

**RACO's Verbatim Gateway keeps you
in touch, and in control,
no matter where you are.**

The Verbatim® Gateway from RACO, the remote monitoring and alarm specialists, allows you to use TouchTone telephones anywhere as interactive, multi-functional operator interfaces. It's a unique breakthrough that provides convenient, inexpensive bidirectional communication with your PLC network via dial-up phone lines. So you can call in and check the status of any channel. Modify alarm criteria and monitoring points. Alter process variables and setpoints. So you can be called and receive clear voice-message reports of alarm situations, with messages directed sequentially to as many as 16 phone numbers.

In a single, compact, ruggedly built system, the Verbatim Gateway delivers these important functions and more. And it does so without requiring the use of PLC outputs or modification of PLC control programs.

In short, whether tracking or controlling intricate manufacturing processes or a host of water/wastewater treatment operations, the Verbatim Gateway begins a new era by making remote communication with your PLC network easier and more affordable than ever.



Extended functionality and versatility — at minimal cost.

Continuous real-time communication between the Verbatim Gateway and the PLC network is performed via a serial link using the protocols supported by specific PLC models. Any PLC's I/O points and data table locations can be manually altered. In addition, the system provides automatic monitoring of as many as 96 points — points reflecting any combination of discrete, analog, timer, counter, or other PLC data objects.

Further, the Verbatim Gateway uses only a single cable connection, to deliver its extensive functionality. You avoid the burdensome costs of complex wiring, additional PLC outputs and relays. You add monitoring points at costs that are about 40% less than those associated with traditional PLC-to-input configurations. As a result, you're able to fully utilize the potential of your PLCs — easily and inexpensively.

Simultaneous monitoring of multiple PLCs on multiple networks — even on networks with dissimilar protocols.

The Verbatim Gateway is designed for use with popular network protocols — including the Modicon Modbus Plus™, Modbus® RTU and the Allen Bradley DH485. Operating at selectable communication speeds up to 1 Mbaud, it's even capable of simultaneously monitoring PLCs on networks using different protocols. And all protocol-specific error-detection techniques and retransmission methods are fully maintained. You can also use the Verbatim Gateway as a bridge between incompatible networks, so that data can be exchanged between them.

The Verbatim Gateway allows easy read and write access to PLC data tables via any telephone.

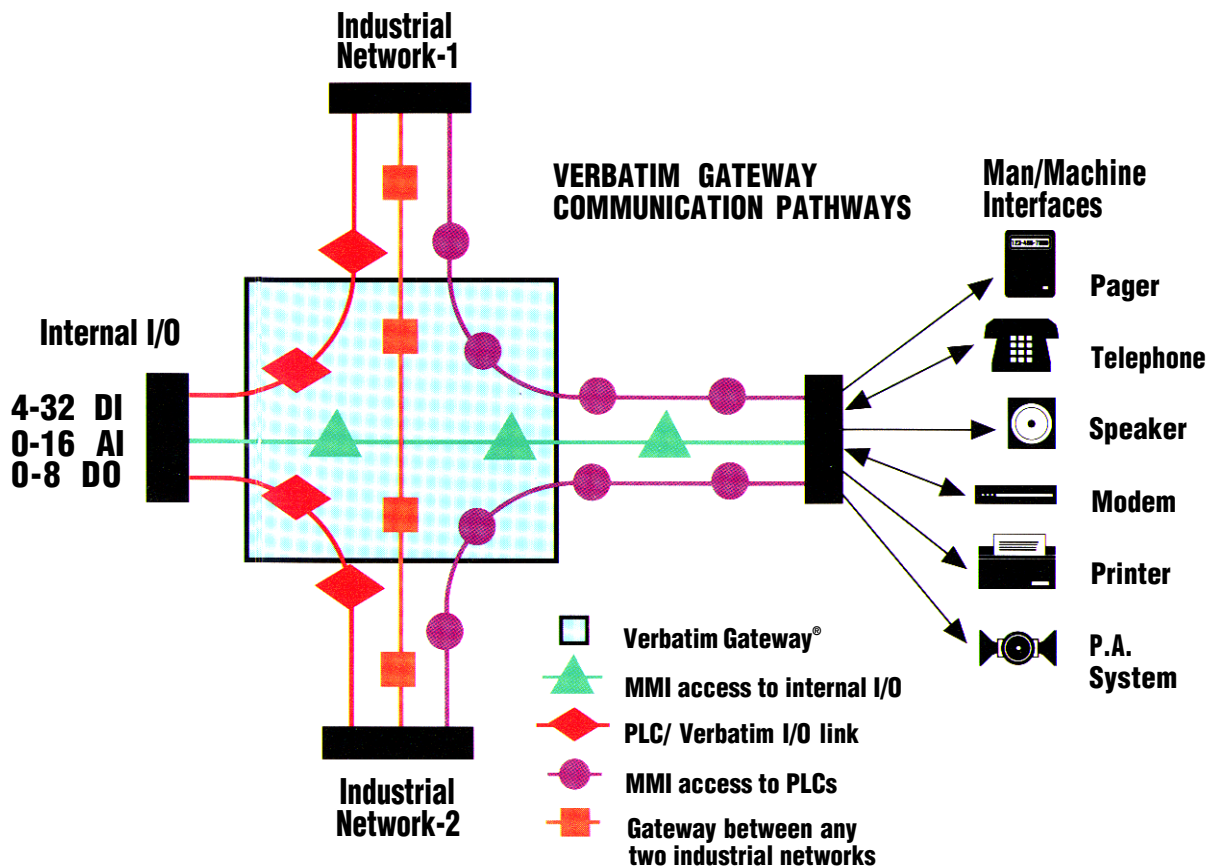
Fast access from any TouchTone phone using brief 4-digit codes, easy programming guided by clear voice prompts.

Accessing any of the 96 points which are automatically controlled by the Verbatim Gateway requires only a brief 4-digit sequence. Users can quickly perform functions that range from ordinary status-checking and message recording/review/revision to reading/writing of data registers at any network address and selection of global commands applying to all channels. Responses are always in voice format; data register numeric codes, for example, are converted to spoken voice messages. If a programming sequence is not recognized by the Verbatim Gateway or if an invalid parameter is entered, the system responds with the appropriate voice message.

The clear voice guidance simplifies entry of dial-out phone numbers, recording of alarm messages and setting of trip delays. The system's preprogrammed operating parameters streamline set-up, yet they may be easily altered to meet specific needs.

The Verbatim Gateway makes certain no alarm condition goes unheeded or unacknowledged.

When an alarm condition occurs, the Verbatim Gateway automatically dials up to 16 field-programmable phone numbers — numbers having as many as 60 digits each. The system then reports the station identification and the specific alarm condition.



Acknowledgment of an alarm phone call is effected by the simple touch of a button on the called phone during the alarm notification or by calling the reporting unit after the call has been received.

Complete status reports — always at your fingertips.

Wherever there's a telephone, there's instant access to status reports on all conditions monitored via the Verbatim Gateway. Similarly, the touch of a telephone key lets you review and alter programming, change alarm criteria, monitoring points, process variables, and set-points. Further, the system's built-in microphone permits listening to on-site sounds, and a built-in speaker-phone allows convenient communication with on-site personnel.

Unlimited flexibility in stored messages — each delivered with maximum clarity.

Free of the restrictions imposed by built-in vocabularies, the Verbatim Gateway can store in memory anything that can be spoken — from names and numbers to technical terms and detailed instructions.

The system's advanced digitized voice technology accurately replicates the original speaker. So there's less opportunity for misunderstanding or error. And messages can easily be changed or entered via the front panel or remotely from any TouchTone telephone.

Designed and built for reliable operation in the harshest industrial environments.

The Verbatim Gateway's heavy-duty metal enclosure, carefully selected and proven solid-state components, and sealed membrane keyboard are an assurance of problem-free performance year after year.

In the event of a power failure, a rechargeable gel-cell battery maintains full and continuous operation for up to thirteen hours. Further, because a precision regulated charger is used instead of a traditional "trickle" charger, battery charging time is minimized and battery life significantly extended.

The Verbatim Gateway also employs non-volatile memory, so no reprogramming is needed following power outages. Alarm messages and user-entered programming are

retained for years—even in the total absence of power to the system.

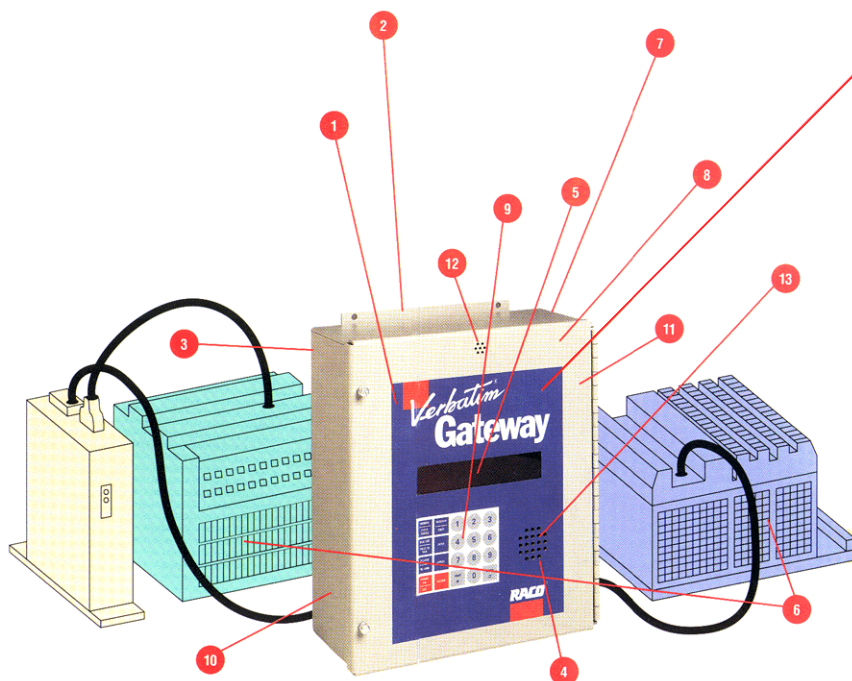
Continuous self-diagnostics, automatic alarming in the event of a PLC communication problem.

The Verbatim Gateway is self-testing and provides complete diagnostic information. Should it detect a communication failure, the unit automatically initiates an alarm. In addition to generating voice-message calls, alarm situations are also indicated by the system's LED display panel.

With start-up and operation made quick and easy through default settings and voice prompts, the Verbatim Gateway places comprehensive PLC monitoring and control capabilities as close as the nearest TouchTone telephone. Based on the Verbatim Automatic Dialing Remote Monitoring System—field proven by thousands operating worldwide — it's the "single-package" solution for keeping your fingers on the pulse of your PLC-controlled processes, for accessing and altering those processes from anywhere in the world.



Both parallel and serial printer ports are provided for local data logging.



- 1 Digitally recorded user messages—over 10 minutes of recording time.
- 2 Expansion slots for plug-in modules.
- 3 Extensive surge protection.
- 4 Verbally reported status checking.
- 5 Visual display of inputs status.
- 6 Simultaneous monitoring of multiple networks.
- 7 Network monitoring supported by a robust set of diagnostics, status and alarm capabilities.



The Verbatim Gateway delivers clear voice messages via telephone, cellular telephone, radio, pagers and PA systems.

- 8 Network gateway for transfer of data between PLCs or other devices using incompatible protocols.
- 9 Easy voice-prompted programming via the front panel or telephone.
- 10 13-hour battery backup.
- 11 User-recorded alarm and normal messages for each monitored point.
- 12 Built-in microphone allows listening to local sounds from remote locations.
- 13 Built-in speakerphone permits operator to place phone calls, communicate with remote callers.

Programmable Features

Alarm Call Grouping

Alarm calls to up to 16 phone number groups

Alarm Criteria

Alarm on Open Circuit
Alarm on Closed Circuit
Status only
High/Low set point
Run Time Meter
Totalizer

Alarm Reset

ON/OFF

Alarm Reset Time

0.1 to 99.9 hours

Alarm System Enable/Disable

Local and Remote
Enable or Disable

Alarm Trip Delay

0.1 to 999.9 seconds

Autocall Test

ON/OFF

Autocall Time Interval

0.1 to 99.9 hours

Call Back/Call Forward

Separate unique phone number

Dialing Format

TouchTone or Rotary
Pulse

Number of Message Repetitions

1 to 20 repetitions

Phone Numbers

16 phone numbers up to 60 digits each

Read/Write Data Registers

Any discrete or integer data register

Ring Delay

1 to 20 rings

Security Code

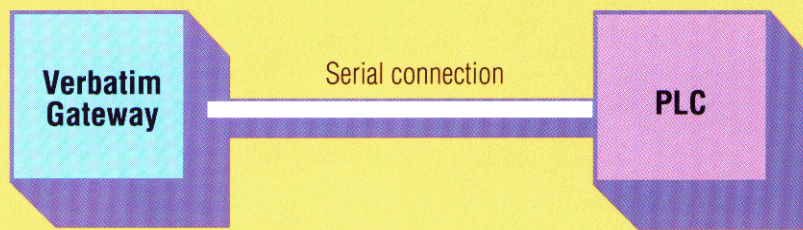
6 digits

Station ID & Message Recording Time

User variable

Time Between Alarm Calls

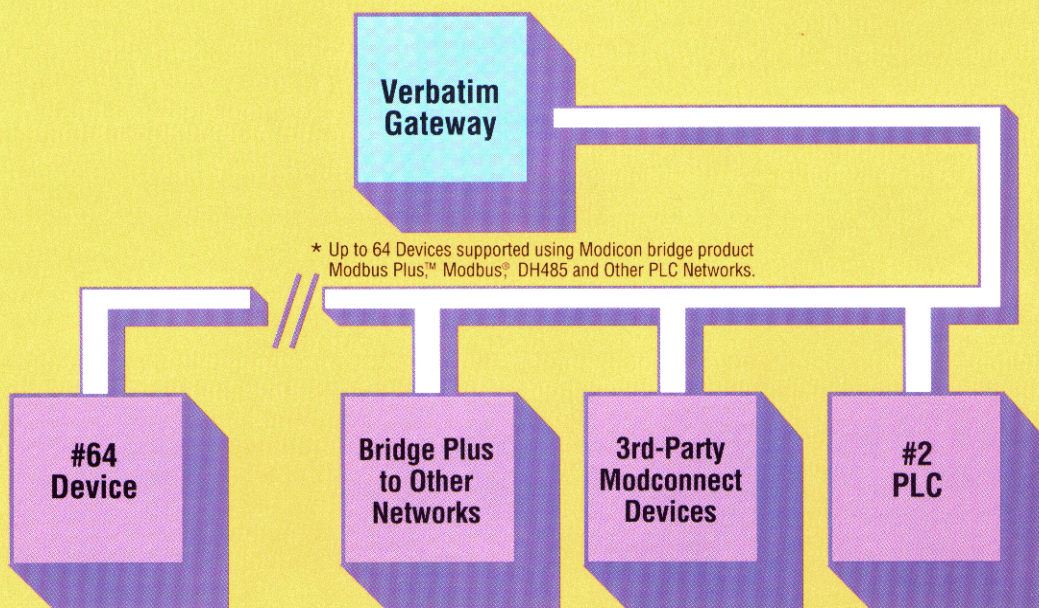
0.1 to 99.9 minutes



Monitoring a single PLC



Monitoring a system with compatible device interface



Up to 64 Devices per Network

Monitoring a PLC network

Standard Specifications

PLC COMMUNICATIONS

- **Fully Compatible:** Requires no modifications to existing network configuration, PLC wiring or programs.
- **Remote Data Table Access:** Monitor or alter any data table location on demand via front panel or telephone.
- **System Security:** Access protected by security codes.
- **Alarm Monitoring:** Continuously monitors 32,64 or 96 PLC addresses.
- **Gateway Function:** Provides for exchange of data between PLC devices on incompatible networks.
- **I/O Export:** Able to continuously transfer internal I/O and alarm data to remote PLCs.
- **Supported Protocols:** Modbus Plus, Modbus RTU, Allen-Bradley DFI, and Allen-Bradley DH485 (programming port). Contact factory for others.
- **Latency:** Depends on configuration and other Network traffic. Typical range. 01-10 seconds.

ELECTRICAL

- **Power requirement:** 105-135 VAC, 50/60 Hz, 15 watts maximum or 8-14 VDC at 500 mA maximum.
- **Battery charging:** Precision voltage controlled, including automatic rapid recharge after drain.
- **Battery backup:** 13 hours.
- **Current draw:** Standby 300 mA Operational 460 mA
- **PLC I/O point sensing:** Two RS232/RS485 ports.
- **Internal input sensing:** Four unpowered contact inputs standard. Open contacts see 5 volts DC; closed contacts see 10 mA DC.
- Standard Centronics parallel printer port.

PHYSICAL

- **Surge protection:** Integral gas tube and solid-state protectors on all phone, power, and signal lines.
- Accommodates field-installed upgrades.
- Rugged metal indoor enclosure.
- **Weight:** 8 lbs. (3.6 kg).
- **Dimensions:** 11⁷/₈" H x 9³/₄" W x 5"D.
- **Mounting centers:** 11³/₈" vertical x 6" horizontal.

ENVIRONMENTAL

- **Temperature range:** 20 to 130°F.
- **Humidity:** 0 to 95%, noncondensing.

TELEPHONE

- Rotary pulse or tone dialing, keyboard selectable.
- Dials up to 16 different numbers, each up to 60 digits long.
- Allows programming of multiple PBX delays in 1-second increments.
- FCC Registered Part 68, "Ringer Equivalence": 0.3A.
- Alarm Acknowledgment is by TouchTone key or by calling back.
- Built-in speaker phone allows two-way conversation.
- Compatible with most cellular telephone systems.

SPEECH MESSAGES

- Users record their own messages. Also, includes resident vocabulary for programming guidance and for default "alarm/normal" speech if no user messages are recorded.

WARRANTY

- Five year parts and labor warranty. See our separate warranty card for details.

INTERNAL I/O OPTIONS

- **Analog.** Custom scaled in the units of measurement required for your job. Analog alarms on a high and a low alarm setpoint. Upgradeable to 1, 4, 8, or 16 analog channels.
- **Remote Supervisory Control.** The operator can turn equipment on or off via any telephone. Upgradeable to 4 or 8 outputs.
- **Channels.** Upgradeable to 8, 16, 24, or 32 contact channels.

FACTORY OPTIONS

- **Enclosure.** System available in NEMA 4X enclosure, which is corrosion proof and sealed against 12 feet of water.
- **Environmental.** Thermostatically controlled heater available, suggested for operation below 20°F or where condensation may occur.
- **Local Alarm Relay Output.** Relay activates during unacknowledged alarm conditions.



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VERBATIM® GATEWAY SERIES VPLC AUTODIALER SPECIFICATION

December 7, 1993

Description & Phone Number Dialing:

1. The autodialer shall be a solid state component capable of dialing up to 16 phone numbers, each up to 60 digits in length. Phone numbers and Standard pulse dialing or Touch Tone DTMF dialing are user programmable via the system's keyboard or Touch Tone phone. Further, the autodialer shall be capable of connecting, via a single serial interface cable, to a variety of Programmable Logic Controllers (PLCs), Distributed Control Systems (DCSs) & SCADA systems. Serial interfacing methods shall incorporate commonly used standard industrial network protocols such as Modicon, Inc. Modbus RTU, Allen-Bradley DH-485 network & others.

Solid State Voice Message Recording and Playback:

2. The unit shall have two different categories of speech message capability, all implemented with permanent non-volatile solid state circuitry with no mechanical tape mechanisms. The unit shall allow for message recording from a remote telephone as well as from the front panel.
- ** User Field Recorded Messages: The user may record and re-record his own voice messages, for each input channel and for the Station ID.
- A. There shall be no limit on the length of any particular message, within the overall available message recording time, which shall be 409 seconds for 36 total channel units and 651 seconds for 57 total or more channel units.
 - B. The unit shall allow selective recording of both Normal and Alarm advisory messages for each input channel.
 - C. The unit shall provide for automatic setting of the optimum speech memory usage rate for the total set of messages recorded, in order to achieve optimum recording sound quality.
 - D. Circuit board switches or jumper straps shall not be acceptable means of manipulating message length or recording rates.
- ** Permanent Resident Non-Recorded Messages: Permanent built-in messages shall be included to support user programming operations, to provide supplemental warning messages such as advising that the alarms have been disabled, and to allow the unit to be fully functional even when the installer has not recorded any messages of his own.

Local & Remote Programming Capabilities:

3. The user may optionally elect to alter the following parameters from their standard normal default values via keyboard entry or remotely from any Touch Tone phone.
- ** Alarm Call Grouping: On alarm, system shall selectively call the correct phone numbers according to the current alarm(s).
- ** Alarm response delay: .1 to 9999.9 seconds.
- ** Delay between alarm call outs: .1 to 99.9 minutes.
- ** Alarm reset time: 0.1 to 99 hours or "NO RESET".
- ** Incoming ring response (answer) delay: 1 to 20 rings.

- ** Number of message repetitions: 1 to 20 repetitions.
- ** Input alarm criteria: Each channel shall be independently configured for "Normally Closed", "Normally Open", "No Alarm", or "Disabled."
- ** Autocall Test: When enabled, the unit shall place a single round of test calls, both at the time this function is enabled and also at regular subsequent intervals until this function is disabled at the keyboard.
- ** Run Time Meter: Selected physical channel inputs shall accumulate and report the number of hours that its input contacts have been closed.
- ** Remote system microphone activation.
- ** Remote and local arming and disarming of system.
- ** Pulse Totalizer Function: Selected physical input channels shall be capable of counting pulses of up to 100Hz. at 50% duty cycle.

Nonvolatile Program Memory Retention:

4. User-entered programming and voice messages shall be kept intact even during power failures or when all power is removed for up to ten years.

Acknowledgement:

5. Acknowledgement of an alarm phone call is to be accomplished by pressing a Touch Tone ® "9" as the alarm call is being received, and/or by returning a phone call to the unit after having received an alarm call.

Remote (PLC) Channel Monitoring Function:

6. The unit shall continuously scan all properly configured Remote Channels. The unit shall monitor remote channels which physically reside in other industrial equipment interfaced to the Verbatim Gateway via the serial interface. The unit shall be capable of interfacing to at least two PLC networks simultaneously. The unit shall be capable of monitoring any PLC data register regardless of register type, whether digital, analog, input, output or status point. Alarm criteria shall be settable according data register type. For digital remote channels, alarm criteria shall be settable for normally '0' or normally '1'. For analog remote channels, both a high setpoint and a low setpoint alarm criteria shall be settable. Violation of alarm criteria at any remote channel shall cause the unit to go into alarm state and begin dial-outs. All remote channel alarm criteria shall be settable either at the front panel of the unit or over the telephone using touch-tone commands. The unit shall be capable of writing data to any PLC data register to which writing data is a legal operation. The unit shall monitor any failure of the active serial communications channels. Upon failure of any communications channel the unit shall enter the alarm state and begin dial-outs. The unit shall be capable of transferring data between one remote channel on one serial communications network and another remote channel on a second serial communications network. The unit shall also be capable of transferring data between remote channels on a serial communications network and physical channels within the unit. The unit shall be optionally upgradeable to incorporate provision for 32, 64 or 96 total remote channels.

Input Monitoring Function:

7. The unit shall continuously monitor the presence of AC power and the status of four contact closure inputs. Unit shall optionally be field upgradeable to incorporate a total of 8, 16, 24, or 32 dry contact inputs. AC power failure, or violation of the alarm criteria at any input, shall cause the unit to go into alarm state and begin dial-outs. Unit shall, upon a single program entry, automatically accept all input states as the normal non-alarm state, eliminating possible confusion about Normally Open versus Normally Closed inputs. Further, as a diagnostic aid, unit shall have the capability of directly announcing the state of any given input as currently "Open Circuit" or "Closed Circuit," without disturbing any message programming. Each input channel shall also be independently programmable, without need to manipulate circuit board switches or jumpers, as Normally Open or Normally Closed, or for No Alarm (Status Only), or for Pulse Totalizing, or for Run Time Metering.

Run Time Meter Inputs:

8. Any dry contact input can be programmed to accumulate and report the number of hours their respective input circuits have been closed. Any such channels will never cause an alarm, but on inquiry will recite the channel's message according to the status of the input and then report the closed circuit time to the tenth of an hour. The input will accumulate and report in tenths of hours up to a total accumulated running time of 99,999.9 hours. The initial value of the Run Time Meter shall be programmable in order to agree with existing electromechanical Run Time Meters. Up to a total of 8 Run Time Meters may be programmed.

Pulse Totalizer Inputs:

9. Any dry contact input can be programmed to accumulate the number of pulses (momentary contact closures) occurring at the input. The maximum input pulse rate must not exceed 100 pulses per second, and if the rate is over 50 pulses per second, the pulses must have a 50% duty cycle. The user shall be able to program an initial starting value and a scale factor for each pulse totalizer input. The pulse totalizer input shall cause an alarm call upon reaching a user defined alarm setpoint.

Alarm Message:

10. Upon initiating an alarm phone call, the system is to "speak" only those channels that are currently in "alarm status".

Communications Protocols:

11. The unit shall interface to standard networks commonly used in industrial installations. The unit shall be capable of network communications using the Modbus RTU protocol, the Allen-Bradley DF-1 protocol, the Allen-Bradley DH-485 protocol and the Modicon Modbus Plus protocol. Additional communications protocols shall be supplied from the factory upon request.

Diagnostics:

12. The unit shall include user commands to execute diagnostics of the PLC network to determine the health of the network. The unit shall inform the user of the length of scan time for the set of all configured remote channels. The unit shall provide a complete verbal report of all programmable functions and their programmed values on command from any remote Touch Tone phone.

Speakerphone:

13. The unit shall be capable of dialing any phone number on command and function as a speakerphone.

Inquiry Message and Function:

14. Inquiry phone calls can be made directly to the unit at any time from any telephone, locally or long distance, for a complete status report of all variables being monitored, including power status.

Power Battery Backup:

15. Normal power shall be 105-135 VAC, 15 watts nominal. The product is to contain its own gel cell rechargeable battery which is automatically kept charged when AC power is present. The system shall operate on battery power for a minimum of 13 continuous hours in the event of AC power failure. A shorter backup time shall not be acceptable. The built-in charger shall be precision voltage controlled, not a "trickle charger," in order to minimize recharge time and maximize battery life available.

Phone Line:

16. The autodialer is to use a standard rotary pulse or Touch Tone "dial-up" phone line (direct leased line not to be required) and is to be F.C.C. approved. Connection to the telephone is through a 4-pin modular jack (RJ-11).

Local Data Logging:

17. The system shall include a parallel printer interface for local data logging. The local printer will automatically print out, with date and time stamp, each activity that occurs; alarms, acknowledgements, programming entries, inquiry calls, etc.. For the purpose of easy program review the user shall be able to printout on demand all user entered programming.

Public Address Broadcast:

18. The standard dialer shall provide a mini phone jack for optional connection to a local public address system. If connected to the PA system the dialer shall broadcast all alarm messages over the PA system and the telephone simultaneously.

Integral Surge Protection:

19. All power, phone line, dry contact, and analog signal inputs shall be protected at the circuit board to IEEE Standard 587, category B (6,000 volts open circuit/3,000 amps closed circuit). Gas tubes followed by solid state protectors shall be integral to the circuit board for each such line. Protectors mounted external to the main circuit board shall not be an acceptable substitute. The installer shall provide a good electrical ground connection point near the unit to maximize the effectiveness of the surge protection.

Warranty:

20. The autodialer shall be covered by a five (5) year warranty covering parts and labor performed at the Factory.

Modular Upgrades:

21. The system shall include expansion connectors to accommodate field upgrades for additional dry contact inputs, remote supervisory control outputs, and analog inputs

Additional Features: Sealed Switches, LED Indicators, Alarm Disable Warning, Talk Through:

22. All keyboard and front panel switches shall be sealed to prevent contamination. Front panel LED's shall indicate: Normal Operation, Program Mode, Phone Call in Progress, Status for each channel, AC Power Present, AC Power Failure, and Low, Discharging or Recharging Battery. On any Inquiry telephone call or On Site status check, the voice shall provide specific warning if no dialout phone numbers are entered, or if the unit is in the "alarm disable" mode, or if AC power is off or has been off since last reset. A built-in microphone shall allow anyone at a remote phone to listen to local sounds and have a two-way conversation with personnel at the autodialer.

Special Order Items:

23. The following options shall be available on specific order:
 - a) 4, 12, 20, or 28 extra contact channels (8,16,24, or 32 respectively, total.).
 - b) 1,4, 8, or 16 analog channels.
 - c) Remote supervisory control (4 or 8 outputs).
 - d) Cellular telephone communications.
 - e) Radio communications interface.
 - g) NEMA 4X (sealed) enclosure.
 - h) Thermostatically controlled heater.

Specifications subject to change without notice.

2

Installation

This section describes how to install the Verbatim Gateway autodialer and how to install a parallel printer to use the Parallel Printer Local Data Logging feature.

2.1

Location and Mounting

Choose a mounting location which is not exposed to condensing humidity or temperatures beyond the limits of 20°-130°F. This location should ideally be within 5 feet of a standard RJ-11 phone jack and a *grounded* 120 VAC power outlet.

1. Mount the Verbatim Gateway autodialer on centers of 6" x 11 3/8" using the external mounting ears on the enclosure. #10 or 3/16" bolt sizes are best.
2. Install the NEMA 4X weatherproof outer enclosure, (optional purchase).
This allows the Verbatim Gateway autodialer to be mounted outdoors as long as temperature limits are not violated. It is best to provide at least an overhead shelter to minimize direct precipitation and solar heating effects.
3. Install the heater/thermostat for cold or humid environments, (optional purchase).

The 120 VAC heater dissipates 75 watts, providing a temperature rise of approximately 30 degrees, or 60 degrees when enclosed in the optional NEMA 4X enclosure.

2.2

Wiring

Refer to the diagram for an example of the wiring connections.

1. Inspect and remove any foreign materials which might create short circuits.
2. Connect the black (negative) battery lead to the negative terminal on the gel-cell battery.
3. Plug the power cord into a *grounded* 120 VAC *outlet*.

Or, remove the power cord from the Verbatim Gateway autodialer and install well-grounded 120 VAC power to terminal strip TS3, located on the lower right of the main circuit board.

If there are any green grounding wires in place on TS3 originating from plug-in expansion cards, leave those green grounding wires in place on the terminal marked GRN (Green). If the Verbatim Gateway autodialer turns on when power is applied, turn it off with the red POWER ON/OFF key.

4. Connect dry (unpowered) contacts to the terminal strip connection points.

The connection point for basic four-channel units is terminal strip TS1, located on the lower left of the main circuit board. Note that there are four common return terminals marked "C"; any combination of these internally grounded terminals may be used. Terminal strip TS1 may be unplugged for convenience. All terminal points are screw clamp type, eliminating the need for wire termination lugs.

The contact input wires should ideally be light (18 to 24 gauge) signal wire rather than heavy power wire. This reduces problems of bulk and stiffness.

5. If your unit has 8 or more inputs, the VX32 Channel Expansion Card should be plugged into connector J4.

If your unit has this card installed, then use TS1 for common return connections only, and connect one side of each contact to the appropriately marked channel input number on the VX32 card. Leave TS1 terminals 1,2,3 and 4 disconnected.



Notes:

- ◆ The common *return* side of the contacts will need to be consolidated into not more than four wires coming into the TS1 terminals marked "C".
- ◆ Route the wires to the VX32 card so that they do not protrude above the top of the card, other wise they will interfere with the front panel board when the door is closed.
- ◆ Terminal strip TS1, and the terminal strips on the VX32 card if any, are not removable terminal blocks. Be sure that wire stresses do not result when a terminal strip becomes unplugged when the door is closed, etc.



Caution:

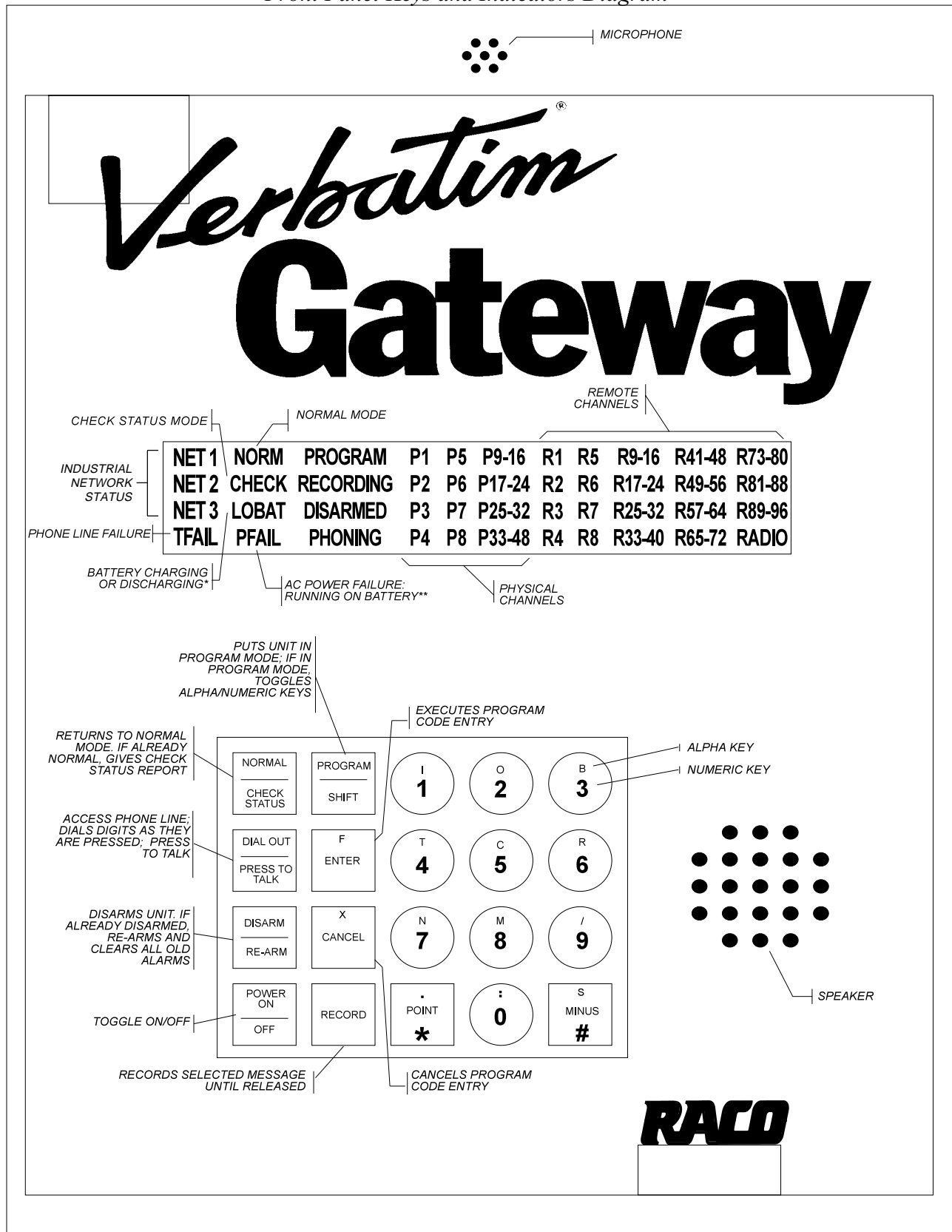
In all cases, be sure that the contact inputs are *dry* and do not provide power of their own, or the Verbatim Gateway autodialer will be damaged!



Exception:

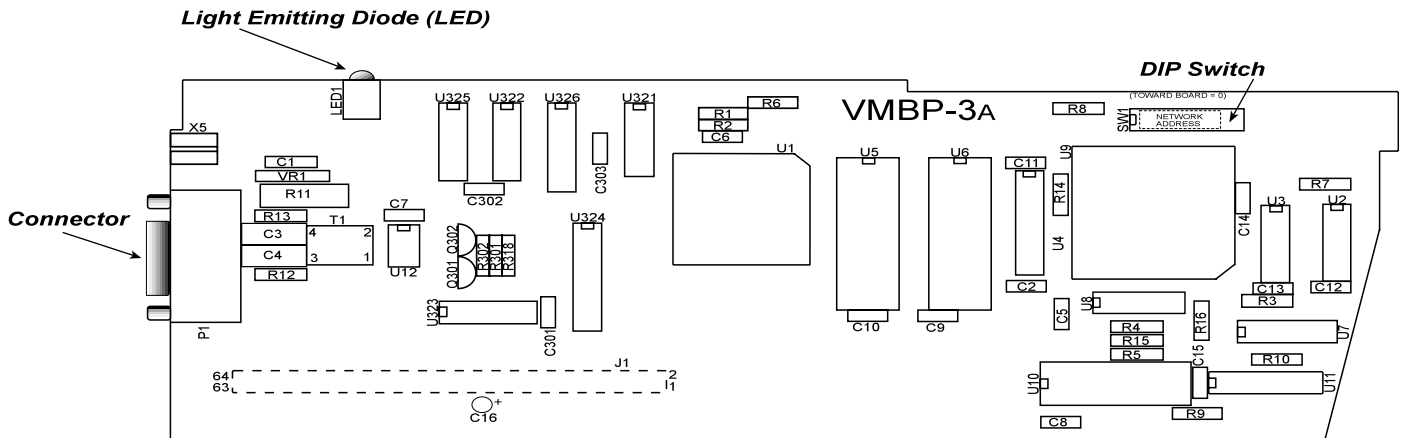
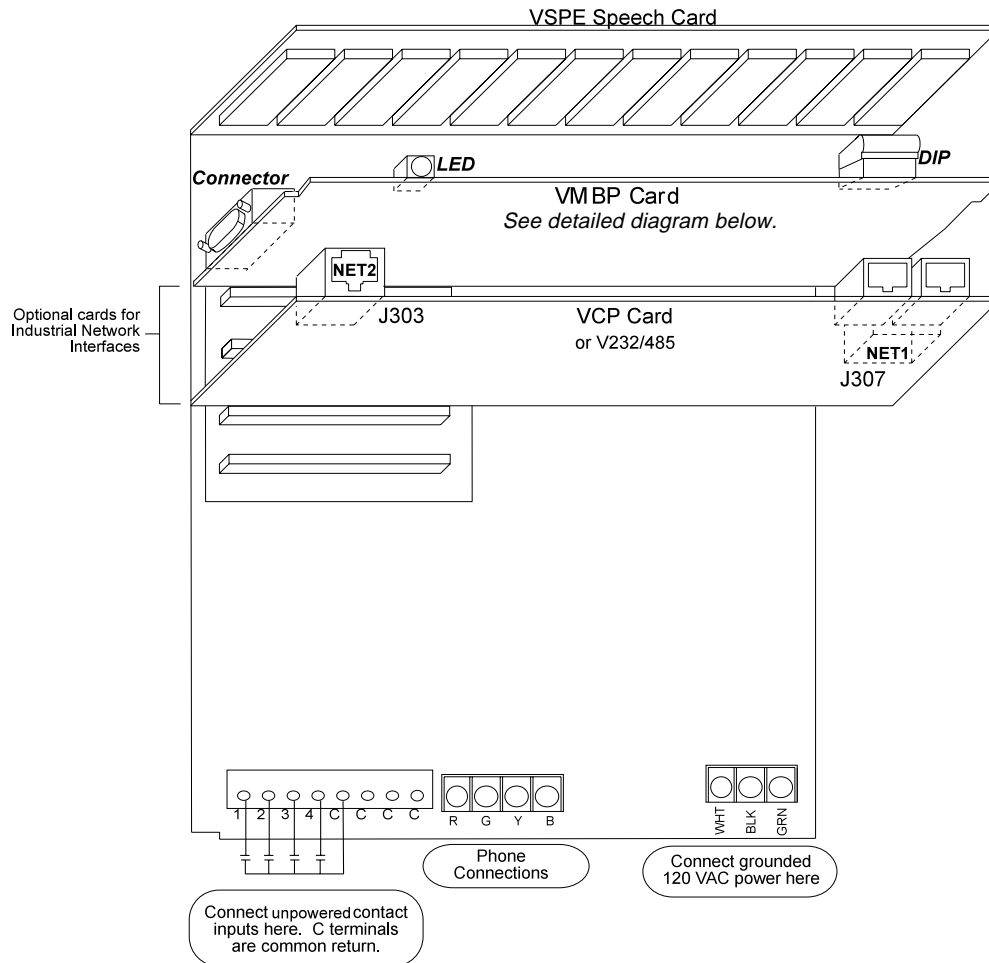
If your inputs are coming from a logic controller with TTL, CMOS or 5-volt DC logic outputs, direct connection may be made as long as the controller has the same electrical ground as the Verbatim Gateway autodialer.

Front Panel Keys and Indicators Diagram

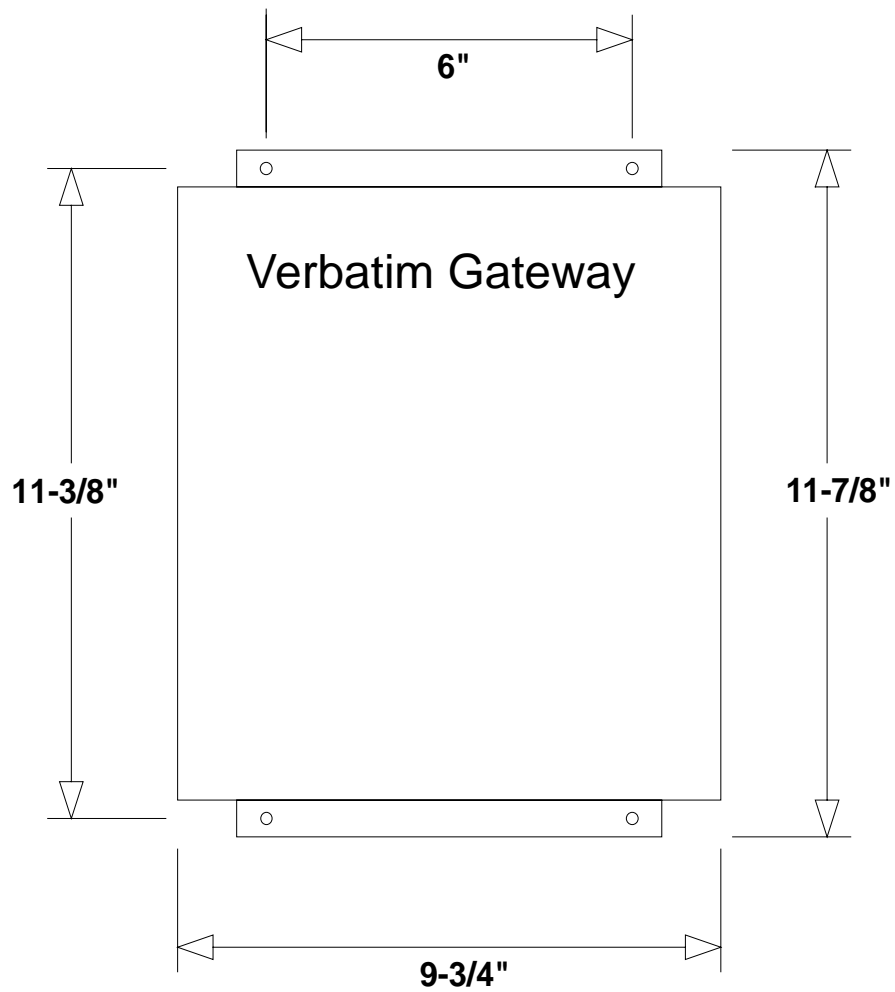


* A discharged battery may take up to a day to fully charge. ** During AC power failure, all illuminated LED's will flash to conserve battery power.

Verbatim Gateway Electrical Connection Diagram

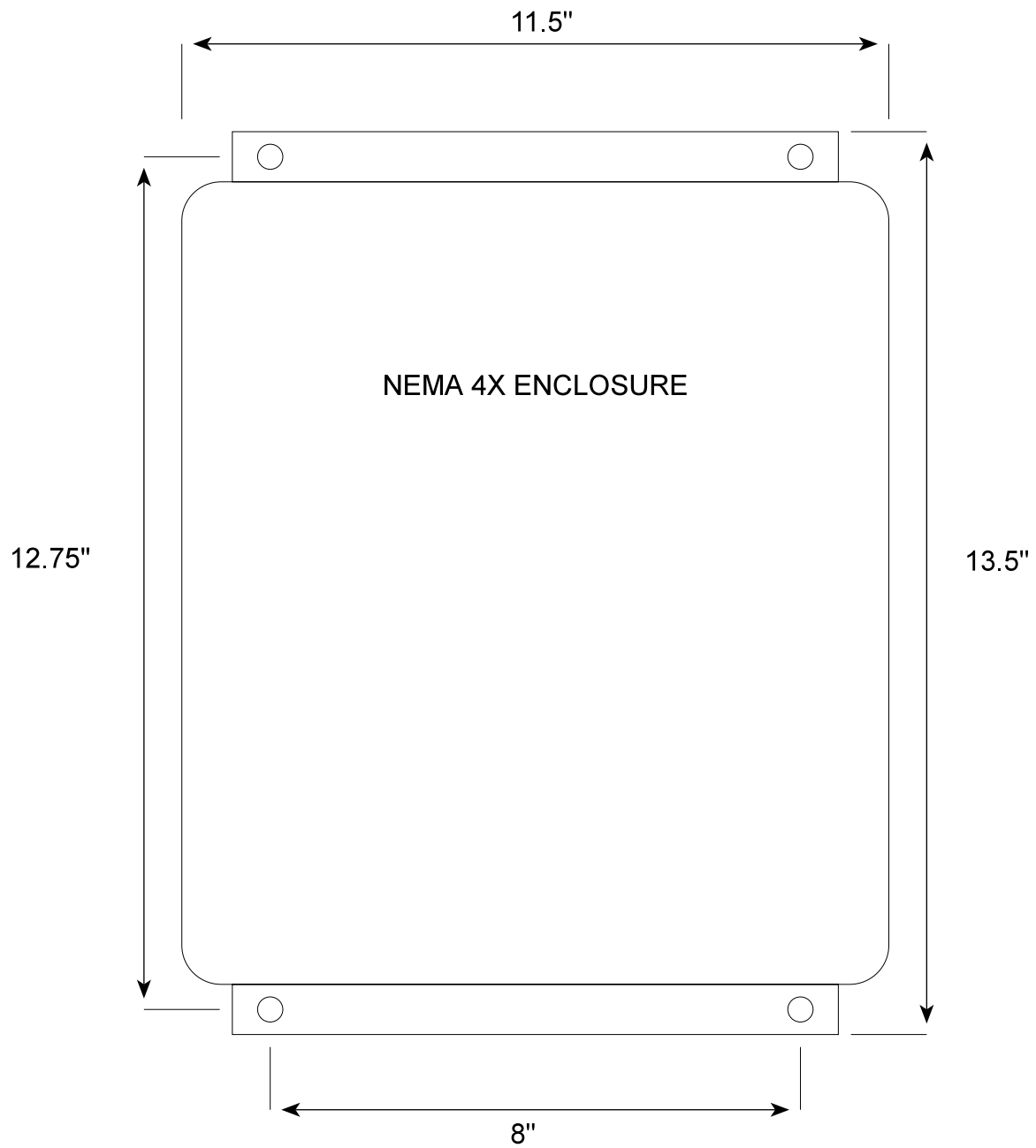


Verbatim Gateway Enclosure Diagram



RECTANGULAR MOUNTING CENTERS: 6" W x 11-3/8" H
OVERALL DIMENSIONS: 9-3/4" W x 11 7/8" H x 5" D

NEMA 4X Enclosure Diagram



RECTANGULAR MOUNTING CENTERS: 8" W x 12.75" H
OVERALL DIMENSIONS 11.5" W x 13.5" H x 5.5" D