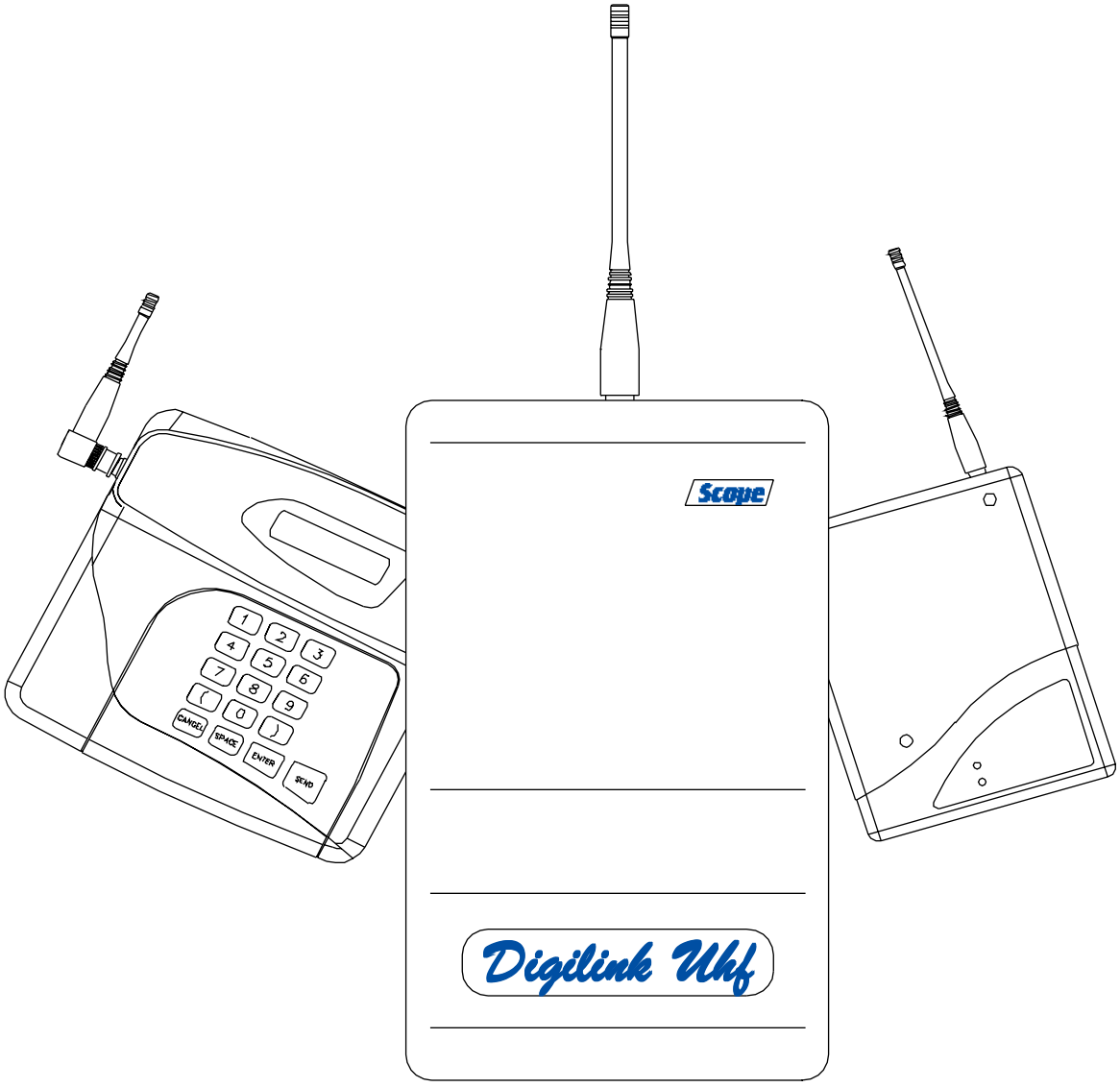
Digilink MK2

Programmable UHF Radio Paging System
Models DL4ACLUSA, DL8ACLUSA

Installation & User Manual



Scope Communications UK Ltd, Quantum House, Totnes, Devon TQ9 5AL Tel: +44 1803 860700
Fax: +44 1803 863716 Email: sales@scope-uk.com Web www.scope-uk.com

DIGLUSAC3

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 or designed optional equipment to further 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.

Licence

This equipment is cleared for use within the USA under a license assigned to the exclusive importer, PIPS Holdings Inc. License No. 950415906. Certain restrictions apply in respect of power output and antenna installations.
Alternative frequencies are available by formal license application (Form 600) via the FCC. These will not be subject to the same restrictions as the standard assigned license. You should obtain the FCC Rules and Regulations, Title 47, Part 80 to End, including Parts 90 and 95, available from the US Gov. Printing Office, GPO Bookstore, FCC Office or www.fcc.gov/oet/info/rules/

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 vapors, unless express authorization 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.

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

PREFACE

Equipment Applications

It is the user's responsibility to determine the suitability of the Scope products for any given application. Scope, including its subsidiaries and Distributors, cannot provide specific advice within this manual, as each application will require independent evaluation. Common sense dictates that certain applications may require back up systems to cover in the event of mains or equipment failure. All applications should be thoroughly assessed by the installer in conjunction with the customer so as to minimize risk. Scope has no control of the use and application of the frequencies issued by the FCC. Some equipment that is individually licensed may have a greater degree of protection than other equipment that is operated on a FCC License Assignment basis. The following information, however, may be of benefit.

Equipment Testing

Range tests should be carried out at least once a week on portable radio equipment, more often when critical criteria apply. This should involve testing the unit past the limit of its required working range. Good working practice dictates that a suitable system installation log, covering both portable and fixed equipment must be generated, together with a record of the dates when the system has been manually checked and/or serviced, (with the aid of suitable test equipment etc.) enabling the system performance to be compared with the original installation data.

The frequency of the tests required will vary between applications. If portable equipment has been dropped or is worn by a person involved in an accident, the unit should be tested again before re-use. It must be stressed that the physical range tests are essential and that any construction work or movement of plant or equipment could alter the signaling capability of the unit. Radio equipment, like any other requires servicing from time to time to ensure that it is operating to its optimum performance. It is therefore essential that equipment is inspected and tested by authorized service centers at least once a year.

Literature

Scope Communications UK Ltd, the manufacturer, in conjunction with it's distributors operates a policy of continual improvement, and therefore reserve the right to modify or change any specifications without prior notice.

While every possible care has been taken in the preparation of this manual, Scope does not accept any liability for technical or typographical errors or omissions contained herein, nor for incidental or consequential damage arising from the use of this material.

Installation

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

Liability

Scope does not accept liability for any damage or injury, howsoever caused as the result of misuse of this equipment. It is the responsibility of the user to ensure that the equipment is operated in the manner for which it was intended and that it is the correct item of equipment for the required task.

PREFACE

Warranty

This product is warranted as free from defects of workmanship and materials for a period of one year from the original purchase date. During this time, if there is a defect or malfunction of this product, Scope will, with proof of purchase, repair or replace at its discretion any defective parts, free of charge. This does not include where the adjustments, parts and repair are necessary due to circumstances beyond the control of Scope, including but not limited to fire or other casualty, accident, neglect, abuse, abnormal use or battery leakage damage.

There are no other expressed or implied warranties except as stated herein, and those excluded include those of merchantability and fitness for a particular purpose. In no event will Scope or any of its agents be liable for direct, indirect, special incidental or consequential damages resulting from any defect in the product, even if advised of the possibility of such damages.

The warranties and remedies set forth above are exclusive and in lieu of all others, oral or written, expressed or implied. No Scope distributor, dealer, agent or employee is authorized to make any modification, extension or addition to this warranty.

Some states do not allow limitations on how long an implied warranty may last and some states do not allow exclusions or limitation of incidental or consequential damages.

Warning! No User Serviceable Parts

Alteration or modification to any part of this equipment, without the prior written consent of the manufacturer, will invalidate all manufacturer approvals and warranties. No adjustments can be undertaken except by qualified and licensed persons as defined by the FCC Rules and Regulations. Operation of altered equipment can result in fines, imprisonment, and/or confiscation of such equipment.

System Overview

The Scope DigiLink DL4ACUSA & DL8ACUSA are AC powered, programmable radio paging systems which can be used to transmit both text and numeric messages direct 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 authorized system installation engineers only. Unqualified personnel should not undertake installation of this equipment under any circumstances whatsoever.

Location 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-story 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 meters must employ low loss 50 ohm coax. We normally do not recommend feeds of more than 15 meters 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 meters) and should be isolated from other cabling (e.g. mains electricity, 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 suspended ceiling voids, or 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 meters, 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 affected 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 wallboard
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 avoid touching the circuitry wherever possible, 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 consult your dealer.

1 Remove the cover from the DigiLink transmitter unit by slackening the four Pozi head screws located at the top and bottom of the unit (see Diagram 1).

2 Carefully lift off the cover and set aside.

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 **Location 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 9).
If in doubt, check with your dealer before proceeding; incorrect connection may cause permanent damage.

7 If the unit is supplied with a sealed lead acid battery, plug together the two connector halves on the battery lead. The battery will now be in circuit and the unit will power up.

8 Replace the cover and re-tighten the four retaining screws.

9 Finally, after checking all connections, connect the mains cable supplied to a suitable isolated, fused spur or switched wall outlet. With mains power correctly applied, the red LED on the base of the unit will light and Zone 8 will auto-trigger to indicate successful initialization.

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.

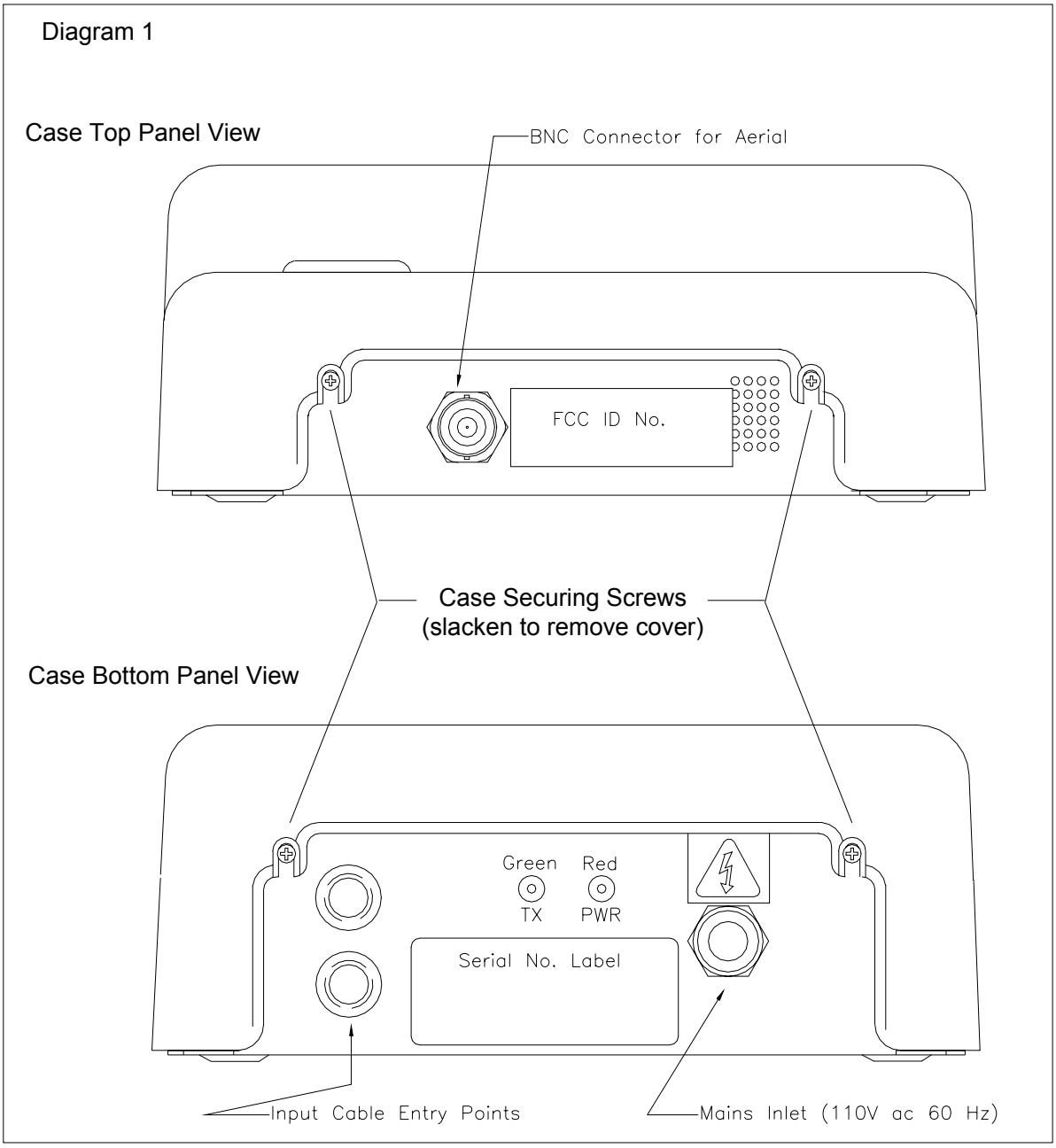
Installation

WARNING !

Isolate mains supply before removing cover.

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.

Diagram 1



Section 2: System Operation

Confirmation of power connection is by way of the red LED on the base of the transcoder console.

Confirmation of transmit is by way of the momentary green LED on the base of the transcoder console.

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).

Problems and Fault Finding.

1 Check that the input cables are connected to the active zones. For a 4 zone unit, these are labeled zones 5-8 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 meters) and are not in close proximity to other mains or telecoms cabling.

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

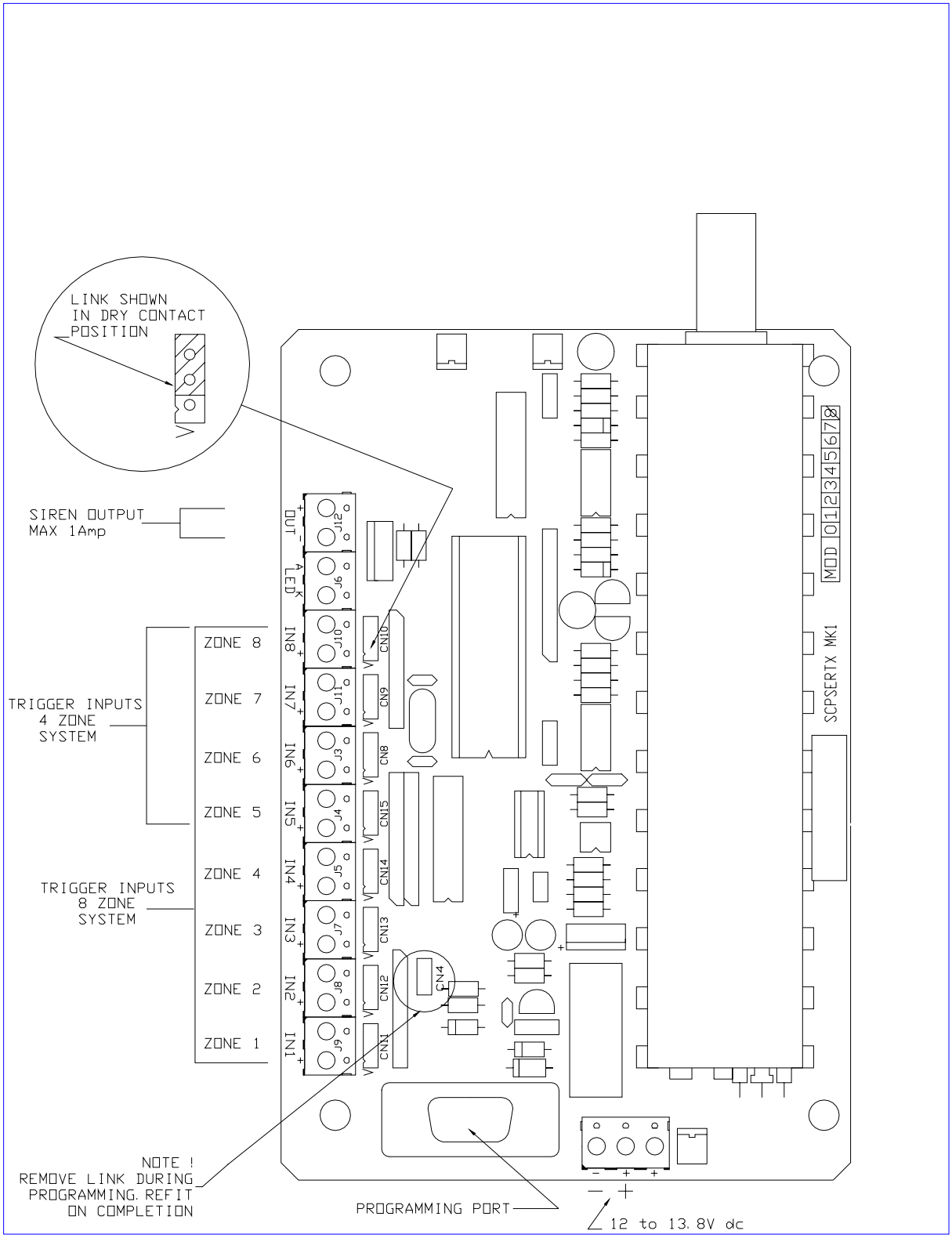
5 Check that the pagers have the battery installed with the correct polarity and are correctly powered up.

6 Check that the red power LED on the base of the transcoder is lit. If not, isolate the power and check the mains plug fuse. The Scope mains input fuse on the integral power supply (250 mA, Anti-Surge) and the low voltage output fuse (2 A) may also be checked by a suitably qualified technician only.

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 center fed half wave dipole, measuring approximately 12 inches from tip to tip, will provide excellent all round local signaling. 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).

Pre-terminated coaxial feeder cables are available for 5, 10 or 15 meter 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 meters. We recommend RG213, or equivalent, on greater lengths. If in doubt consult your dealer.

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

Service Information

If you experience a problem with your equipment, please contact the distributor from whom it was purchased. In any event, ensure you have the systems details at hand for reference purposes.

Record your system details here for quick reference:-

Date supplied____/____/____ Serial Number of the base console_____(where applicable)

Transmitter frequency ___ ___ ___.___ ___ ___MHz FCC Approval No: JRNUSAECOLINK

Number of pagers supplied with the system _____

Transmitter baud rate _____

Pager ID port 1 NO _____ Pager ID port 1 NC_____
Pager ID port 2 NO _____ Pager ID port 2 NC_____
Pager ID port 3 NO _____ Pager ID port 3 NC_____
Pager ID port 4 NO _____ Pager ID port 4 NC_____
Pager ID port 5 NO _____ Pager ID port 5 NC_____
Pager ID port 6 NO _____ Pager ID port 6 NC_____
Pager ID port 7 NO _____ Pager ID port 7 NC_____
Pager ID port 8 NO _____ Pager ID port 8 NC_____

Prefix the Pager ID with (A) for alpha and (N) for numeric pagers

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

System Specification

Mains Input:	110V @ 60Hz
Mains Power Consumption:	10W max
System Operating Voltage:	13.8V dc
System Power Consumption:	less than 200uA (micro Amp) standby, 300mA transmit.
Transmitter:	
Frequency Range:	450-470 MHz
Channel Spacing:	25 KHz or 12.5KHz
TX Baud Rate:	512 or 1200
FCC Approval No.	JRNUSAECOLINK
General:	
Ports:	4 or 8 dry contact/voltage inputs (configurable) Open Collector (siren) output: 1A max COM1: serial port for programming function only
Data	POCSAG Numeric or Alphanumeric format
Footprint (mm):	•328 (L) x 190 (W) x 75 (D) max

•excluding aerial

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