



Masthead
Repeater
Installation
Handbook

Type: LGMT434

V4.93

Issue 7.

PRE-INSTALLATION NOTES

Unpacking.

On receipt, inspect the package and contents for signs of damage. If damage has occurred, advise the carrier and/or suppliers immediately. Inspect the contents to confirm that all items are present and undamaged. If any items are missing or damaged, contact the supplier immediately. It is advisable that the original carton is retained as this forms the safest transport container in the event that a unit has to be returned for any reason.

Servicing.

This unit should not require general servicing. Any repair work should only be undertaken by Luminite Electronics Ltd.

Moisture.

Do not expose the internal electronics of this unit to moisture i.e. take care during installation not to allow rain or damp into the product. When the product is sealed it is water resistant to IP66.

Box Contents.

1 x *GENESIS* Masthead / Repeater
1 x 1/4 wave antenna

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Introduction

The Genesis range of wireless Passive Infra Red Detectors (PIR) have been designed to meet the newest and most demanding requirements of the CCTV market. These detectors provide the versatility of wireless whilst meeting and surpassing the requirements needed for a BS8418 system.

The whole wireless PIR system will comprise of one receiver and perhaps one or more repeaters but these are only required on extremely large or difficult sites. The receiver can either directly interface with a dome camera or can connect to a relay control unit. The receiver can also connect directly to some third party DVR's and transmission systems.

How the system works.

At the heart of the system there is a Masthead which receives the data transmitted by the PIR detectors. See Fig 1.

Each time a PIR detects movement it transmits data to a masthead. This masthead then does two things. Firstly it re-transmits the data and attaches a text string to it which can be received by either a Pager (LGP434) or Walk Test Instrument LGWT434). These devices will display the ID number and name of the PIR such as "Main Gate" etc. The walk test unit shows additional information such as the PIR's battery status, pulse count setting and software version as well as the signal strength at the masthead.

The second thing that the masthead does is to pass data via an RS232 link to an alarm system such as the LGRU64 relay control unit with up to 64 alarm relay outputs and a further 64 tamper relay outputs. This control unit keeps a log of events and provides text for video insertion.

Alternatively, the masthead may be connected directly to some popular DVR/ transmission systems thus illuminating complex and costly wiring.

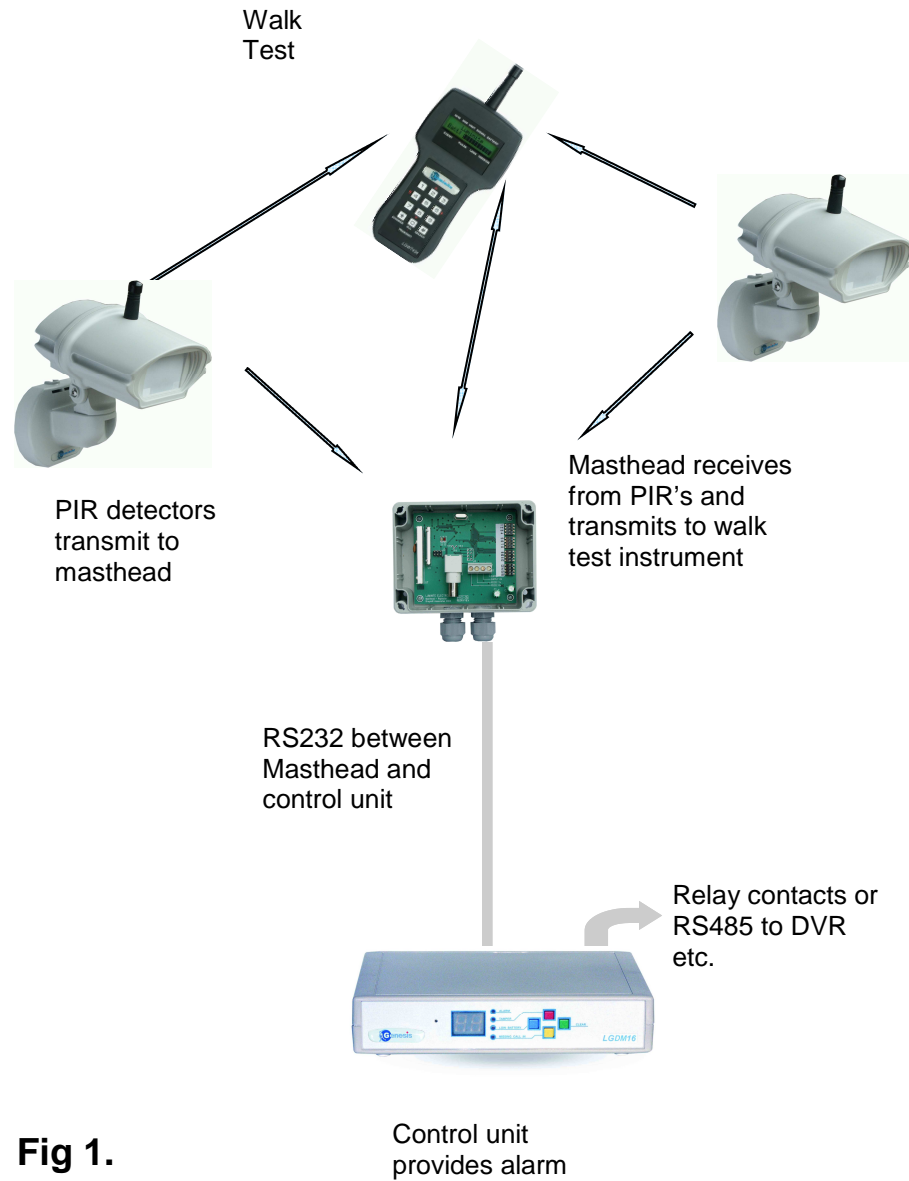
Transmission from the detector to the masthead transceiver can be up to 1km line of sight but may be extended to many kilometres by using repeaters.

A masthead unit can simply be converted to become a repeater by just a switch change.

The PIR detectors CALL IN every 5 minutes with an IM'E STILL HERE message.

The LGRU64 and some third party products will give an alert if any of the PIR's logged on the system fail to call in.

Another alternative to the Masthead is the LGMR4x4 which is a masthead with relay outputs for direct connection to a PTZ or Dome camera. (See separate instructions.)



Positioning the Masthead/Repeater.

The Masthead is weather resistant to IP66 and may be mounted on the outside of a building. It is connected to the LGRU64 Relay Control Unit using RS232 with a cable length of up to 25 metres maximum. Some DVR's and transmission systems are compatible with the Genesis system and therefore avoid the need to use the relay unit. Check the web site for the latest list of compatible products.

Pass the fixing screws down through the screw tunnels on each of the four corners. DO NOT drill extra holes in the product. The cable glands MUST face downwards. For best radio reception mount the unit at about the first or second floor level. Do not mount it too high as this has the same effect as mounting it too low and will shorten the range.

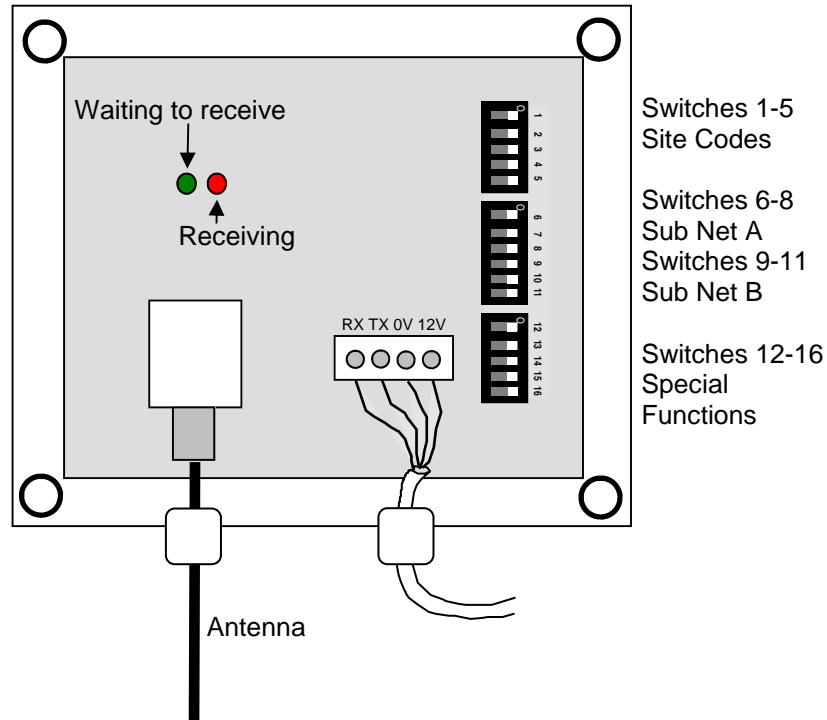


Fig 2.

Antenna connection.

Connect the 1/4 wave antenna onto the BNC socket by first removing the cable gland from the enclosure. Now attach the antenna on to the BNC socket and then pass the antenna through the cable gland. Screw the gland into the enclosure and tighten with a 21mm AF spanner. Finally tighten the cable gland around the antenna.

For even better results, use an external antenna (AE434). Follow the same procedure but instead pass the coaxial cable through the cable gland and crimp on the 50 ohm BNC plug supplied with the AE434.

Connecting to the alarm system.

Masthead LGMT434

Connect a CAT5 twisted pair cable to the four terminals as shown in Fig 2.

The four terminals are:

0 volts, 12 volts for the 12 volt supply and A&B for the DATA.

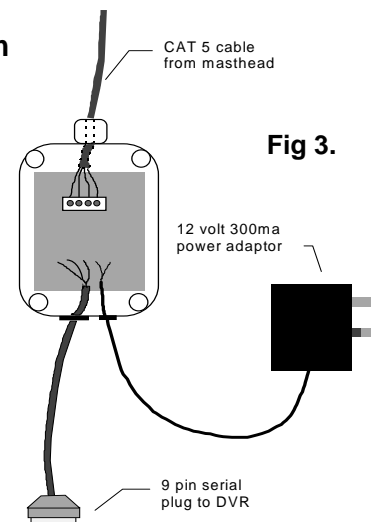
Run this cable down to the relay unit (LGRU64) or compatible DVR.

(Maximum length 50 metres)

LGRU64 Relay unit. Terminate the CAT5 cable at the terminals on the rear of the relay unit in the same way that they are connected in the masthead. 0 volts & 12 volts for the supply. RX&TX for the DATA. (See LGRU64 operating and installation instructions).

Connecting to a compatible DVR or alarm system.

A conversion kit is available for is available to make this job easier and comprises of a power supply, junction box and appropriate serial lead. (See individual products operating and Installation Instructions)



CODE AND FUNCTION SWITCHES.

There are sixteen switches which have the following functions.

SWITCHES 1-5 Site Codes

SWITCHES 6-8 Sub Net Code A

SWITCHES 9-11 Sub Net Code B

SWITCHES 12-16 Special functions



SITE codes separates one site from another. There are 32 site codes to choose from and it is recommended that each new installation should be set to a different site code. The site code can also be used to identify the installation. EG: (14) EZ Car Rentals. All the detectors on the system must have the same site code. The masthead and any repeaters must also have the same site code. If a pager is to be used, then that must also have the same site code.

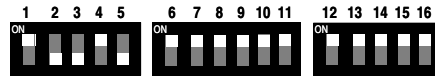
When initially installing the system or when carrying out a maintenance check, type the site code number into the Walk Test Indicator.

SUB NET codes divide the site up into sections and are only needed if one or more repeaters are used. If there are no repeaters, leave the sub net codes at 1. All PIR's and repeaters on the site are set to the same SITE code but will only communicate with a masthead or repeater which has the same sub net code. Distant PIR's will need to route through one or more repeaters. Those PIR's must send the sub net code that has been set on the nearest repeater. That repeater then sends the sub net code of the next repeater or masthead if it is next in line.

The Masthead has two Sub Net Code settings. A & B. As a Masthead, only the RECEIVE switches (**A**) are applicable. If the unit is configured as a repeater, then the SEND switches (**B**) also apply.

Pagers and Walk Test Instruments do not have Sub Net Codes and will respond to the Masthead and any repeaters as long as they are the same Site Code. (See separate Walk Test & Pager Instructions). Up to seven repeaters and one masthead may be deployed.

EXAMPLE



In this example Sit Code 14 has been set. The Sub Net Codes are set to the default setting of 1.

	SWITCHES	1	2	3	4	5
SITE CODES	1	△	△	△	△	△
	2	△	△	△	△	▼
	3	△	△	△	▼	△
	4	△	△	△	▼	▼
	5	△	△	▼	△	△
	6	△	△	▼	△	▼
	7	△	△	▼	▼	△
	8	△	△	▼	▼	▼
	9	△	▼	△	△	△
	10	△	▼	△	△	▼
	11	△	▼	△	▼	△
	12	△	▼	△	▼	▼
	13	△	▼	▼	△	△
	14	△	▼	▼	△	▼
	15	△	▼	▼	▼	△
	16	△	▼	▼	▼	▼
	17	▼	△	△	△	△
	18	▼	△	△	△	▼
	19	▼	△	△	▼	△
	20	▼	△	△	▼	▼
	21	▼	△	▼	△	△
	22	▼	△	▼	△	▼
	23	▼	△	▼	▼	△
	24	▼	△	▼	▼	▼
	25	▼	▼	△	△	△
	26	▼	▼	△	△	▼
	27	▼	▼	△	▼	△
	28	▼	▼	△	▼	▼
	29	▼	▼	▼	△	△
	30	▼	▼	▼	△	▼
	31	▼	▼	▼	▼	△
	32	▼	▼	▼	▼	▼

REPEATER MODE.

With switch **13** down the Masthead becomes a REPEATER. In this mode the unit will receive PIR detectors and relay them on to a distant masthead transceiver.

Up to eight repeaters can be used in a chain for very long range reception. Each repeater will need to have a different Sub Net Code setting.

SUB NET CODE SWITCHES

	SWITCHES	6	7	8
SUB NET CODES	1	△	△	△
	2	△	△	▼
RECEIVING A	3	△	▼	△
	4	△	▼	▼
	5	▼	△	△
	6	▼	△	▼
	7	▼	▼	△
	8	▼	▼	▼

Sub Net A must be the same as the PIR detectors Sub Net code that are intended to communicate with this repeater.

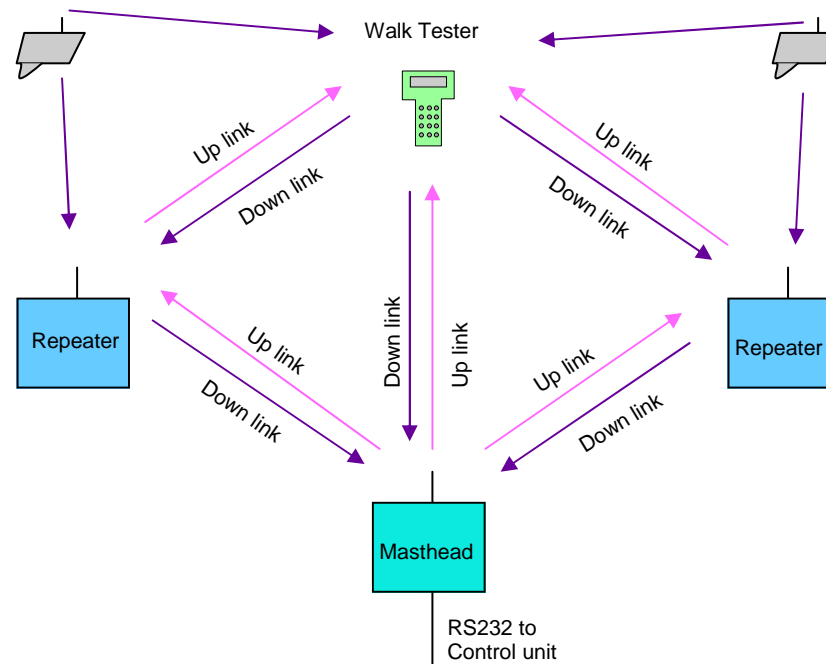
	SWITCHES	9	10	11
SUB NET CODES	1	△	△	△
	2	△	△	▼
TRANSMITTING B	3	△	▼	△
	4	△	▼	▼
	5	▼	△	△
	6	▼	△	▼
	7	▼	▼	△
	8	▼	▼	▼

SPECIALFUNCTION SWITCHES.

Switches 12 through to 16 have the following functions.

FUNCTION	SWITCHES	12	13	14	15	16
Reserved		△	△	△	△	▼
Relay 8 light sensor		△	△	△	▼	△
Relay 1 global output		△	△	▼	△	△
Repeater		△	▼	△	△	△
Walk Test		▼	△	△	△	△
Follow On Contacts		△	▼	△	▼	△

The Walk Test Instrument does not take any notice of Sub Net codes and will receive from anywhere on the site either directly from the Masthead or via Repeaters. All these products will be set to the same Site Code.



WALK TEST. With switch **12** down the Masthead will be in permanent WALK TEST Mode. In other words, when an alarm event is received it will be re-transmitted back out so that it can be received on a WALK TEST Instrument or PAGER. It is also possible to set the Masthead in WALK TEST Mode by sending a command via RS232 from the LGRU64 control unit. (See LGRU64 instructions).

NB: Do not leave the system in walk test mode as this uses a lot more air time and could cause a Call In problem on big systems.

THIRD PARTY PRODUCT.

Certain third party products are designed to work directly from the Mastheads RS232 output without the need for the LGRU16 Control Interface. Two of the most commonly used makes are listed below.

Geovision
Videoswitch

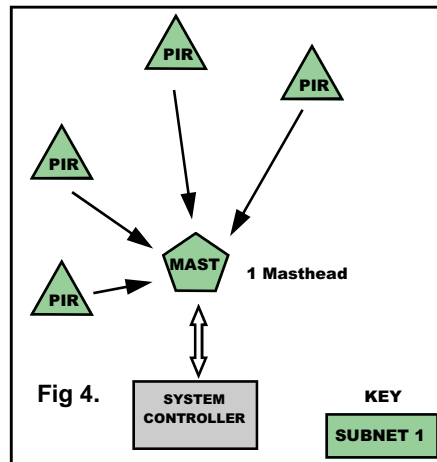
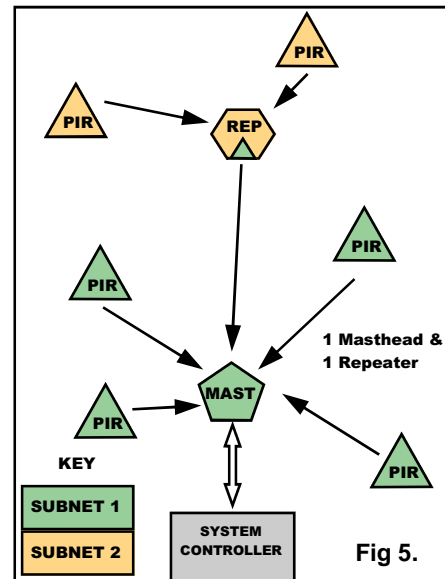
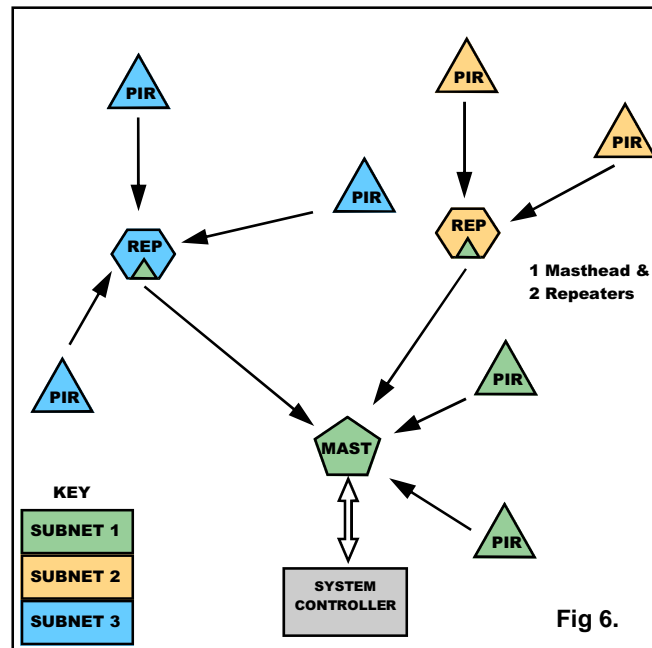


Fig 4 shows PIR's communicating directly with the Masthead. All Sub Nets are 1.



Figs 5 & 6 show examples where one or more repeaters are used and how the Sub Net Codes separate the system.



Preparation & Testing.

It is recommended that a Walk Test Instrument should be used to accurately test and set the detectors up.

Position testing with a Walk Test Instrument (LGWT434)

Step 1. Position the Masthead in a suitable position where it has overall line of sight to all the PIR's and can also be easily wired to the Relay control unit or compatible DVR. An optional antenna with 5 metres of cable is available (AE434) which will greatly improve radio reception.

A temporary test may be made quickly just by connecting a 12 volt battery to the mast-head and resting it roughly in it's intended position. Decide on a SITE Code from one of the 32 codes available and set it on the Masthead. Set the SUB NET Code to 1. Switch the Masthead into Walk Test mode by switching down switch 12.

Step 2. Set the same SITE Code on the Walk Test Instrument by following the operating instructions provided with the instrument.

Make TEST Transmissions from all the positions where you want to site the PIR detectors and check the signal strength. If signal strength is weak, decide on a different position or install a repeater on the site. NB: In a majority of cases a repeater will not be necessary due to the exceptional transmission range from the PIR detectors to the Masthead. Bear in mind that the PIR will achieve a better signal strength at the Masthead than the hand held walk test instrument. Therefore if the walk test reading is marginal, then a PIR will probably be OK in this position.

Step 3. When all positions have been tested and approved the fitting of the detectors can take place.

Set the switches in the detector for the required Site code Unit code and Sub net code. For testing purposes set the pulse count to **1. (IMPORTANT)** The detector reads the switches only once when the battery is connected. If the switches are changed, the battery must be un-plugged and re-connected for the change to take place.

Plug the white battery connector on to the white two pin plug positioned on the left hand side of the board. See Fig 7 on page 8. Now fit the front lens housing to the rear battery section making sure not to trap the battery wires. Fit the two M5 16 mm screws and tighten.

Screw the wall bracket to the wall using the screws and plugs provided at a height of between 2 & 2.5 metres and hang the detector on it temporarily to make angle adjustments. See Fig 2 on page 5.

Testing the PIR detectors

Step 1. Testing with a Walk test Instrument. Hang the detector on the wall bracket and walk about within the detection area using the Walk Test Instrument. The test instrument will display the unit code and bleep each time detection takes place. In filter mode it will ignore all other unit codes on the site and only respond to the detector under test. Other information will also be displayed such as signal strength and Tamper, Shock and Cloak alarms.

NB: The **Cloak detection** will only work during day light and is not instantaneous. To test this, ensure the detector has been in position for at least 5 minutes and then cover the lens with a bag. After a few minutes the detector will send a Cloak message .

Anti Tamper will indicate if the detector is opened.

To test the **Shock sensor**, strike the detector hard with something like the handle of a large screwdriver.

If a walk test instrument is not available then a Masthead can be utilised for a simple test.

Testing with a Masthead receiver. A sounder is available for the masthead receiver to facilitate walk testing. Model LGSOU12. Connect this sounder to the RS232 output of the Masthead in accordance with it's operating instructions. Set the masthead site code and sub net code to be the same as the detector. Connect a 12 volt battery to the masthead and proceed to walk about within the detection area. The sounder will alert each time detection occurs. This sounder will operate on any of the 64 unit codes.

Testing with a portable computer. The masthead outputs text from it's RS232 terminals. A computer may be connected to these terminals to view all the mastheads received information. An optional accessory data lead is also available.

The computer may also be used to input a name for each Unit code which will be transmitted to the walk test instrument.

Settings: Baud rate 19200. 8 data bits. 1 stop bit. No Parity.

Step 2. Angle adjustment. There are three angle adjustment screws which must be slackened before the detector can be adjusted to the correct position. Once correct area coverage has been achieved, lock the angle adjustment screws tightly.

If a sun shield is required, fit this in place before fitting the antenna.

Step 3. Finish. Lift the detector off the wall bracket and dismantle again. Disconnect the batteries. Set the Pulse Count switches to one count. A higher number may be required for sites where loose materials are allowed to blow about or where strong sun light can reflect directly into the detector lens. Higher pulse count settings will reduce the effective detection range.

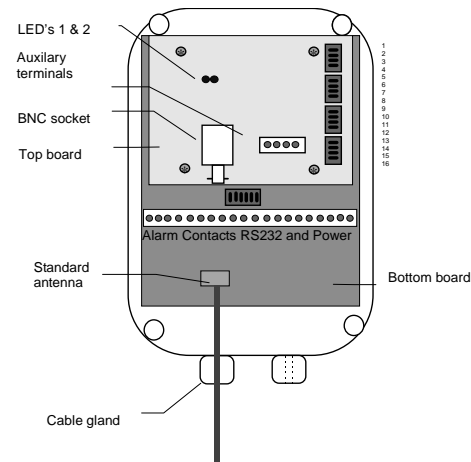
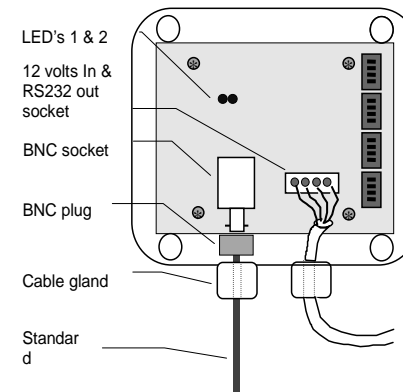
Re-assemble the detector and hang it back on the wall bracket. It will not have changed position because the angle adjust screws have been locked.

Fit the two M5 16 mm screws to the top and bottom of the wall plate and tighten.

Types of Receivers

Masthead LGMT434

This transceiver can be used on its own for a simple pager system or can interface directly with some third party DVR's and alarm systems. It will also connect to the dedicated LGRU64 relay control unit to provide up to 64 relay alarm outputs together with 64 Tamper relay outputs.



Masthead Relay Unit LGMRU4x4

The masthead relay unit does everything that a masthead unit can do but also provides 4 alarm and tamper relay outputs. This model is primarily intended to connect directly to a dome camera's pre-set inputs but may also be used to connect to DVR's and alarm systems where a smaller number of relay outputs are required. A switch change converts the product to an 8 alarm output without tampers if required. Expansion cards are available to increase the number of alarm outputs up to a maximum of 32.

LGMT434 Wireless PIR Detector Specification.

RF input	434.525Mhz 10m/w
RF output	434.525Mhz 10m/w
Antenna connection	BNC
Antenna	1/4 wave included
RF range	1-2 Km line of sight
Encoding	Manchester with Rolling code
Data out	RS232
Settings:	Baud rate 19200. 8 data bits. 1 stop bit. No Parity.
Operating voltage	12 volts DC
Current consumption	100m/a
Enclosure	ABS L115 W90 H55mm
IP rating	65

Luminite Genesis product range

		<u>Wireless</u>
Wireless PIR's	15m x 90 deg	LGWP1520
Wireless PIR's	40m x 1 deg	LGWP4004
Wireless PIR's	12m Horizontal curtain	LGWP12HC
Masthead/Repeater		LGMT434
Masthead Relay Unit		LGMRU4x4
Relay Expansion Module		LGREM4x4
Walk Test Instrument		LGWT434
16 way relay unit		LGRU16
Relay module		LGRM8
16 way DM interface unit		LGDM16
16 way relay unit with end of line resistor		LGRU16ELR 3 versions
Relay module with end of line resistor		LGRM8ELR 3 versions
Optional antenna		AE434
Transmitter module		LGTX434-12
		<u>Hard wired</u>
Wired PIR detectors	15m x 90 deg	LGHW1520
Wired PIR detectors	40m x 1 deg	LGHW4004
Wired PIR detectors	12m horizontal	LGHW12HC

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