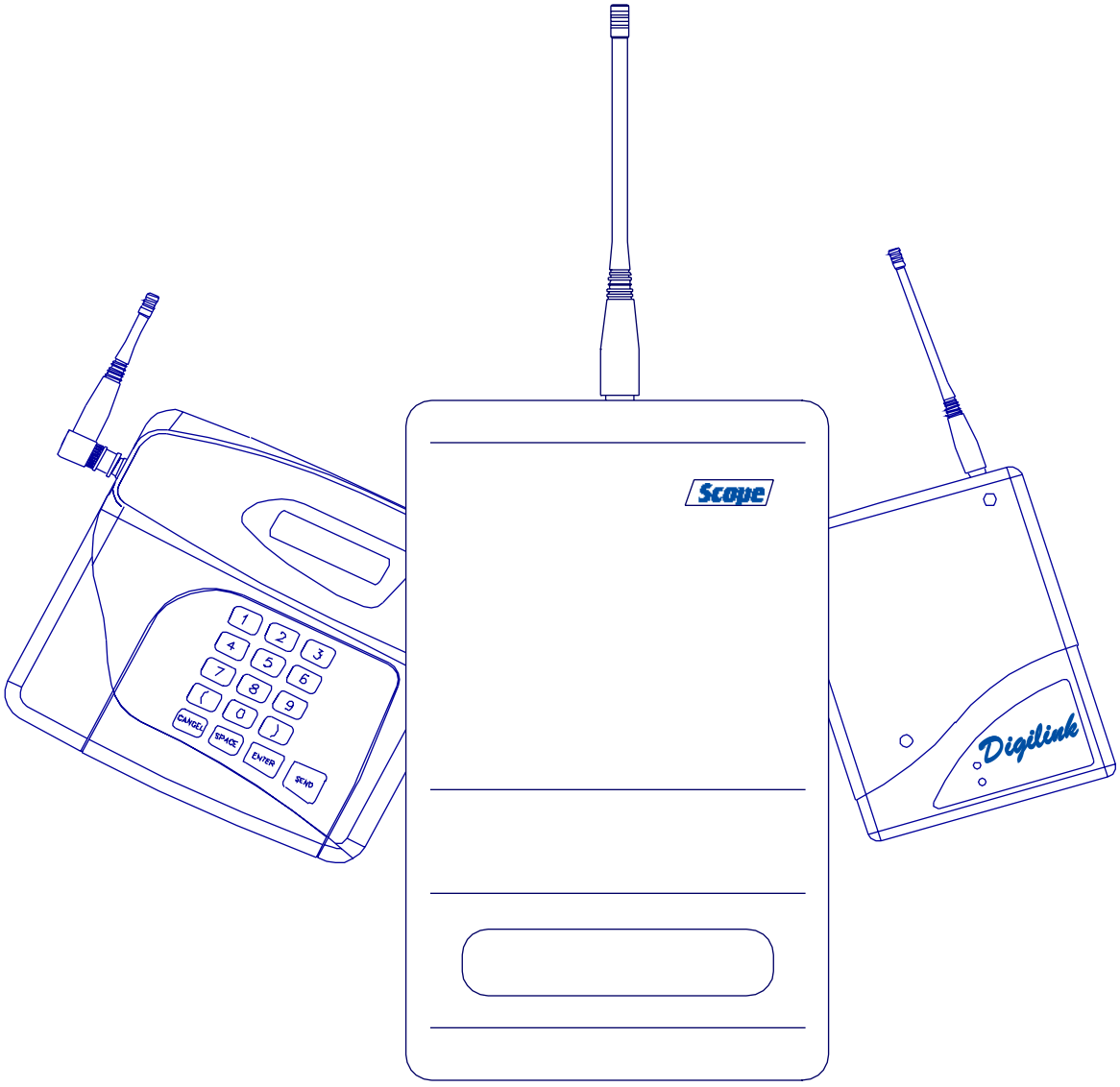
Digilink MK2

Programmable UHF Radio Paging System
Models DL4EDC, DL8EDC

Installation & User Manual



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DLEDC5

PREFACE

Important Installation Information

It is the purchasers' responsibility to determine the suitability of this equipment and its derivatives for any given application, Scope cannot give specific advice in this manual, as each use will require independent evaluation.

Scope has, wherever possible, employed extra safeguards to monitor the system's performance. Certain system installations, operational requirements or budgets may, however, limit the effectiveness of these safeguards. Again, the suitability of the system for any given application must therefore be decided by the installer and their customer, relative to the application and risk.

Good working practice dictates that a suitable system installation log must be generated, together with a record of the dates when the system has been manually checked, (with the aid of signal strength meters etc.) enabling the system performance to be compared with the original installation data.

Scope has no control of the use and application of the frequencies issued by OFCOM. Some equipment that is licensed may have greater protection than other equipment which is operated on a WT Act License Exempt basis.

The supply of this equipment is governed by our standard terms and conditions of sale, which can be found on the reverse of all order acknowledgements*, proforma invoices*, delivery notes, price lists and invoices. Alternatively, these can be provided on request.

* Faxed proforma invoices and quotations refer to "conditions available upon request".

Important Safety Information

Scope products are designed to operate safely when installed and used according to general safety practices. The following requirements should be observed at all times.

Do NOT subject this equipment to:
Mechanical shock
Excessive humidity or moisture
Extremes of temperature
Corrosive liquids

This equipment is designed for indoor use, unless expressly stated otherwise, and must not be used in classified Hazardous Areas, including areas containing explosive or flammable vapours, unless express authorisation has been given in writing by the manufacturer. If in doubt, consult your local product dealer for further information.

Do not obstruct any slots or openings in the product. These are provided for ventilation to ensure reliable operation of the product and to protect it from overheating.

Only use a damp cloth for cleaning (not liquid or aerosol based cleaners), and ensure that any power is removed from the unit prior to beginning the cleaning operation.

Preface

Important Safety Information

Removal of covers from the equipment must only be undertaken by authorised service personnel, who must ensure that power is isolated prior to removal.

Installation

Installation must only be undertaken by an Approved contractor, who shall ensure that all work is carried out in compliance with IEE Wiring Regulations. For mains powered equipment, a readily accessible isolating fuse or switched socket must be located within 1 metre of the equipment.

No User Serviceable Parts

Alteration or modification to any part of this equipment, without the prior written consent of the manufacturer, will invalidate all Approvals and Warranties attaching to the equipment. Further liability for the operation of the equipment, under the applicable law, will pass to the user, who will absolve the manufacturer of any further responsibility for it's correct operation and use.

This product complies with the essential requirements of the R&TTE Directive 1999/5/EC
Copies of the Declaration of Conformity covering this product can be obtained from Scope at Quantum House, Steamer Quay, Totnes TQ9 5AL United Kingdom.

Do not discard. At end of life this equipment must be sent to an authorised waste treatment centre.
Contact Scope at the above address for further details.

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System Overview

The Scope Digilink DL4DC & DL8DC are 12 to 13.8V dc powered, programmable Short Range Device radio systems which can be used to transmit both text and numeric messages to base station control equipment and to pocket pagers carried by individuals or entire groups. The unit is supplied with either 4 or 8 inputs, which can be hardware configured to accept either dry contact (no voltage) or voltage (5-18V dc) triggers. Each input is pre-programmed as either N/O (Normally Open), N/C (Normally Closed) or C/S (Change of State). Triggering any of the inputs (zones) will result in a pre-programmed message (up to 40 characters) being transmitted to the selected pager or group of pagers.

The unit can be programmed to repeat transmit (1,2,3 transmissions or until reset) if required. In addition, the trigger period can be defined (period for which the zone must remain in the active state before triggering). One input can be configured as a Reset to clear any current transmission cycles. This can also be used as an "Arm/Disarm" facility for the alarm inputs. Selected inputs can also be set to 24 hour (always armed) mode (for use as "Panic" buttons etc.). Various other parameters can be programmed to suit specific user requirements.

The Configuration Data sheets accompanying your system will detail how all the various parameters have been set. It is vital that you retain this information in a safe place as you will need to quote the unit's serial number in the unlikely event that you experience any problems. You will also need this information should you wish to order more pagers (these must be matched to the identity of your system).

For advanced users who wish to program the unit themselves, a Programming Interface must be purchased. This provides a Windows based menu driven application running on a PC serial port, allowing all functions to be programmed and stored in the system's secure non-volatile memory. Full details can be found in the SCPMON Monitor Program Help files.

Section 1: Installation

The information contained in this Section is intended for use by authorised system installation engineers only. Unqualified personnel should not undertake installation of this equipment under any circumstances whatsoever.

Siting of the hardware

Before locating the hardware in any given location, it is important to take into account the range of operation that you require to obtain from your system. The standard transmitter can quite easily provide ranges of up to a mile or more and will provide excellent propagation on most industrial sites, covering a considerable area with just a quarter wave antenna (BNC terminated) connected directly to the unit.

For coverage of very large sites, or where exceptionally difficult operating conditions exist, it may be advantageous to install an external antenna. Installing the transmitter on the second or third floor of a building will more often than not boost overall range. However, horizontal range is not always required as much as propagation through a multi-storey building. Here it may be more useful to use a small external antenna mounted outside the building at half the building height. Sometimes range is required more in one direction than in the other: moving the aerial to one side of the building can provide a bias in the required direction, which may overcome the range difficulties. (See section: **Other Antennas***).*

Important: coaxial feeds which are longer than 5 metres must employ low loss 50 ohm coax. We normally do not recommend feeds of more than 15 metres for standard applications. However, we suggest you contact our technical department where other considerations may prove this to be impractical.

A further consideration that must be taken into account is the length and location of the dry contact cables. To avoid interference and possible false triggering, cable runs should be kept to a minimum

(ideally less than 10 metres) and should be isolated from other cabling (e.g. mains, telecoms. PC networks, etc).

Some major points to consider when installing equipment:

1 Never install antennas near or adjacent to telephone, public address or data communication lines or overhead power cables.

2 Avoid, where ever possible, running antenna coax alongside other cables.

3 Avoid mounting the transmitter in the immediate vicinity of telephone exchanges or computer equipment.

4 Always use **50 ohm** coaxial cable between the antenna and the transmitter. If cable runs exceed 5 metres, always use low loss 50 ohm cable such as RG213 or UR67.

Coaxial cable intended for TV, Satellite or CCTV installations is normally 75 OHM and therefore totally unsuitable for any transmitter installation manufactured by Scope.

5 Also remember that the performance of the system will be effected by the type of material the unit is mounted on and its surroundings.

The following is a list of materials that this transmitter will be adversely affected by if mounted on or if mounted in close proximity to:

a) Foil back plasterboard
b) Metal mesh or wire reinforced glass
c) Metal sheeting, large mirrors or suspended ceilings
d) Lift shafts

All of the above can reflect radio waves and thereby reduce the capability of the transmitter to perform its desired functions.

6 The circuit boards within this equipment may be harmed by Electrostatic Discharge (ESD). Installers should ensure that both themselves and the system's chassis are grounded before beginning any installation, and should ensure that adequate anti-static procedures are adhered to at all times.

7 ***Warning!*** Never transmit without an aerial attached to the transmitter

8 ***Warning!*** Carefully check the **Installation** section in this manual covering terminal connections prior to installation. Damage caused by incorrect connection is the responsibility of the installer!

Installation

The following procedure must be adhered to when installing the Digilink paging system. Ensure you have taken into consideration all of the above information before selecting the location for your transmitter. If in doubt please feel free to telephone the technical helpline on (01803) 860710.

1 Remove the cover from the Digilink transmitter unit by undoing the two Pozi head screws located on the front face of the unit (see diagram on page 6).

2 Carefully lift off the cover and place to one side.

3 The transmitter should be fixed to an even wall surface using suitable screws fitted through the three holes provided in the chassis plate. Hold the chassis up to the chosen location and with the aid of a pencil mark the position of the mounting holes.

Warning: Do not use the chassis plate as a template for drilling the holes into the wall. Hammer drills vibrating through the chassis may irreparably damage the quartz crystals on the printed circuit boards.

4 Place the Digilink transmitter over the mounting holes and secure the unit with suitable screws. Check that the chassis plate does not bend and that the screws do not snag or pinch any of the internal cables.

5 Connect the antenna to the unit via the BNC connector located at the top of the housing. If the antenna is an external antenna, or an antenna which is separate from the transmitter unit itself, ensure that the previous criteria covered under the section headed **Siting of the Hardware**, have been strictly adhered to (also see section headed **Other Antennas**).

6 Connect the input cables to the zone terminals. Unless the unit has been specifically configured for voltage input, these should be simple “dry” (no voltage) contacts only (i.e. isolated switch or relay contacts).
If configured for voltage input (5-18V dc), the jumper link beside the relevant terminal must be positioned nearest the “V” symbol marked on the circuit board (see diagram on page 8).
If in doubt, check with Scope before proceeding; incorrect connection may cause permanent damage.

7 Connect the power input lead to the + and – terminals provided (see diagram on page 8). Voltage must be 12 to 13.8V dc max.

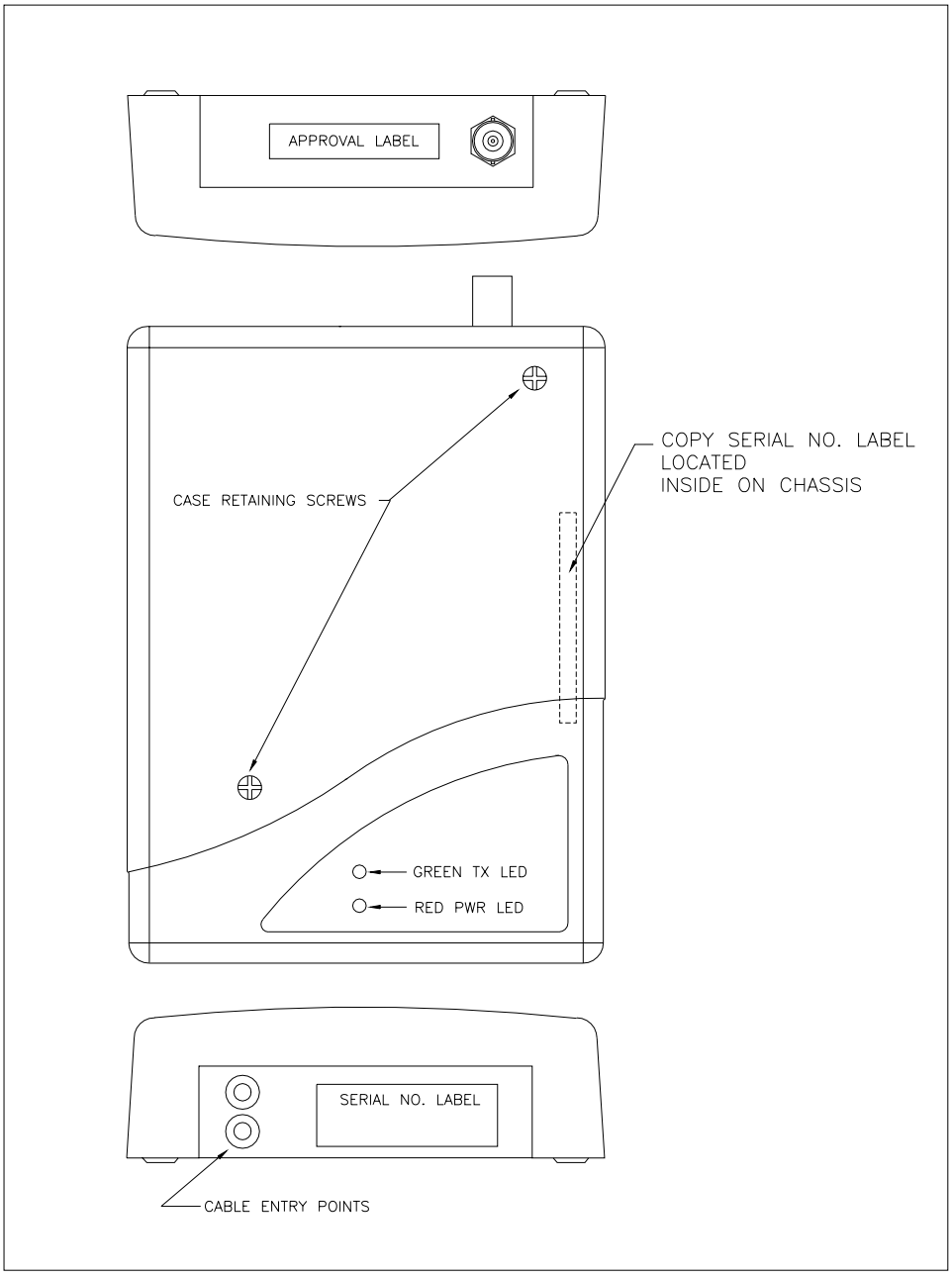
8 Replace the cover and refit the two retaining screws.

9 With power applied, the red Power LED on the front fascia of the unit will blink continuously after automatic activation of zone 8. This indicates that the system is running and that the power source is good. The red LED will remain off during transmission repeat periods, or when the power source falls below 10.5V dc.

10 The system is now active and will transmit the pre-programmed message for each of the zones when triggered. Repeat transmissions and other programmed parameters (e.g. battery low message) will be identified on the Configuration Data sheet(s) supplied with the system. A “Battery Low” message will be transmitted when the voltage falls below a pre-programmed value. The default setting is 10.5V dc.

Installation

The Transcoder PCB contains static sensitive components. Care should be taken to avoid contact wherever possible and anti-static precautions should be observed during installation.



Section 2: System Operation

Confirmation of power connection is by way of the red LED on the front fascia. This will remain off until a zone is triggered. It will then blink continuously, except during transmission repeat periods or when the power source falls below 10.5V dc, when it will remain off.

Confirmation of transmit is by way of the momentary green LED on the front fascia. This will light for approximately 1 second each time a transmission occurs.

When any zone is changed to it's active state, the pre-programmed message for that zone will be transmitted to the pager(s). Repeat transmissions can be programmed for added security, these will be detailed on the Configuration Data sheets provided with your system.

Where the system has been configured for voltage input:
volts present = an open input, no volts = a closed input.

The siren output is an "open collector" type switching to ground. It may be used to switch up to 24V dc @ 1A max. Note that if it is used to switch a relay, a suitable diode must be connected across the relay coil (stripe towards positive side of coil). If using a battery to power the unit, it should also be noted that use of a siren will severely shorten the battery life.

Problems and Fault Finding.

1 Check that the input cables are connected to the active zones. For a 4 zone unit, these are the uppermost terminal blocks on the main PCB (see diagram page 8).

2 Check the Configuration Data sheet supplied with the system to confirm the active (trigger) state of each input i.e. Normally Open, Normally Closed or Change of State.

3 If your system has been configured for Dry Contact operation, ensure that no voltage is present on the input cables. Also, check that cable runs are not excessive (preferably less than 10 metres) and are not in close proximity to other mains or telecoms cabling.

4 Check that the pagers are at least 3 metres from the transmitter and aerial. Under certain conditions it is possible to flood the pager receivers and corrupt the data received.

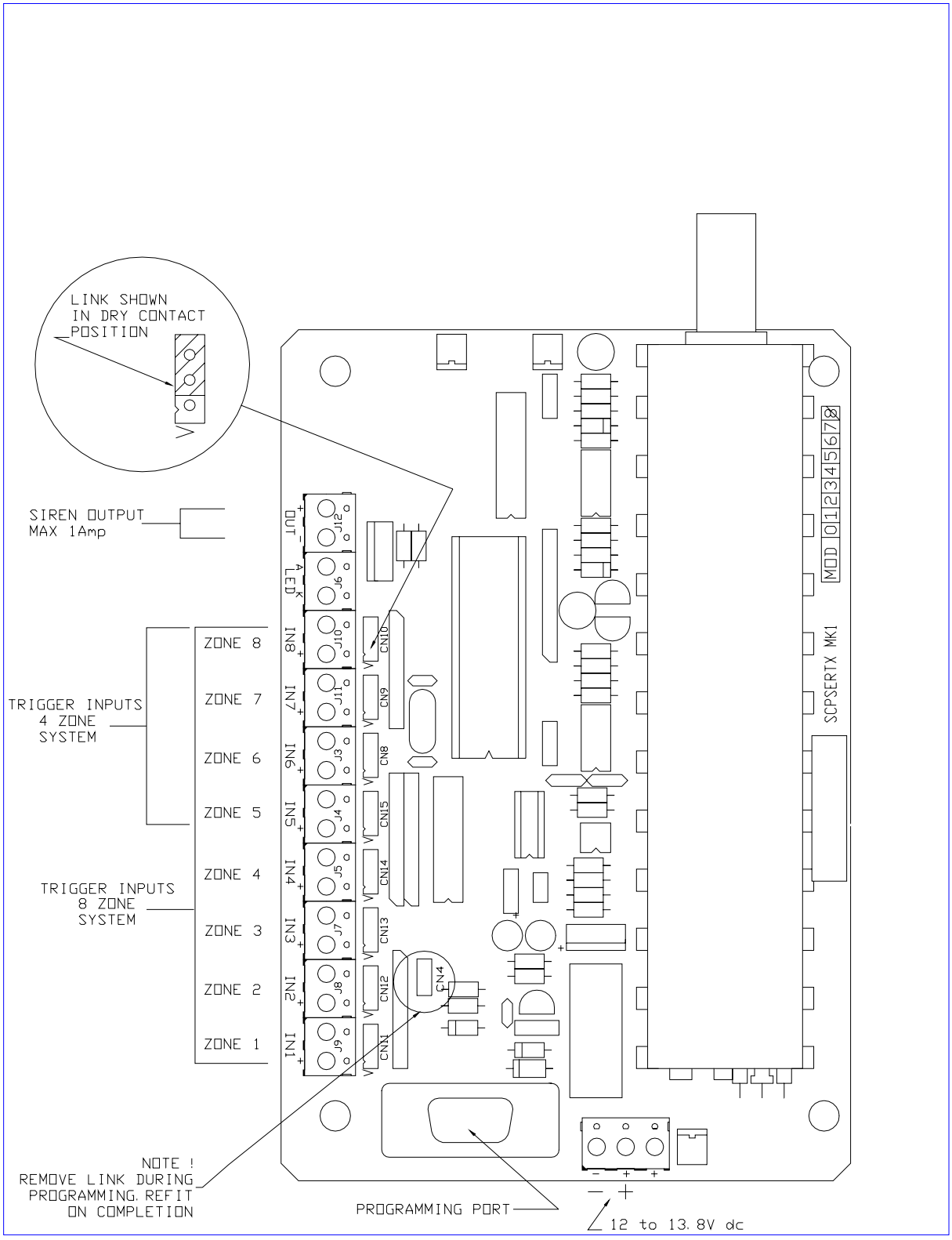
5 Check that the pagers have the battery installed with the correct polarity and are correctly powered up.

6 Check that the power source is the correct type (12 to 13.8V dc) and correctly wired to the terminals provided (see diagram page 8). After triggering any zone, the red LED should blink to indicate that the system is running.

7 Check that the green LED lights for the duration of the transmission. If not, go back to the cabling and re-check the terminal connections.

8 Check that the aerial is correctly installed.

Transcoder PCB: terminal connections



Other Antennas

The range and performance of this equipment can be improved by the addition of more efficient antennas*. These can be installed either inside or outside the building and are connected to the transmitter with 50 OHM coaxial cable.

Glass mount antenna (UHFGM): for installation on the inside of a suitable window. This can boost range, especially if it is required in one direction from the building.

The centre fed half wave di-pole, measuring approximately 12 inches from tip to tip, will provide excellent all round local signalling. This can be mounted either inside or outside a building. Two versions are available:
1) a light duty antenna suitable for sheltered environments/internal installation (LUHFDP).
2) a heavy duty stainless unit with optional mounting hardware for more arduous applications (UHFDP).

The 6dB end fed colinear (UHF6DB): for external application. When elevated, this will boost overall range at a slight loss to some local signals.

Pre-terminated coaxial feeder cables are available for 5, 10 or 15 metre requirements.

Note ! High frequencies can equate to high power losses. Always use quality cable. RG58 is only acceptable on cable runs of up to 5 metres. We recommend RG213, or equivalent, on greater lengths. If in doubt consult our Technical Department.

**subject to license conditions. Specifically, mounting height and Effective Radiated Power (ERP)*.

Service Information

Pagers returned with flat, incorrectly installed or leaking batteries will be charged for!

In the event that a pager requires service, return it directly to Scope in the pre-addressed service bag supplied with your system by registered post. Ensure that you carefully fill out the service form provided. Failure to complete this form in full will result in inevitable delays!

If you experience a problem with your equipment you must first telephone our service hotline on (01803) 860740, where we may request that you undertake a few simple checks. If a problem still remains, we will arrange collection of your system by overnight carrier at our expense. Upon receipt, we will endeavour to service or replace the system within 24 working hours and return the same by overnight carrier.

We suggest that you retain the packaging for your control equipment. Incorrectly packed goods returned for service are the responsibility of the customer. If we deem that new packaging is required before we can return the unit, a charge will be made.

Record your system details here for quick reference:-

Date supplied____/____/____ Serial Number of the Transmitter _____

Transmitter frequency _____MHz Transmitter Type approval 13216 DLDC

Number of pagers supplied with the system _____

System base ID number_____ Transmitter baud rate _____

For information on individual pager types, refer to the appropriate pager manual

System Specification

System Operating Voltage:	12 to 13.8V dc
System Power Consumption:	less than 200uA (microAmp) standby, 300mA transmit.
Transmitter:	
Power output:	500mW
Frequency Range:	450-470 MHz
Channel Spacing:	25 KHz
Adjacent Channel:	better than 200nW @ 4.5 KHz deviation
TX Baud Rate:	512 or 1200
Type Approval:	ETS 300 220 Cert. No. 13216
Type Approval No.	13216 DLDC
EMC Approval:	EC Type Approved to ETS 300 683, Cert. No. 13326
General:	
Ports:	4 or 8 dry contact/voltage inputs (configurable) Open Collector (siren) output: 1A max COM1: serial port for programming function only
Footprint (mm):	♦184 (L) x 138 (W) x 45 (D) max

♦excluding aerial

Scope's policy is one of continuous development and specifications are subject to change without prior notice