RACO
REMOTE ALARMS AND CONTROLS
SINCE 1948

Verbatim™

Responder

Responder
for use with Verbatim
Automatic Dialing
Remote Monitoring System

The RACO Verbatim® Responder is designed to operate in conjunction with the RACO Verbatim Voice Alarm Autodialer. The Verbatim autodialer places command calls to the remotely located Responder, and causes control output relays on the Responder to be activated.

Thus the Verbatim Autodialer is able to automatically control equipment at a separate location using ordinary, economical dial-up phone service as the connecting medium. This is in addition to the Verbatim autodialer's usual role in placing voice alarm calls to personnel in the event of non-routine alarm conditions.

A TYPICAL WATER LEVEL CONTROL APPLICATION

A commonly encountered situation is a water tank with float switches or other sensors which monitor the water level, and which generate routine "request to pump" and "request to stop" commands that need to be relayed to a remotely located well pump site. The problem is how to get that command information to the remote pump site.

This problem can be solved with a Verbatim autodialer at the tank site, with the respective float switch contacts connected to the corresponding alarm inputs on the autodialer. In operation, when a given float switch activates, the autodialer places an alarm phone call to the Responder and causes the appropriate corresponding output relay on the Responder to be activated. The pump equipment connected to the Responder is thus automatically controlled, causing the water level at the tank to cycle between suitable low and high limits.

PERSONNEL ALARM CALLS IN THE EVENT OF RESPONDER FAILURE

Part of the Responder's function is to issue a series of DTMF "9" tones upon receipt of a valid command. This acknowledges the alarm (request to activate a relay) at the autodialer, suspending further dialing activity.

However, if the Responder should fail to receive or act on a command call, no acknowledgement will occur, and the autodialer will go on to place voice alarm calls to personnel, warning of a failure.

A water level control system should also typically include separate "emergency low level" and "emergency high level" detection switches, which would be connected into separate additional inputs on the autodialer, and which would result in immediate emergency notification calls to personnel in the event of out-of-limit water level conditions.

SECOND-LEVEL CONTROL

Some systems will include a separate, non-emergency "low low" detection which calls for a second pump to be turned on to increase flow. This can generally be accommodated by using additional control relay outputs on the Responder.

OPTIONAL "CONDITIONAL ACKNOWLEDGEMENT" CONFIGURATION

For additional security, the Responder can be optionally field-configured so that the acknowledgement tones (DTMF 9's) are issued only if an auxiliary input on the Responder is closed to gound by an external set of contacts.

If the contacts are open, a command call placed by the Verbatim autodialer will not be acknowledged, resulting in followup voice alarm calls being placed to personnel by the Verbatim autodialer.

If it is desired to use this feature, it is up to the system engineer to arrange for the appropriate operation of these external contacts, so that the acknowledgement of alarm calls is allowed, or prevented, in the desired fashion.

DIRECT RESPONDER OPERATION

Although the Responder normally is commanded by a Verbatim autodialer, it is also possible for personnel to call a Responder and issue the proper series of DTMF touch tones to achieve the same relay operations as when the Verbatim provides the commands.

A single auxiliary dry contact input on the Responder can be connected so that if, and only if, that input is closed to ground, the caller will hear an initial 400 Hz signal tone as an indirect indication of current conditions.

BUILT-IN TIMER

The Responder incorporates a built-in timer which activates a built-in audio alarm and a selected output relay if a valid command call is not received within the preset time period. The timeout period can be set to 6 minutes, 24 minutes, 3 hours or 24 hours. The timer can be disabled if necessary. An additional relay is supplied on two-relay models for this auxiliary use.

COMMAND ACTIVATION CODES

The separate commands that control specific output relays on the Responder, are implemented as extended command dialout phone numbers programmed into the autodialer. Alarm Call Grouping is invoked at the autodialer so that each input results in the dialing of its own distinct command phone number as the first number dialed.

Each command phone number begins with the initial digits (usually seven for a local call) required to reach the Responder's phone number. These digits are followed by a programmable delay period of several seconds to allow time for the Responder to answer the call, before the final command digits are issued.

A plug-in PROM chip determines which followup command tone digits are required to activate a given output relay. This chip is normally furnished for four command digits, but on special order up to ten digits can be implemented for increased security.

PERSONNEL PHONE NUMBERS

In addition to the command phone numbers programmed into the autodialer, personnel phone numbers are also programmed. Alarm Call Grouping programming includes these personnel phone numbers in common for all command inputs. Personnel will only be called if an initial call to the Responder is not acknowledged.

There is an overall limit of sixteen phone numbers programmable at the Verbatim autodialer. Each personnel phone number can be shared by all command inputs. For example, one Verbatim autodialer could be set up to command two outputs on each of six separate Responders, and still allow followup or emergency personnel calls to four personnel phone numbers.

It is possible to program second, duplicate command phone numbers for a given command input, still ahead of the personnel phone numbers, to provide a second chance for the command call to get through before personnel would be called. This uses up additional phone number allocations out of the total of sixteen.

RELAY OUTPUTS

The Responder is available with two relay outputs standard, or eight outputs optional. Normal relay operation is momentary, one second nominal duration. However the unit may be field-configured so that the first two relays together implement a single latched output. On eight output versions, the first four relays can be field-configured to implement two such latched outputs.

MOUNTING OPTIONS

The Responder is available in either a basic unit (circuit board configuration suitable for mounting on a flat panel surface), or optionally with a NEMA 4X enclosure.

ADDITIONAL SYSTEM ENGINEERING CONSIDERATIONS

Each respective command input to the autodialer must be returned to its normal state before a different command input is invoked, in order to prevent "collisions" of command calls, redundant command calls, and unintended premature acknowledgement of the calls.

The Verbatim autodialer serves only to relay commands to remote Responders. In general, it must receive appropriate contact or logic-level inputs from an intelligent controller, although in simple systems, float switches might suffice.

In special cases it is possible to have the responder linked to the Verbatim autodialer via a direct wire pair instead of dial-up telephone lines. Contact factory for details.

More than one Responder, and/or more than one Verbatim autodialer, may be combined in one overall control system or network.

Note that while the Verbatim autodialer includes a built-in power failure detection with dialout alarm, it must be disabled when using Alarm Call Grouping. If a dialout alarm is required in the event of power failure, one of the alarm inputs on the autodialer must be connected to external relay contacts which indicate the presence or absence of power.

It is the responsibility of the system engineer or customer to verify that the risk of possible sustained failure of dial-up phone lines, or of the Verbatim autodialer, or of the control system commanding it, is acceptable as considered against risks of alternative approaches. Failure of the Responder itself, including that caused by local power failure, would presumably result in notification calls to personnel either directly if it did not respond with an acknowledgement, or else subsequently, as a result of emergency limits being exceeded.

MODEL RSP RESPONDER SPECIFICATIONS

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Call answer duration	Adjustable, 30 to 90 sec.
Output relays	2 standard, 8 optional
Relay contacts	SPDT (normally open/ normally closed), 5 amps, 120 VAC
Basic unit dimensions	9"H x 7"W x 2-½"D
Basic unit mounting centers	8-¼"H x 6-¼"W (via screws up to 6-32)
Optional enclosure	Fiberglass NEMA 4X
Optional enclosure dimensions	11-¼"H x 9-¼"W x 5-½"D
Optional enclosure mounting centers	10-¾"H x 6"W (via screws up to 5/16")
Power	120 VAC, 10 VA nominal; 12 VDC available on special order.

The Responder has no voice or dialout or battery backup provisions. It has no programming that could be lost during powerdown.
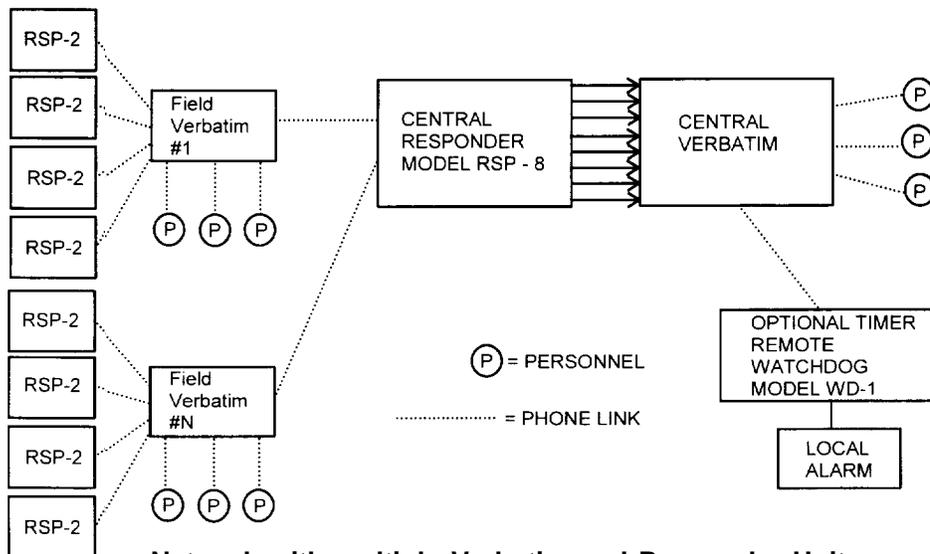
Phone line interface is FCC approved.

All specifications are subject to change without notice.

RESPONDER ORDER NUMBERS

NUMBER OF OUTPUTS	BASIC UNIT	WITH NEMA 4X
TWO	RSP-2-NB	RSP-2
EIGHT	RSP-8-NB	RSP-8
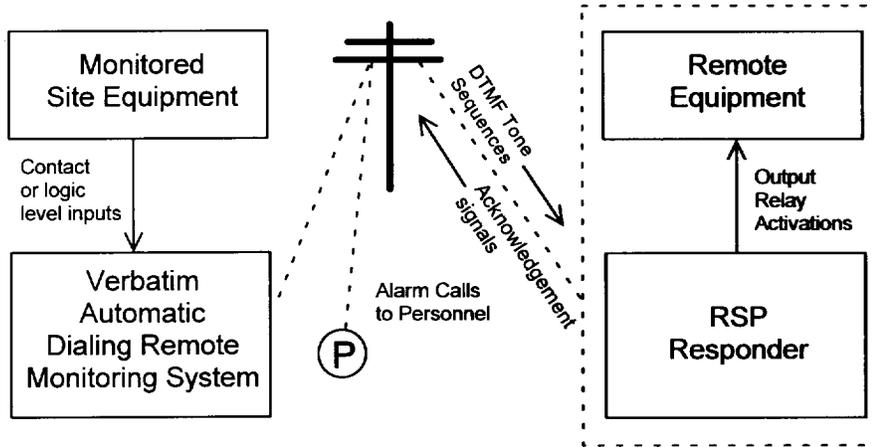
Typical Responder and Verbatim Network

Network with multiple Verbatim and Responder Units