remain inhibited for the time set via dip 4 (see 6.4 p. 6).

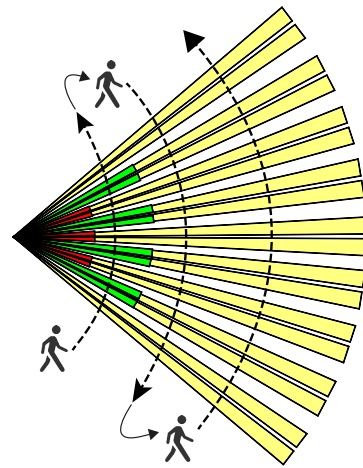
7.2 LED indications

Condition		Red LED	Green LED	Blue LED
Power on	Stabilisation	Fixed 10 s		
Walk test	IR pulse			Single blinking
	Alarm transmission	3 blinks	3 blinks	3 blinks
	Tamper	Single blinking		
Operating	Alarm transmission			Blinking

8 MAINTENANCE

8.1 Periodic test

Carry out a simple test regularly to verify the functionality and the coverage limits of the detector.



- set the device in Walk Test mode: switch it off and wait 30 s, switch it back on and wait until it is stabilised (around 10 s)
- taking detector position as the point of reference, make half-circle movements from opposite directions to check coverage from both sides

Detector LED indicators shall respond as shown in the table of 7.2 p. 7 paragraph.

8.2 Battery replacement

Replace the battery with a new one of the same type only. Follow this procedure:

- Open the housing (see mounting procedure).
- Remove the discharged battery.
- Press and release 3-4 times Tamper button to discharge any capacitor that may still be charged.
- position the new battery (see mounting procedure).
- Reset any discharged battery memory on control unit or compatible receiving device.

Discharged batteries shall be disposed of according to current laws and using specific containers.

Materials used are very harmful and polluting if dispersed in the environment.

EU DECLARATION OF CONFORMITY

Hereby, EL.MO. Spa declares that the radio equipment SCORPIO is in compliance with Directive 2014/53/EU. The full text of the EU declaration of conformity is available at the following internet address: www.elmospa.com – registration is quick and easy



GENERAL WARNINGS



This device has been designed, built and tested with the utmost care and attention, adopting test and inspection procedures in compliance with current legislation. Full compliance of the working specifications is only achieved in the event the device is used solely for its intended purpose, namely:

Indoor wireless IR detector for intrusion detection systems.

The device is not intended for any use other than the above and hence its correct functioning in such cases cannot be assured. Consequently, any use of the manual in your possession for any purpose other than those for which it was compiled - namely for the purpose of explaining the product's technical features and operating procedures - is strictly prohibited.

Production processes are closely monitored in order to prevent faults and malfunctions. However, the components adopted are subject to an extremely modest percentage of faults, which is nonetheless the case with any electronic or mechanical product.

Given the intended use of this item (protection of property and people), we invite you to adapt the level of protection offered by the system to suit the actual situation of risk (allowing for the possibility of impaired system operation due to faults or other problems), while reminding you that there are specific standards for the design and production of systems intended for this kind of application.

We hereby advise you (the system's operator) to see that the system receives regular routine maintenance, at least in accordance with the provisions of current legislation, and also check on as regular a basis as the risk involved requires that the system in question is operating properly, with particular reference to the control unit, sensors, sounders, dialler(s) and any other device connected. You must let the installer know how well the system seems to be operating, based on the results of periodic checks, without delay..

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply.

If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

INSTALLER WARNINGS



Comply strictly with current standards governing the installation of electrical systems and security systems, and with the manufacturer's directions given in the manuals supplied with the products.

Provide the user with full information on using the system installed and on its limitations, pointing out that there are different levels of security

performance that will need to suit the user's requirements within the constraints of the specific applicable standards. See that the user looks through the warnings given herein.

Work involved in the design, installation and maintenance of systems incorporating this product should be performed only by personnel with suitable skills and knowledge required to work safely so as to prevent any accidents. It is vital that systems be installed in accordance with current legislation. The internal parts of certain equipment are connected to the mains and therefore there is a risk of electrocution when maintenance work is performed inside without first disconnecting the primary and emergency power supplies. Certain products include batteries, rechargeable or otherwise, as an emergency backup power supply. If connected incorrectly, they may cause damage to the product or property, and may endanger the operator (explosion and fire).

USER WARNINGS



Check the system's operation thoroughly at regular intervals, making sure the equipment can be armed and disarmed properly.

Make sure the system receives proper routine maintenance, employing the services of specialist personnel who meet the requirements prescribed by current regulations.

Ask your installer to check that the system suits changing operating conditions (e.g. changes in the extent of the areas to be protected, change in access methods, etc...)

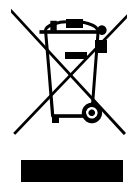
MAIN SAFETY RULES

The use of the device is forbidden for children and unassisted disabled individuals.

Do not touch the device when bare footed, or with wet body parts. Do not directly spray or throw water on the device.

Do not pull, remove or twist the electric cables protruding from the device even if the same is disconnected from the power source.

DISPOSAL WARNINGS



IT08020000001624

In accordance with Directive 2012/19/EU on waste electrical and electronic equipment (WEEE), please be advised that the EEE was placed on the market after 13 August 2005 and must be disposed of separately from normal household waste.