ANNUNCIATION & DISPLAY DESIGN GUIDE

ROVING ALARM NOTIFICATION SYSTEM (RANS)

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Communications & Documentation Technologies

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Introduction

This design guide has been developed to provide you information that will help develop the design and installation of *RANS-Audio* systems. It is recommended that you review this entire manual if you are designing a RANS system. Table 1 provides an easy form for developing a list of materials as you proceed through this manual. Prepare pricing by obtaining equipment prices from the most current **CDT**'s *EMPACT series* price list. If you require any assistance, please contact our factory.

A set of sample specifications are provided in this manual. These specifications are also available on diskette in IBM-compatible or Macintosh format. Please contact the factory.

Overview

RANS-Audio is a wireless alarm reporting system which utilizes portable alarm receivers carried by responding personnel. The central alarm system receives alarm inputs and transmits a unique English language message to the portable alarm receivers.

The responding personnel receive an alarm tone and the English (or other) language audio alarm message. The wireless connection to all portable alarm receivers allows the responding personnel to rove the facility not tied to one control location. The personnel can be performing other duties and respond to alarms only when they occur.

As well as utilizing personal alarm receivers, *RANS-Audio* can provide an audio alarm message to the facility two-way radio system, intercom system, or public address system.

Examples of Use

A Hospital Psychiatric Wing Requires Response to Personal Alarms

The hospital psychiatric ward has a personal security system which sends an alarm when a staff member is in trouble. However, there are no security staff permanently assigned to the ward.

A *RANS-Audio* system is connected to the personal security system. A personal security alarm is immediately sent to several roving security guards. The *RANS-Audio* system informs each security guard of the type and location of alarm. Response is rapid.

RANS-Audio portable alarm receivers can be issued to many different personnel. Personnel can transfer receivers at change of shifts.

A Correctional Facility Needs Alarm Response from Roving Personnel

A correctional facility must be staffed at a minimal level especially during nighttime and graveyard shift periods. Alarm response must be from other officers who are roving their own areas of responsibility.

The important alarm systems of the facility are connected to a *RANS-Audio* system. The alarms are reported either to individual officers for certain alarms or to all officers in the cases of life-safety alarms. The English language alarm message informs the officer of the exact nature of the alarm. Response is rapid.

A Security Control Room at Times Must Provide Alarms to a Reduced Staff

The control room is minimally staffed in the nighttime hours and the staff is required to monitor several outside tasks during the shift. Alarms could be missed by the staff.

The important alarms are connected to the *RANS-Audio* system. Alarms are transmitted immediately to the staff who may be anywhere in the facility. The English language message alerts the staff member to the alarm. The staff member proceeds either back to the control room or directly to the point of alarm.

Detailed Design

Discussion

The *RANS-Audio* is normally installed to connect roving personnel to an alarm system. Central alarm signals are automatically sent to the roving personnel regardless of their location. See Figure 1.

The *RANS-Audio* system connects to alarm equipment by other manufacturers. The RANS sends the alarm information generated by the other manufacturers alarm equipment. Therefore, the number of alarms to be transmitted by the RANS system will be dependent on the design of the facility and the requirements of the other alarm equipment.

The design of the *RANS-Audio* system is not complicated. There are only three items to be selected and placed. These are: (1) the alarm encoder; (2) the radio transmitter; and (3) the transmit antenna.

The type and quantity of portable alarm receivers is relatively independent from the central encoder and transmitter. The alarm receivers respond to one or more encoder codes, and any number of receivers can be assigned to any code.

Since the *RANS-Audio* system uses a radio transmission system, each system must be assigned an operating frequency. This is not difficult, and factory assistance is available. A form for requesting assistance is contained in this manual.

The design information contained in this section should be sufficient to acquaint you with the system and plan a system design. Additional installation and wiring technical information is contained in the RANS-Audio Installation and Operations Manual.

Frequency Selection

Each *RANS-Audio* system must have a licensed radio frequency. This frequency is normally in the VHF range although frequencies in other ranges are available with factory assistance.

Factory assistance is available for selecting and licensing an operating frequency. Figure 2 is a two-page (front/back) form which can be copied and completed to request frequency selection and licensing assistance. Contact your representative or the factory if you have any questions.

Equipment Placement

RANS-AUDIO ENCODER UNIT

- The RANS encoder unit is designed to be mounted adjacent to the alarm equipment that will produce the alarm information that will be transmitted to the remote displays.

- The encoder location will require a 120 VAC power connection, connections to the alarm equipment by other manufacturers, and a connection to the radio transmitter. Battery Backup may also be necessary.

RANS TRANSMITTER UNIT

- The transmitter unit is located adjacent to the transmitter antenna to be sure maximum transmitter power is delivered to the antenna. A transmitter to antenna distance of not more than 25 feet is recommended.

- You may wish to locate the transmitter after locating the transmitter antenna. The transmitter location will require 120 VAC power and the wiring coming from the encoder location.

RANS TRANSMITTER ANTENNA

- The location of the transmitter antenna is critical to the proper operation of the system. Locate the transmitter antenna on the highest structure whenever possible. The best reception will be achieved at the portable alarm receivers when the transmitter is in a “line-of-sight.”

- The antenna should be mounted on a minimum 20-foot mast located on either a flat or slightly pitched roof. The antenna mast will usually require guy wires. There should be sufficient roof space for installing the guy wires.

- Additional antenna mounting information is contained in the *RANS-Audio* Installation and Operations Manual.

INTERCONNECTIONS

The RANS system interconnections are not complicated. Connections are required as follows:

- The alarm equipment by other manufacturers must be connected to the RANS alarm encoder. The distance should not exceed 15 feet.

- The encoder will be connected to one outlet of 120 VAC power. A two-conductor cable will run from the encoder to the RANS transmitter. The distance between the encoder and transmitter can be up to 3000 feet.

- The transmitter location will require one outlet of 120 VAC power. The two-conductor wire from the encoder will terminate at the transmitter.

- A special radio frequency transmission cable will run from the transmitter to the antenna. The recommended distance for this cable is 25 feet or less.

- Running the transmission cable to the antenna usually involves penetrating the roof. Additionally, the transmission cable is delivered from the factory assembled and tested. If conduit and a “roof jack” are used, a sufficient size should be specified to accommodate the cable and connectors (i.e., 1-inch conduit).

Equipment List

Proceed through following steps to make an equipment list for this system. Table 1 is a sample equipment form for your use. Copy this form and use it for your design. Current pricing is available on the current **CDT**'s *EMPACT series* price list.

Begin by determining the quantity of alarm zones required for your system.

- Typically there is one alarm input zone for each alarm input received from the external alarm equipment. For example, if a personal security system contains 42 zones, there will be 42 zones in the *RANS-Audio* system.

- Each zone will be associated with its own customized prerecorded voice alarm message. The content of the alarm messages can be determined at this time or just prior to ordering. A typical message length is four seconds.

Determine the quantity of portable alarm receivers that should respond to any one of the zone alarm signals.

- Each alarm zone will be assigned a calling code. The portable alarm units will respond to these calling codes.

- If one portable alarm receiver should respond to each alarm zone, each portable alarm receiver will have its own code.

- If several portable alarm receivers will respond to one alarm zone, each receiver will have the same code. (Note: Multiple codes are possible. Consult the factory for more information).

- If all portable alarm receivers should respond to all zone alarms, all portable alarm receivers will have the same code.

- Many facilities are divided into sections and the response to alarms in one section will be accomplished by personnel in that section only. One *RANS-Audio* system can handle multiple areas. Consult the factory if more information is necessary.

The system will normally require only one *RANS-Audio* encoder location. One RANS encoder will provide up to 20 zones of alarm information. Additional RANS encoders can be coupled (cascaded) to increase the number of alarm zones in groups of 20. Specify the encoder as follows:

- Determine the number of encoder alarm zones required; one encoder for each 20 zones.

- Include one customized alarm message for each alarm zone input.

- Determine the number of calling codes will be associated with the alarm zones.

- The use of portable alarm receivers requires the paging adapter. Include the paging adapter in your equipment list.

- Determine whether the encoder unit will require a backup battery. A backup battery is recommended unless the system power will be furnished by an on-line uninterruptable power source.

Determine the radio transmitter as follows:

- There is only one transmitter usually used with the *RANS-Audio* system. If your system has different requirements, please contact the factory.

- Determine whether the transmitter unit will require a backup battery. A backup battery is recommended unless the system power will be furnished by an on-line uninterruptable power source.

Determine the transmitter antenna assembly to be used.

- The recommended antenna is a high-gain stick antenna. This antenna will assure you that the maximum possible signal is reaching the portable alarm receivers.

Determine the quantity of portable alarm receivers required.

- A minimum of one portable alarm receiver is recommended for each alarm zone.
- The facility requirements will dictate the quantity of portable alarm receivers required.
- The factory will ask for coding information at the time of ordering.
- Carrying holsters are recommended for every portable alarm receiver.

Determine the type of batteries that should be used with your portable alarm receivers.

- The lithium batteries will provide 6 to 8 months of normal operation but are not rechargeable.
- The Ni-Cad batteries are rechargeable but only provide 30-40 days operation between charges. If Ni-Cad batteries are selected, one charger should be purchased for every alarm receiver.

Budgetary Pricing

The system can be priced by applying the pricing from the current **CDT** price list to the list of materials you have developed on Table 1. If you are not sure you have current pricing schedules, please contact the factory.

A complete budgetary price should include the installation pricing also. Labor and overhead costs are regional in nature and should be obtained from your local area. Please remember all taxes, insurance, and any bond or other special fees.

Always allow sufficient installation hours to include complete system testing, documentation, and training of the facility staff.

Ordering

Prepare your *RANS-Audio* order using Table 1. If you wish, you can copy Table 1 and attach it to your purchase order.

If you have any difficulty planning your installation or have special circumstances to consider, please do not hesitate to contact our engineering staff.

Specifications

CDT maintains a complete set of specifications for the *RANS-Audio* System. A copy of sample specifications are included in this manual.

CDT's *EMPACT series* specifications are available on diskette in either IBM-compatible or Macintosh-compatible formats.

The **CDT** sales engineering staff is also available for technical assistance. If you wish we can provide plans preparation and specification preparation assistance. Please contact us if you have any questions.

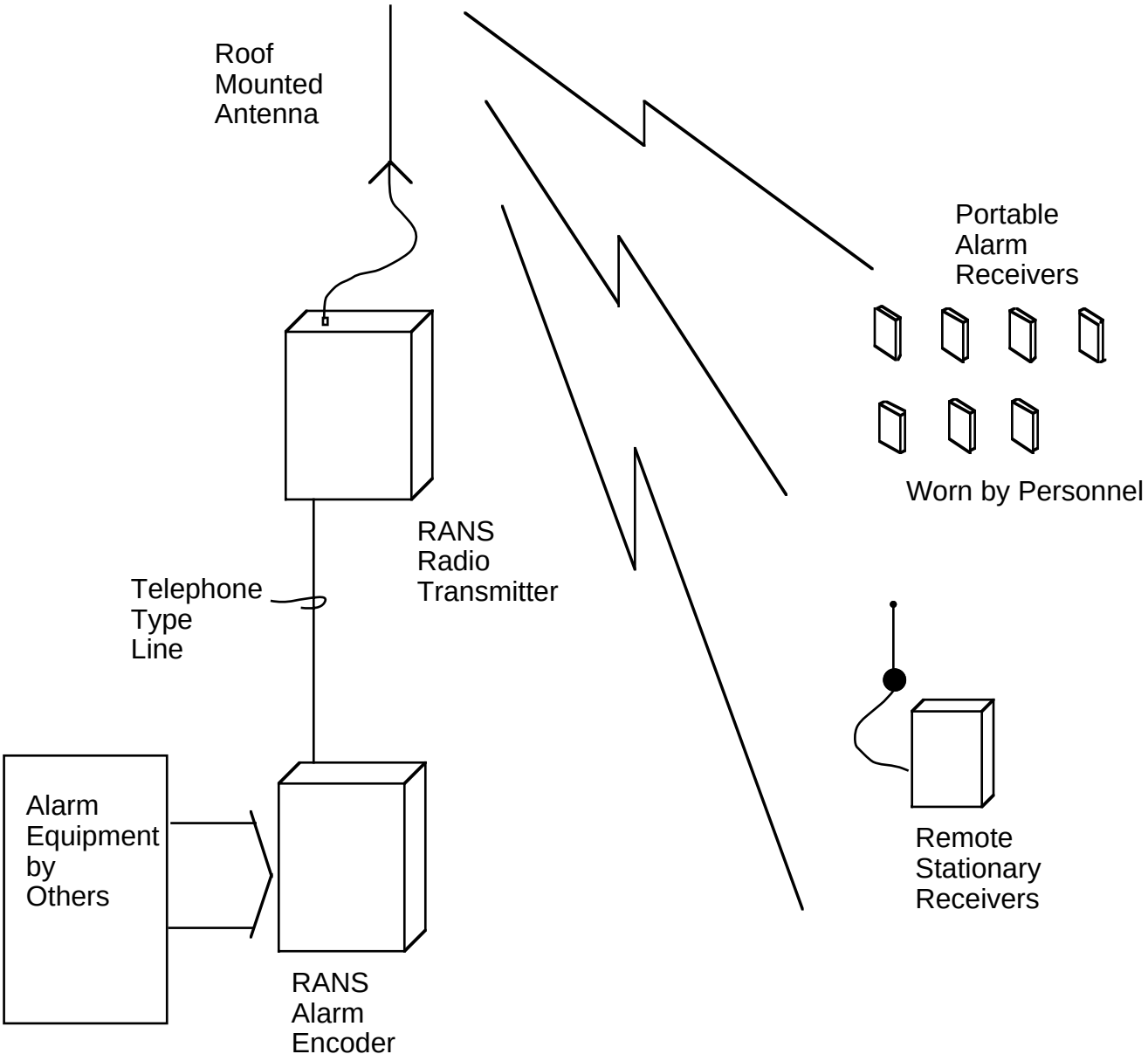

Figure 1
Typical RANS-Audio Installation

Table 1. Equipment List

Part No.	Description	Qty.	Price Each	Total
500 RA	*RANS Audio Encode*r, Basic; includes encoder and power supply.			
520 RA	*Preprogrammed Voice Modules*; add for each zone up to 20 per encoder; includes custom message programming.			
550 RA	*Radio Paging Interface Module*; provides radio page selective codes; includes telephone line interface.			
650 RA	*Transmitter Assembly, VHF*; VHF radio output for alarm receivers; includes 2-watt VHF transmitter, enclosure, and power supply; specify frequency; see Note 2.			
682 RA	*Transmitter Antenna Assemblies*; approximately 4.5 dB gain; antenna masts not included.			
655 RA	*Transmitter Antenna Cable Assemblies*; maximum distance transmitter/antenna—25 ft.; completely assembled; includes connectors, assembly, and testing; add cable length below.			
152 MP	*Transmitter Antenna Cable Length*; add for each foot of antenna cable up to 25 feet maximum; consult factory for longer lengths.			
120 MP	*Optional Encoder Battery Backup*; installs in encoder enclosure.			
130 MP	*Optional Transmitter Battery Backup*; installs in transmitter enclosure.			
100 RA	*Portable Alarm Receivers*; includes lithium battery; specify frequency.			
105 RA	*Leather Holster Carrying Case* for portable alarm receiver.			
L31	*Replacement Lithium Battery*; 6-8 mo. operation.			
N28	*Replacement Ni-Cad Rechargeable Battery*; 30-40 days' operation before recharge; requires charger below.			
150 RA	*Battery Charger* for portable alarm receivers			