



EMPACT SERIES
Communications & Control Equipment

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ANNUNCIATION & DISPLAY DESIGN GUIDE

RADIO ALARM LINK (RAL)

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33408 Sandy Creek Lane, P.O. Box 776
Pine Valley, California 91962-0776
(619) 478-2600
FAX (619) 478-2555
Internet: <http://www.cdtco.com>
email: cdt@cdtco.com

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Introduction

The Radio Alarm Link is designed to work either as an independent system or in conjunction with the Mobile Map Plus annunciation system. Radio Alarm Link provides an economical method for interconnecting remote alarm equipment or providing for remote annunciation of alarm signals, especially when the installation of conventional wiring is not practical. If you already have a Mobile Map Plus System, Radio Alarm Link can provide remote relay contacts directly from the existing Mobile Map data transmission system.

Overview

In many cases remote locations are required to monitor alarm signals. Usually provisions are available to connect these remote monitoring points to the area being monitored. However, if conventional wiring connections are not available, the *Radio Alarm Link (RAL)* can provide the necessary connections.

Radio Alarm Link provides a wireless method of supervised connections between two points. The advantages of the *RAL* connection is the simplicity of installation.

Radio Alarm Link is recommended only when conventional wiring methods (trenching, conduit, wiring, etc.) are very expensive or impossible. If in doubt, compare the price of convention wiring with the cost of the *Radio Alarm Link*.

Examples of Use

Control Room Monitoring Alarms from a Remote Location

A locked storage building in a remote part of an industrial facility must have an intrusion monitoring system. The building is about 1/2 mile away and installation of dedicated wiring will be expensive.

A *Radio Alarm Link* installed between the remote storage building and the control room will provide a supervised connection and allow the remote alarms to be presented in the control room. A matching graphic annunciator can show the location of alarms.

Monitoring Alarms Across Major Roads or Highways

Alarm inputs across a major road or highway will require the installation of conduit and wiring (that may be impossible), or leasing of telephone lines which may not be available or very expensive.

A *Radio Alarm Link* and directional antennas can easily connect the remote alarm points to the central control location.

Detailed Design

Discussion

Radio Alarm Link (RAL) is normally used to connect alarm signals between two locations that cannot be easily or cost-effectively connected by other means. (See Figure 2-2).

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

The design of the *RAL* system is not complicated. There are only four items to be selected and placed. These are: (1) the alarm encoder/transmitter; (2) the transmit antenna; (3) the alarm receiver/decoder; and (4) the receiver antenna.

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 *Radio Alarm Link Installation and Operations Manual*.

Equipment Placement

***RAL* ALARM ENCODER/TRANSMITTER UNIT**

- The *RAL* encoder/transmitter 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 120VAC power connection, connections to the alarm equipment by other manufacturers. Battery backup may also be necessary.

***RAL* 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.
- For short distances up to 1/4 mile, the antenna can be mounted on the encoder/transmitter unit. For longer distances, consult the factory.
- Additional antenna mounting information is contained in the *RAL Installation and Operations Manual*.

RAL RECEIVER/DECODER UNIT

- The location of the Receiver/Decoder should be near the alarm equipment which is to receive the alarm information.
- In many cases the alarm information will be sent to a matching **CDT** graphic annunciator system. In those cases, the receiver/decoder can be mounted several hundred feet from the annunciator.

RAL RECEIVER/DECODER ANTENNA UNIT

- The location of the transmitter antenna is critical to the proper operation of the system.
- For short distances up to 1/4 mile the antenna can be mounted on the receiver/decoder unit. For longer distances, consult the factory.

INTERCONNECTIONS

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

- The alarm equipment by other manufacturers must be connected to the *RAL* alarm encoder/transmitter. The distance should not exceed 15 feet.
- The encoder/transmitter will be connected to one outlet of 120 VAC power.
- When necessary, a radio frequency transmission line will connect the encoder/transmitter to the transmitter antenna. The length of this cable should not exceed 25 feet.
- The receiver/decoder should be mounted adjacent to the equipment that receives the alarm information.
- When necessary, a radio transmission cable will connect the receiver/decoder antenna to the receiver decoder. The length of this cable should not exceed 25 feet.

Equipment List

Proceed through following steps to make an equipment list for this system. Figure 4-3 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. The columns at the right are provided for labor installation or other calculations.

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

- Typically there is one alarm zone for each distinct alarm.

Determine the quantity of remote receiver/decoder units required.

Determine the number of additional encoder/transmitter and receiver/decoder zone cards required.

- Each basic Receiver/Transmitter or remote Receiver/Decoder contains 8 zones. Additional zones must be added to EACH unit; with each additional zone card adding 8 zones.

Determine whether your system should use the security code option. The security code assures that the *RAL* will only receive correct alarm transmissions from the system encoder.

The system will normally require only one *RAL* encoder/transmitter. Specify the encoder/transmitter as follows:

- From 4.5.4.2 above determine the number of encoder alarm zones required.
- Similar to 4.5.4.4 above, the encoder will require additional 8-zone encoder cards for each 8 zones beyond the 8 zones provided with the basic encoder unit.
- Determine whether the security code option is required. One security code option is required for the encoder/transmitter.
- Determine whether the encoder/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 which transmitter antenna assembly should be used.

- There are three different antenna assemblies listed. The use of a particular antenna will be determined by the installation.
- The recommended antenna is the highest gain stick antenna. This antenna will assure you that the maximum possible signal is reaching the mobile displays.
- The ground plane antenna should only be used if the remote receiver/decoder(s) will operate in an area which is truly line-of-site at distances not more than 1/2 mile.
- The higher gain stick antenna can be utilized if the antenna is mounted on a tall building and the operating distance for the remote receiver/decoders is not more than 1 1/2 miles.

One transmitter antenna cable assembly is required to connect the transmitter unit to the antenna.

- The maximum recommended distance is 25 feet. If the required distance is longer than 25 feet, consult the factory for additional cable recommendations.
- Select the antenna cable assembly and the length of the antenna cable required. If the exact cable length is not known, use a 25 foot length.

Select the antenna assemblies for the remote receiver/decoder units.

- Each remote receiver/decoder unit will require an antenna. The most suitable antenna for this application is the ground plane antenna as described in 4.5.4.7 above. If distances are greater than shown a higher gain stationary antenna should be used. Each antenna will require an antenna cable assembly.

Budgetary Pricing

The system can be priced by applying the pricing from the current **CDT's EMPACT series** price list to the list of materials you have developed on Figure 4-3. If you are not sure you have current pricing schedules, please contact the factory.

A complete budgetary should include the installation pricing also. Space is provided in Figure 4-3 to include this information. Labor and overhead costs are regional in nature and should be obtained from your local area. Please remember to include 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 *Radio Alarm Link* order using Figure 4-3. If you wish you can copy Figure 4-3 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 *Radio Alarm Link* system. These specifications are suitably written for inclusion in larger project specifications.

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

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.

