



## Data Sheet

# Long Range AIR IR Multi-Beam Set

## 10GP-RV

The new intelligent battery Multi-beam is available as a battery powered transmitter with a conventionally wired/power receiver with relay or with a battery powered Receiver with an 'open collector' Please specify at time of purchase. Battery life expectancy of transmitter: 8-12 months (subject to detection range), receiver: 4-6 months.

A version is available with transmitter and receiver battery packs with life expectancy of 1 year approx. (1 OGP-RV). In this version, the transmitter is supplied in the standard housing measuring 400 x 100 x 100mm, and the receiver in a housing measuring 900 x 78 x 75mm (excluding antenna).

The receiver unit houses a battery pack, cradle, and either our 10GP radio alarm data transmitter, or space for provision of client's own transmitter (check compatibility with open collector O/P).

Where a more covert system is required i.e. beam positions are to be concealed, then a full length housing is available for both the transmitter & receiver unit. The SolaRay housing, measures 1.8M and is available for wall mounting, pole mounting, or supplied complete with integral base plate for free standing applications.

The SolaRay housing can be fitted with either the BatteRay transmitter or receiver units. Where annual battery change is prohibited, then the system can be powered via an integral Photovoltaic system with shunt regulated standby battery, and solar panel.

Where higher security is required i.e. additional beam sets are required to be fitted within the housings, SolaRay low current frequency coded/synchronised beam sets are available, or alternatively, conventionally hard-wired beam sets.

In the majority of site applications, either one or several of the aforementioned can be mixed & matched to provide the most cost-effective solution.

### Optional equipment being:

10GP radio alarm transmitter fitted within housing with external range of 500M in free space.

R1 Single channel alarm data receiver with relay O/P.

R1B Single channel plug-in alarm data receiver with integral sounder (no relay O/P).

8008 Multi-channel radio alarm receiver offering clean sets of voltage free relay contracts for integration with CCTV/intruder equipment, etc.

Refer to data sheet on FM8000 series for full range of receivers and compatible products

Battery packs are available using Duracell Pro cells.

The standard transmitter and receiver are supplied suitable for wall mounting with pole mount brackets provided FOC. Note a pole mount kit is not available with the Bat/bat-1 version, as this is designed to be fitted to wall or square section post of 75mm min. Heavy-duty Scaffold pole mounting brackets are available utilising standard scaffold type ironmonger & securing nuts. All standard pole mount brackets are designed to suit a pole of outside diameter 49 - 51mm (typical of scaffold pole).



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## 10GP-RV

### The intelligent low current battery powered Active Infra-red Multi-beam set

The low current 9v.D.C. Multi-Beam Transmitter is fitted with an integral battery compartment for six 'C' type batteries providing a battery life expectancy of up to 12 + months.

The Transmitter can be supplied with one of three Receiver options:

#### Option 1

Conventional 12v.D.C. hard wired Receiver with C/O alarm relay. (contact rating 1A.24v.D.C.)

#### Option 2

Low current 9v.D.C. Receiver with NPN open collector alarm output and fitted with an integral battery compartment for six 'C' type batteries. (4 months battery life expectancy in quiescent state)

#### Option 3

Low current 12v. D.C. Receiver with NPN open collector alarm output and fitted with an integral battery compartment for eight 'D' type batteries. (8 months battery life expectancy in quiescent state) + Integral 9v.D.C. battery compartment for six 'C' type batteries on 'hot standby'. (total battery life expectancy in excess of 12 months).

#### Applications

Ideal for driveways, outbuildings and remote locations where cables or power cannot be run.

#### Additional features:

BATTERY TRANSMITTER	BATTERY RECEIVER	CONVENTIONAL RECEIVER
◆ Dual Multi-Beam Optics	◆ Dual Multi-Beam Optics	◆ Dual Multi-Beam Optics
◆ Range up to 100 metres	◆ Adjustable dwell time 2-15 secs	◆ Adjustable dwell time 2-15 secs
◆ High/Low power selector	◆ Audible low battery warnings (TX/RX)	◆ Audible low battery warning (TX)
◆ Auxiliary inhibit input	◆ Alignment output voltage	◆ Alignment output voltage
◆ Pole/Wall mounting	◆ Post/Wall mounting	◆ Post/Wall mounting
	◆ Enclosure tamper	◆ Enclosure tamper

## BatteRay™

### Intelligent Low Current Active IR Multi-beam

Range: 0.5 - 100M

Transmitter Part No: FPI-42/BAT & Receiver Part No's: FRI-42/BAT & /BAT-1

#### Installation instructions

#### GENERAL DESCRIPTION

The low current active IR. beamset is a beam interruption device featuring a dual optical system that provides multi beam paths, adjustable over 180 deg. horizontal and 40 deg. vertical, using a single pair of housings. One housing contains the transmitting equipment which is powered by 6 internal 'C' type **batteries (not included)** the other housing contains the receiving equipment which is also powered by 6 internal 'C' type batteries (not included as standard).

Typical working voltage 9V DC. Battery life expectancy: TX-8 - 12 months and RX-4 months (subject to using recommended cells).

**NOTE: The Receiver is available in a larger housing (suffixed -1) equipped with 'D' type 12V DC Battery holders (8 x batteries), capable of providing a battery life expectancy of 8 months. A further 'C' type 9V DC 'hot-standby' battery holder (6 x batteries) is fitted to the Multi-beam set PCB/chassis, providing a total battery life expectancy in excess of one year.**

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The housings are designed for external use (IP5-1). The object of the multi beam system is to minimise false alarms that could be generated by single beam interruption due, for instance, to birds flying through the beam system.

**The Receiver (RX) unit** complete with two photo electric detector adjustable optical assemblies, **NPN open collector alarm output** - Tamper O/P - Audible TX & RX low battery warning - Adjustable dwell time 2-15 secs (P3 factory set, battery holders) and complete with cover-filter & weather resistant housing with fittings for - wall/pole mounting. Bat-1 version can only be mounted on a square post as standard.

**The Transmitter (TX) unit** having two IR. emitter adjustable assemblies, complete with internal battery pack holder (**batteries optional**), High/low, power selector (S1) - Auxiliary inhibit input, cover filter & weather resistant housing with fittings for wall, square post, or pole mounting.

### INSTALLATION

The units should be installed at a distance from each other not greater than the range specified for the model. If the ground slopes between the units at a greater angle than 20 deg. it will not be possible to align the optics if the mountings are upright, and for such situations it would be necessary to set the mounting surfaces at a suitable angle.

A template is provided for wall mounting, Note: Bat-1 version, the extrusion can be drilled for rear fixing as necessary on site. Ensure screw holes are made weatherproof.

To avoid rainwater entry, the units should be mounted with the cable gland downwards.

The mounting surfaces to which the equipment is fitted must be firm and vibration free (**50mm O/D pole min. (3" min square post for Bat-1 version of receiver)**).

Note that the optical assemblies are adjustable over wide angles (180 deg. horizontal and  $\pm$  20 deg. vertical), the mounting positions should be arranged accordingly.

Note that the special cover.filter material, in combination with the performance characteristics, eliminates the need for system heaters under normal climatic conditions.

Although fitted with rejection circuits, it is good practice to mount the Receiver unit in a position that will minimise the effect of sunlight or artificial light falling directly on the optical axis. This is particularly important when the equipment is installed on sloping ground, where it is prudent for the Receiver optics to point towards the ground rather than the sky.

Two sets of beams may, be stacked to provide a 4-beam system. **Note:** - When used in this arrangement the **sets must be transposed**.

Care must be taken, making sure that the projected cone of IR energy from any one set of beam transmitters, is only seen by that beam sets associated receivers, and not by receivers of another set of beams. (Cross talk / interference).

### WIRING CONNECTIONS

Note units are '**HANDED**': If it is desired to install either TX or RX on a wall in a corner adjacent to a 90 deg. wall, access to the terminal connections may be prohibited If this is the case, then the TX & RX chassis assembly can be unscrewed from their mounts and rotated through 180 deg. then re-screwed in position, thus allowing access to the terminal connections.

EMC Directive 89 / 336 / EEC: To ease your path to system conformity with the directive, we recommend that any cabling to from the beam unity be screened.



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### BATTERY REQUIREMENTS

Transmitter: - 6 x Type 'C' Duracell Procell or Duracell Plus Alkaline Batteries

Receiver:- 6 x Type 'C' Duracell Procell or Duracell Plus Alkaline Batteries

Receiver (Bat-1): - 8 x 'D' Duracell Procell or Duracell Plus Alkaline Batteries + optionally (subject to operational life required), 6 x Type 'C' Duracell Procell or Duracell Plus Alk. Batts.

**Note:** Both the TX & RX batteries are monitored for low voltage and provide the following audible O/P's at the Receiver (RX) only:-

TX Low Battery = Double beep every 10 Sec's approx

PX Low Battery = Single beep every 10 sec's approx

TX& RX Low Battery = Series of single beeps of 1.5Sec intervals approx

### BATTERY POWERED RECEIVER OUTPUT

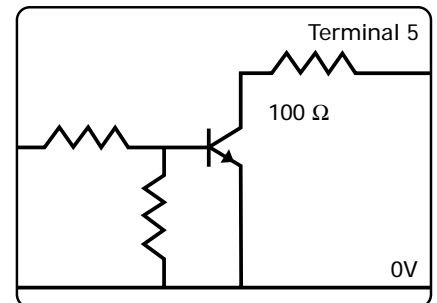
Receiver- output as factory set is an NPN open collector O/P (=100  $\Omega$  "on" impedance) with the O/P low (transistor on) with beam made, & O/P high (transistor off) with beam broken. Switch 'S1' controls the NPN switching mode and can only be changed from the factory set mode by removal of the PCB screening can that provides access to the switch. Such an operation will change the mode as follows: O/P high (transistor off) with beam made, & O/P low (transistor on) with beam broken.

### TESTING THE RECEIVER 'OPEN COLLECTOR OUTPUT' (O/P)

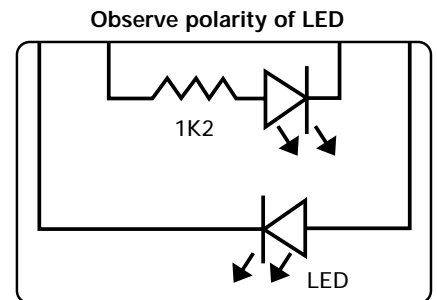
Using a 1K2 resistor in series with an LED between terminals 2 & 5 (as shown below), with the units as per factory set and the beam made, should light the LED. The LED should extinguish when the beam is broken (observe polarity of LED) If a 1K2 resistor is not available, then by using an LED only between the 'OV' & 'Align' test pins found each side of the terminal connection block (as shown below), LED should light when the beams are made, and extinguish when both beams are simultaneously blocked.

Note: The LED only method does not actually test the open collector O/P, meaning that the beams could appear to be functioning OK, even when the 'Open collector O/P' is not.

Receiver (RX)		Terminals	
FR1 - 42/BAT		4&6	Spare
OV	- +	3	4
•	1 2	5	6
			Align O/P
			•



Approx. Current Requirements	
Transmitter	1mA
Receiver	Quiescent 2.5mA
	Principal Alarm 2.5mA
Typical working voltage 9V DC	



### BEAM ALIGNMENT

**Caution:** Whilst the covers are removed make sure that the sunlight does not shine directly on to the lenses, This is to avoid burning the IR Cells through the lens.

### Initial alignment

Optical sighting modules are fitted to both TX and RX enabling initial alignment of beams. Using either the left or right alignment sighting window, adjust both the TX and PX optics horizontally and vertically so that its opposing unit can be seen in the centre of the sighting window. Where units prove difficult to align, then it may be prudent to invest in the 'mini strobe light' (Pt. No. FA3-128).





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To finally align the units correctly select the 0-10V range on a suitable volt meter (moving coil preferred) Connect the voltmeter to terminals 1 (-ve) and 3 (+ve) or if equipped with suitable clips, to the PCB pin marked 'ALIGN' O/P (+ve) and the PCB Pin marked 0 V (adjacent T1) -ve.

Cover the lenses of the lower TX and RX and adjust the upper TX and RX lens assemblies for maximum voltage reading. Uncover the lower lenses and cover the top lenses, adjust the lower TX and RX lens assemblies for maximum voltage reading.

Precise voltages will depend on the range at which the equipment is used, but at 100M a voltage of approx. 2.0-3.0V dc. should be obtained. If the voltage is considerably lower than this, alignment is not correct and the procedure should be repeated.

As a final check hold the 90% obscuration filters supplied in front of each beam path (optic).

The alignment volts may fall depending on distance, but the 'open collector O/P' should not operate. If this test causes an alarm either the max range has been exceeded or the equipment is still not aligned correctly.

### TESTS

Once the alignment is complete the following tests should be carried out:

1. Break / block both beams simultaneously at the RX end. The alarm o/p should operate immediately
2. Repeat the above at the TX end, and again at mid point through the detection zone.
3. Break the beam path at various intervals along the detection zone length, ensuring that the alarm o/p activates to an alarm condition.  
If positions are found where the above does not occur (most likely when the detection zone runs alongside solid walls, glass windows, shiny floor, etc), then it is probable the unit is suffering from a reflected or bozinced beam path, and the TX power should be switched from factory set 'High power' (HI) to 7ow power' (LO) via the switch on the PCB.
4. Remember when stacking two sets (one on top of the other) the units should be transposed to reduce the possibility of cross-talk between beam sets.  
Where the TX and RX are fixed to a solid mass of building fabric i.e. wall, panel, etc, a reflected beam path may occur creating cross-talk between sets. To determine whether this condition exists break each of the beam paths at various intervals along their detection zone length to ensure that the o/p associated with each of the beams activates to an alarm condition. **Note:** Such installations should be avoided, however the transmitter power switch in its low power position may overcome the problem subject to zone distance.

## BAT-BAT-1

### Receiver (larger Housing)

The BAT/BAT-1 receiver can be identified by the larger housing than that of its Transmitter counterpart, or that of the standard receiver unit. The Housing comprises of a base plate assembly, top-cap assembly, a front acrylic cover, back plate, top-cap tamper assembly, and anti-tamper. Additionally provided within the housing is BatteRay Receiver unit, 1 +year battery holders, and platform for mounting of Radio alarm data transmitter unit (may optionally be supplied factory fitted and pre-wired).

### Removing the barrier cover

Removal of the cover can be achieved by unscrewing the top-cap retaining screw and with drawing the top-cap assembly. The cover can now be removed by applying light pressure to the inside at the top of the cover and pulling forward, and lifting away our of the base-plate assembly.

A reverse procedure is adopted to reinstate the cover. Note that the bottom of the acrylic filter front cover is identified by the slightly angled/tapered comers.



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### Barrier fixings

Fixing locations can be chosen throughout the length of the barrier by drilling through the rear aluminium back-plate at the required positions. All fixings should be made in a weather-proof manner.

The housing can either be wall mounted, or mounted on to a square box section post.

When sighting the columns and associated equipment, avoid directing the beam paths through the corners of the front acrylic covers, as this could result in beam attenuation (reduced performance).

### Re-assembling the covers

Re-assembly is a direct reversal of 'removing the barrier covers'.

## 10GP-General Purpose Transmitter

The 10-GP-Transmitter is a general-purpose contact transmitter in a weatherproof housing that may be used to signal to any of the standard receivers or control panels.

### Specification

Power: 8 Pdc - 13 Vdc

Low battery Signal: 8.5 Vdc

### Transmission Frequency

Range (free space): 500M max. (Greater with repeater panel)

### Installation

The transmitter is generally provided as part of the pre-assembled BatteRay Bat/Bat-1 system, with interconnections already made. Should the transmitter be required for other use, then the accompanied instructions with the purchase of the unit will apply.

To obtain the maximum operating distance, both the transmitter and receiver units should be mounted as high as possible. Avoid mounting the transmitter adjacent to metal objects or construction material, as this will dramatically reduce the operating range.

### System Code setting

To avoid cross talk between adjacent systems, a secure system code must be set by means of the ten way switch found within the transmitter unit. Ensure that the transmitter is set to the same code as the receiver unit.

To gain access to the transmitter unit, it is necessary to remove the four retaining transmitter cover screws.

### The following codes must not be used:

1. All switches ON
2. All switches OFF
3. Alternate switches ON, OFF. Note. Never use this code as it may result in false alarms.
4. (1+2)ON, (3+4)ON, (5+6)ON, (7+8)ON, (9+10)ON. Never use these code combinations as it will cause excessive battery drain in any remote controls. The LED. Next to the switch on the receiver will illuminate as a warning.

### Zone Setting

Fit the program jumpers as shown overleaf to the required zone. If using with the RI Receiver, set the code to PANIC.



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**Test Link**

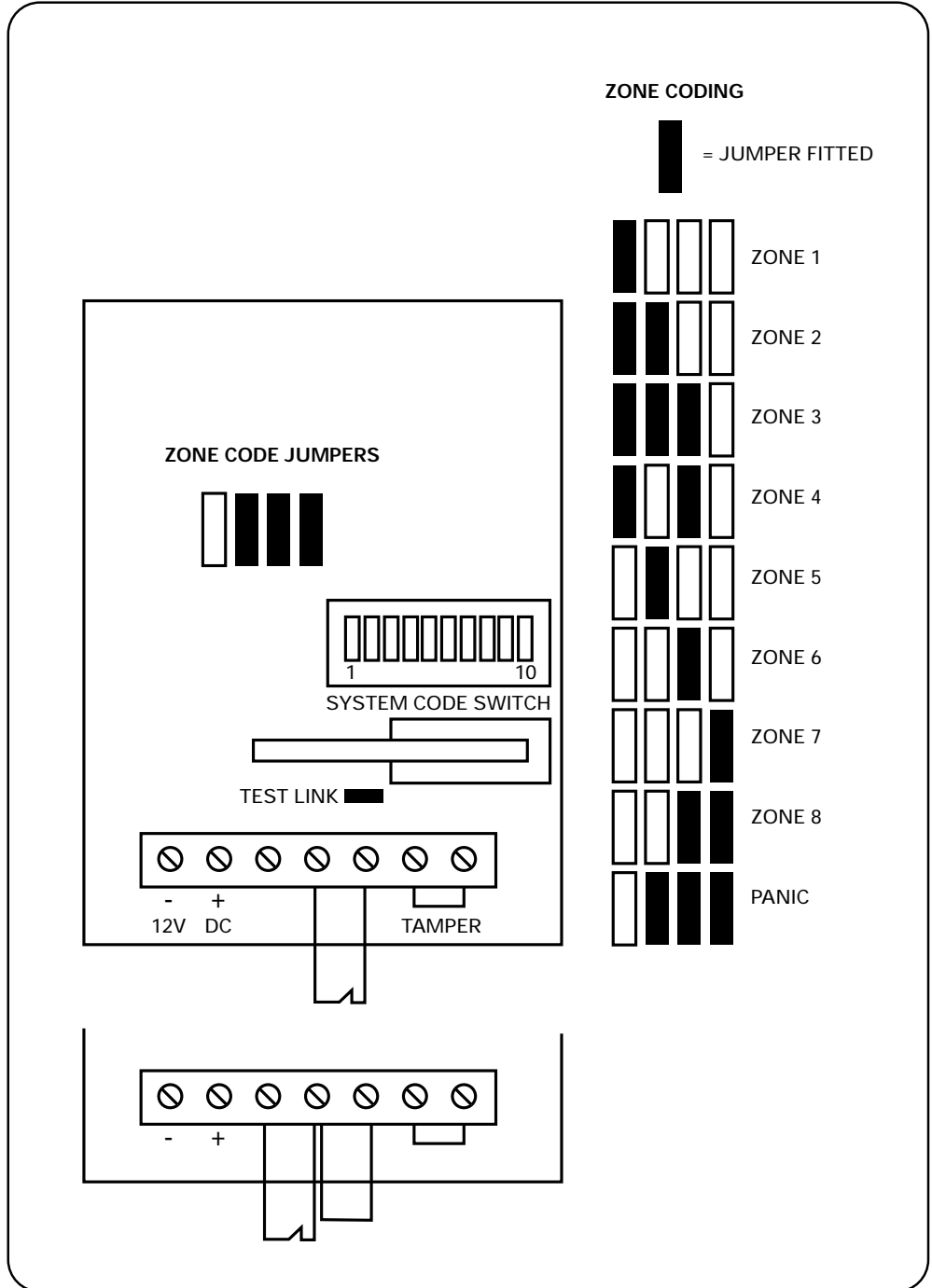
With the test link fitted, the transmitter will operate for approximately one second each time the input is switched. With the link removed, the three minute inhibit is operational to conserve the battery. This is the normal mode when battery operated to prevent repeated transmissions draining the battery. i.e. in this mode the alarm input must be restored for three minutes before the transmitter can be re-triggered.

**Tamper Switch**

When the cover is removed a tamper signal is transmitted continuously. If the remote tamper input is not required, ensure that the terminals are shorted with a wire link.

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The barrier system comprises of a base plate assembly, top-cap assembly, a front acrylic cover (two on a by-directional column,) back plate, top-cap tamper assembly, and on a by-directional column only, a base mount pole.

### Removing the barrier cover (Applicable to BatteRay model Bat/bat-1)

Removal of the cover can be achieved by unscrewing the top-cap retaining screw and with drawing the top-cap assembly. The cover (or cover's on by-directional column) can now be removed by applying by applying light pressure to the inside at the top of the cover and pulling forward, and lifting away the base-plate assembly. A reverse procedure is adopted to reinstate the cover.

### Barrier fixings

Wall Mount version: Fixing locations can be chosen throughout the length of the barrier by drilling through the rear aluminium back-plate at the required positions. All fixings should be made in a weatherproof manner. Note that on model Bat/bat- 1, some of the 'integral system modules may require to be removed to gain access to the rear extrusion for fixing to wall or 3-4" post construction.

Free-standing version: Four 12mm holes are provided at each corner of the base mount plate. Note that the barrier is supplied fitted with an 'integral-mounting base. For added security/protection to cable entry, the barrier can be lowered to sit further down on its base plate. This is achieved by withdrawing the barrier - base mount pole securing screws and lowering the back-plate down on its base mount, in order to pick up the lower set of positioning holes.

The column can be secured by suitable fixtures via the 4 x 12mm holes to an existing concrete plinth, or to a new concrete base of minimum dimensions 400x 400 x 400.

### Deployable mounting of free standing column

In such 'instances we would suggest that 4 x Metpost type fixings and securing bolts be used to attach to soft ground. Items can be supplied on request.

### Mounting internal equipment

Note when reinstating internal modules after wall/post mounting the single sided wall mount housing model Bat/bat-1, care should be taken not to over tighten the screws, as this could result 'in stripping the extrusion channel thread.

When sighting the columns and associated equipment, avoid directing the beam paths through the corners of the front acrylic covers, as this could result in beam attenuation (reduced performance).



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