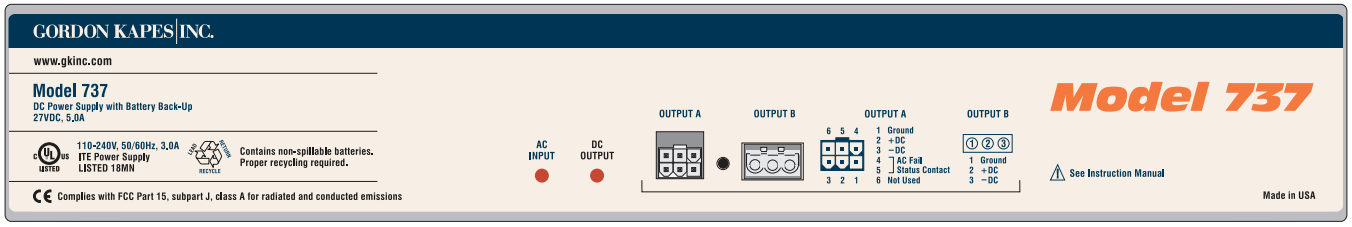
Technical Practice

Issue Preliminary, September 2005

Model 737 DC Power Supply with Battery Back-Up



1. General Description

1.1 Product Overview

The Model 737 DC Power Supply with Battery Back-Up provides a filtered and regulated source of 27 volts DC with a maximum output current of 5 amperes. The input voltage range is 110 to 240 volts, 50/60 hertz. Rechargeable batteries contained within the Model 737 provide output back-up capability in the event of an AC input voltage interruption. Under battery operation, the Model 737 will continue to supply a 5 ampere DC output for up to nominally two hours. For output loads of less than 5 amperes the battery operating time will substantially increase. The unit is completely self-contained in a compact enclosure. Mounting kits, available separately, allow the unit to be wall or rack mounted. The Model 737 is Underwriters Laboratories, Inc. Listed under their CUL-60950 ITE category.

1.2 Features

Model 737 features include LED status indicators, filtered and regulated DC output, wide AC input-voltage operating range, uninterruptible output provided by internal back-up batteries, output short-circuit protection, status contact, dual output connectors, and simple installation. Two LED indicators are provided to serve as installation, operation, and maintenance aids. The DC output is expressly designed to support a wide range of telecommunications and data applications. The AC input-voltage range, 110-240, allows the Model 737 to be used in most applications around the world.

The Model 737's circuitry provides a full on-line uninterruptible power source for important applications. Events ranging from a momentary AC power loss to a sustained AC power outage will have minimal impact on the DC output. A 5 ampere output load can be supported for up to two hours, nominal, with a direct increase in support time as the load current decreases. The internal batteries are precisely charged to ensure maximum output performance and long usable life. The charging circuitry includes "temperature compensation" to automatically adjust the charging voltage in response to changes in ambient temperature.

The Model 737's circuitry is designed for robust performance. The DC output is short-circuit and over-current protected, returning to normal operation when a fault condition is removed. An electrically isolated status contact is provided for installer-selected applications. This contact indicates when the incoming AC power has effectively failed and the Model 737 is operating under battery power.

The Model 737 is intended for wall- or rack-mounted applications. Mounting kits, available from Gordon Kapes, Inc., are purchased separately. Various wall-mounting kits are available, including specialized ones that allow co-mounting of equipment from other manufacturers. Kits are also available to allow the Model 737 to be mounted in 19- and 23-inch rack enclosures. Contact the factory for details.

A 3-position removable screw terminal strip provides access to the ground and DC output connections. Ground, DC output, and status contact interconnections are accessible using a 6-position detachable connector. AC input power is connected using a non-detachable 3-conductor cord that includes a North America-standard NEMA 5-15P plug. The plug can be replaced as appropriate for the installation location.

1.3 Physical Description

The Model 737 consists of a steel enclosure that houses a precision-fabricated circuit board, two 12 volt, 7.2 ampere-hour sealed lead-acid batteries, and related interconnection wiring. The overall dimensions are 2.9 inches (7.4 cm) high, 17.0 inches (43.2 cm) wide, 9.1 inches (23.1 cm) deep. The unit weighs 32.7 pounds (14.9 kg).

2. Applications

2.1 Primary Application

The Model 737 DC Power Supply with Battery Back-Up is intended to provide telecommunications and data applications with an uninterruptible source of 27 volts DC. The true on-line implementation ensures a reliable DC output even in the face of an uncertain AC power input. The DC output is directly applicable for equipment that requires a "–24 volt" power source.

2.2 Floating Output

The Model 737's DC output is isolated (floating) from ground, making it suitable to provide a positive or negative ground-referenced DC voltage. The DC output can float up to ±150 volts away from ground, allowing it to be connected in series with other telecommunications power supplies, e.g., ring voltage generators.

2.3 Device-Specific Interconnecting Cables

In some situations the Model 737 shipping carton may include a cable assembly that will allow direct interconnection with a specific telecommunications or data device. One end of the cable will have a 6-position plug to directly mate with the Model 737's 6-position output connector. The other end will have a connector appropriate for the device to be powered by the Model 737. This arrangement will allow for rapid, simple, and reliable installation. Contact Gordon Kapes, Inc. if your installations warrant having a custom interconnecting cable fabricated. While not appropriate when installing a limited number of Model 737 units, a custom interconnecting cable can be very cost effective when multi-site installations are contemplated.

2.4 Safety Compliance

The Model 737 has been tested and approved by Underwriters Laboratories, Inc. as a CUL (Canada-United States) Listed device under their CUL-60950 ITE category. A Listed product is one that has passed the requirements of a complete, independent unit. This helps to ensure that the Model 737 will perform in a safe manner, as well as complying with most local electrical codes.

3. Installation

3.1 Words of Caution

As with any product, installing the Model 737 requires a safety-first approach. Read the entire installation section of this practice before starting the installation process.

Warning: Handle the Model 737 with great caution! It is very heavy relative to its physical dimensions. If dropped the unit can be hazardous to people or property.

3.2 Checking for Damage

The Model 737 should be inspected for damage immediately upon receipt. A claim should be filed with the shipper if damage is found. A replacement should be ordered if necessary.

3.3 Installation Kits are Required

In all cases a mounting kit is required to install a Model 737. Typically, no mounting kit will be included in the Model 737's shipping carton. Mounting kits, purchased separately, allow units to be wall- or rack-mounted. By offering a variety of mounting options, installations can be configured to meet the exact needs of a facility. Ensure that the desired mounting kit is specified and procured before attempting to install a Model 737.

3.4 Selecting a Mounting Location

Whether rack or wall mounting is going to be performed, two factors come into play when selecting the "perfect" mounting location: unrestricted air flow and proximity to an AC outlet. Ventilation holes, located on the top, bottom, and sides of the enclosure, must remain clear to allow adequate air flow. Selecting a mounting location that provides convenient access to the designated AC outlet is also important. The Model 737 contains a 6-foot (2-meter) 3-conductor power cord with a North America-standard NEMA 5-15P plug attached.

3.5 Rack Mounting

Several different rack-mounting kits, purchased separately, are available from Gordon Kapes, Inc. Separate kits are available to allow a Model 737 to be mounted in either a 19- or 23-inch rack enclosure. Some kits allow the Model 737 to be mounted flush with the rack rails while others are designed for center mounting. Center mounting can be effective, providing superior weight balance. Included in each kit are a left and a right bracket, along with a set of fasteners. Each bracket is attached to the Model 737 using four 10-32 x ½-inch pan-head machine screws. For a secure attachment, these screws include an integral lock washer. Screws are not provided to secure the Model 737 with attached brackets to the rack enclosure. The installer must provide four screws; two per rack mounting "ear."

Begin the installation by selecting an appropriate mounting location. While the unit can be installed in any two "spaces" (3.5 vertical inches) of a standard rack, selecting a location that allows proper cooling is critical. Adequate battery life depends on maintaining the Model 737's ambient temperature as close to "room temperature" (68 degrees F or 20 degrees C) as possible. Refer to Section 5.2 of this practice for details. Attach the mounting brackets using four screws per bracket. Refer to Figure 1 for details. Then mount the completed assembly to the rack rails.

It's important to note that the Model 737's enclosure is 2.9-inches high, substantially less than the 3.5 inches taken by two full rack spaces. But with the brackets installed the completed assembly does use two full rack spaces. A gap is present between the top of the Model 737 and the bottom of the next piece of equipment. This gap is useful as it provides all-important cooling space around the Model 737. Refer to Figure 2 for details.

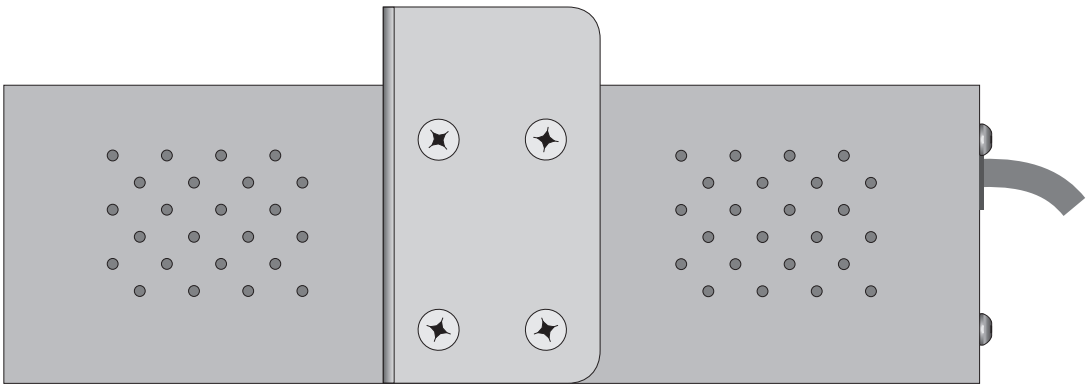


Figure 1. Right side of Model 737 cabinet showing center rack-mount bracket attached

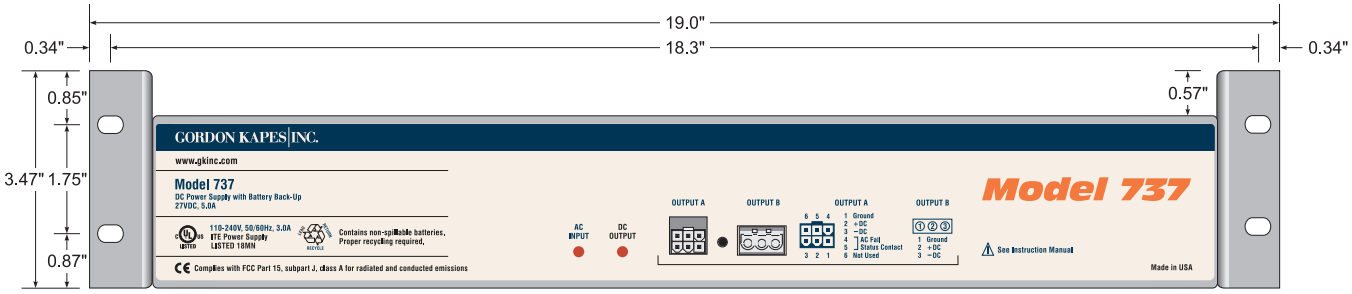


Figure 2. Front view of Model 737 cabinet showing 19-inch flush rack-mount brackets attached

3.6 Wall Mounting

Several different wall-mounting kits, purchased separately, are available from Gordon Kapes, Inc. Included in each kit are two mounting brackets and a set of fasteners. The mounting brackets are symmetrical, allowing each bracket to be mounted on either the left or right side of the Model 737's enclosure. Each bracket is attached to the enclosure by means of four 10-32 x ½-inch pan-head machine screws. For safety it's important to use the fasteners provided in the wall mounting kit as they are the correct length and include an integral lock washer. Also included in the mounting kit are four #10 x ¾-inch self-tapping screws. These are used to secure the brackets to the recommended mounting surface.

Begin the mounting process by securing the two mounting brackets to the left and right sides of the Model 737's enclosure. Ensure that four screws are installed per bracket. Refer to Figure 3 for details. When using the wall mounting kit, the Model 737 is intended for use only with a wood backboard surface (minimum thickness ¾-inch). The unit is designed for mounting in a vertical orientation, with the front panel facing left or right. Refer to Figure 4 for details. Select a mounting location that provides adequate air flow through the enclosure, as well as allowing access to a source of AC power. Refer to Section 5.2 of this practice for a review of temperature-related issues.

The actual mounting process is best done as a two-person procedure. One person should carefully hold the Model 737 into the desired mounting position. The second person should mark the locations of the four mounting screws: two on the top bracket and two on the bottom. Be certain that the correct two screw locations on each bracket are marked. The narrow part of the "keyhole" mounting slots should be on the top. Pilot holes can then be drilled at the marked locations. The #10 x ¾-inch screws provided in the mounting kit, as previously mentioned, are appropriate for use only on a minimum ¾-inch wood surface.

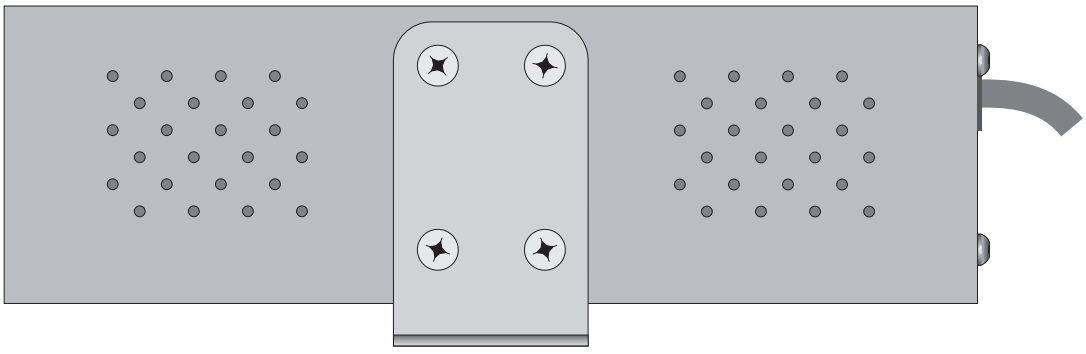


Figure 3. Right side view of Model 737 cabinet showing wall-mount bracket attached

3.7 Safety Ground Connection

One conductor of the 3-conductor AC power cord brings safety ground to the Model 737's enclosure. In addition, a separate safety ground connection must be made directly to the Model 737's enclosure. This will ensure that a safety ground connection is maintained, even if the AC power plug is unplugged from its associated outlet. A ground connection screw has been specifically provided on the back panel of the Model 737's enclosure. Using a #12 or #14 AWG wire, connect safety ground to this green-colored screw. The other end of the wire must be connected to a known-good safety ground location. Should questions arise, a competent electrician is best able to identify an adequate safety ground connection point.

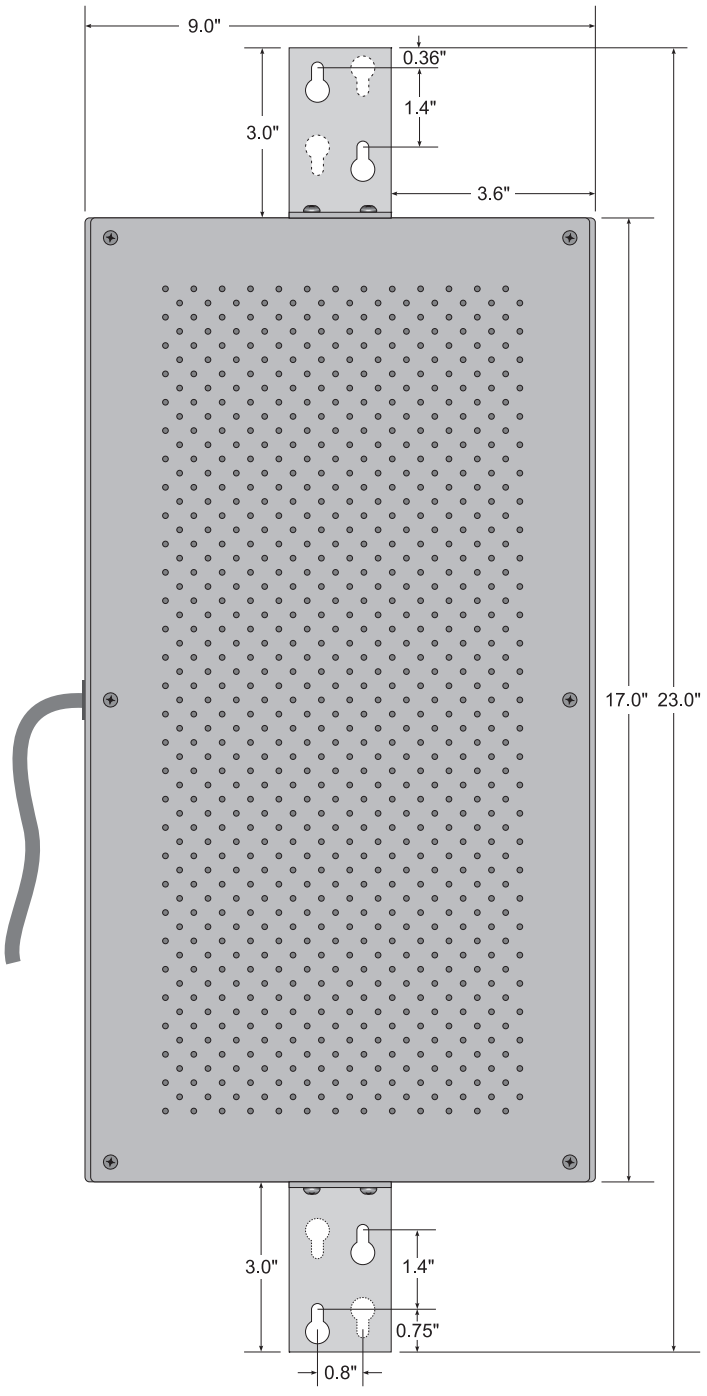


Figure 4. Recommended Model 737 wall-mounting configuration

3.8 Safety First

Before making any output connections to the Model 737, ensure that a separate safety ground connection has been made and that the AC power plug is not plugged into an outlet. In addition, be certain that the DC output is not active. This can be confirmed by observing the state of the DC output LED indicator, visible on the front of the unit. If the DC output LED is lit, refer to Section 7.3 for details on how to manually "shut down" the unit.

3.9 Ground and DC Output Connections—3-Position Terminal Strip

A 3-position removable screw terminal strip, located on the front panel of the Model 737, allows access to the ground and DC output signals. No tools are required to remove the terminal strip from the front of the enclosure. Pin 1 is connected, via the Model 737's internal circuitry, to ground. Pin 2 provides the + connection of the 27 volt DC output. Pin 3 provides the – connection of the 27 volt DC output. Refer to Figure 5 for details. Note that the ground provided on pin 1 is the same as that supplied by the AC power cord and the separate safety ground connection. This allows a safety ground connection to be provided to connected equipment. This ground connection should not be used as the primary safety ground connection for the connected equipment! This ground is provided strictly as a secondary path.

3.10 Ground and DC Output Connections—6-Position Connector

A 6-position connector, located on the front panel of the Model 737, also allows access to the ground and DC output signals. Pin 1 is connected, via the Model 737's internal circuitry, to ground. Pin 2 provides the + connection of the 27 volt DC output. Pin 3 provides the – connection of the 27 volt DC output. Refer to Figure 5 for details. Note that the ground

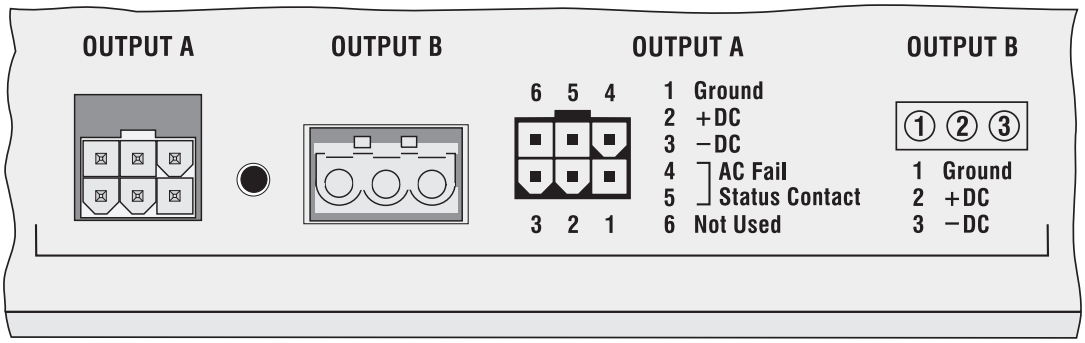


Figure 5. Front view of Model 737 cabinet showing 6-position connector and 3-position terminal strip

provided on pin 1 is the same as that supplied by the AC power cord and the separate safety ground connection. This ground allows a safety ground connection to be provided to connected equipment. This ground connection should not be used as the primary safety ground connection for the connected equipment! This ground is provided strictly as a secondary path.

3.11 Selecting the Desired DC Output Scheme

As mentioned previously, the DC output is isolated (floating) with respect to ground. The DC output can be connected directly to the equipment to be powered in this manner or it can be referenced to ground. In telecommunications applications it is typical to utilize a positive ground scheme with the output configured to be –27 volts DC with respect to safety (earth) ground. This is easily accomplished with either output connector by wiring pin 1 (ground) to pin 2 (+ DC) and using this combination as the ground connection for the load. Pin 3 (– DC) provides the –27 volt DC connection for the load.

3.12 Status Contact

The status contact provides an indication of the Model 737's AC power input. It is accessible on pins 4 and 5 of the 6-position connector. The status contact is intended for use in a variety of site-specific applications. It is isolated from ground, making it compatible with most monitoring and alarm equipment. When the Model 737 is producing 27 volts DC from the incoming AC power, nominally 110 to 240 volts, the status contact is open (not shorted). When the incoming AC power has failed (below approximately 15 volts) the status contact changes into, and maintains, a closed (shorted) state. Note that the status contact is intended only for use in low-voltage (less than 60 volts AC or DC), and low-current (less than 0.5 amperes) applications.

3.13 Status Contact Connections—6-Position Connector

The 6-position connector, located on the front panel of the Model 737, allows access to the status contact connections. Specifically, the normally open (not shorted) contact is accessible on pins 4 and 5. Refer to Figure 5 for details.

3.14 Connecting AC Power—North American Applications

As previously discussed, the Model 737 requires a source of 110 to 240 volts 50/60 hertz AC power for operation. Attached to the unit is a 6-foot (2-meter) 3-conductor power cord with a North American-standard NEMA 5-15P plug attached. This plug should be suitable for all North American applications, as well as selected international ones, where the nominal AC source is 120 volts. Before the Model 737's power plug is plugged into the AC source, confirm that a separate safety ground connection has been made. The desired DC output connections should have been made by way of the 3-position terminal strip or 6-position connector. If desired, a status contact connection should have been made. Now the power plug can be plugged into the designated AC outlet. Upon connection to AC power, the AC input and DC output LED indicators, visible on the front panel, should

light. The unit will now be producing nominal 27 volts DC. Do not secure the AC power cord to any surface or other equipment. It must hang free to allow rapid disconnection if circumstances require. Attaching the AC power cord to any other surface or other equipment creates a safety hazard and may be an electrical-code violation.

3.15 Connecting AC Power—Non-North American Applications

Most international applications will require a different type of plug from the one molded onto the end of the Model 737's AC power cord. This can be easily remedied by replacing the existing NEMA 5-15P plug with one applicable for the location. Begin the process by cutting off the existing plug. Be careful to preserve as much of the cord length as possible! The wire colors used by the Model 737's power cord have the internationally recognized color code. The plug should be terminated accordingly:

Connection	Wire Color
Neutral (N)	Light Blue
Line (L)	Brown
Earth/Ground (E)	Green/Yellow

Before mating the newly-attached power plug to the source of 110 to 240 volt AC power, confirm that a separate safety ground connection has been made. The desired DC output connections should have been made by way of the 3-position terminal strip or 6-position connector. If desired, a status contact connection should have been made. Now the power plug can be plugged into the designated AC outlet. Upon connection to AC power, the AC input and DC output LED indicators, visible on the front panel, should light. The unit will now be producing nominal 27 volts DC. Do not secure the AC power cord to any surface or other equipment. It must hang free to allow rapid disconnection if circumstances require. Attaching the AC power cord to any other surface or other equipment creates a safety hazard and may be an electrical-code violation.

4. Testing and Operation

4.1 Installation Review

By this point, the desired connections should have been made between the Model 737 and the associated equipment. A safety ground connection should have been made to the ground screw located on the back panel of the Model 737. The power plug should have been plugged into the selected AC outlet. Confirm that the power cord is hanging free. The AC input and DC output LED indicators should be lit steadily. If the DC output LED does not light a wiring error may exist; most likely a short or over-current condition is present. Check the installation and refer to Section 6–Incorrect Operation of this practice for troubleshooting assistance.

4.2 Status LEDs

The Model 737 contains two LED status indicators which are visible on the front panel of the unit. The AC input LED lights steadily whenever the AC input is in excess of approximately 75 volts. The DC output LED lights steadily whenever a DC output is being produced, regardless of whether the unit is operating from incoming AC power or the internal batteries.

4.3 Testing the Associated Equipment

Now that 27 volts DC is being produced, check each piece of equipment that is being powered by the Model 737. If possible, use a digital voltmeter to check the DC output for nominal 27 volts DC; a reading of 26 to 28 volts would be considered normal when AC power is present and the batteries are fully, or nearly fully, charged. A reading of 21 to 27 volts would be considered normal when the AC power input has failed and the unit is operating under battery power. If the status contact has been utilized, check the associated equipment to ensure that it recognizes the Model 737's normal and AC failure operating states.

4.4 Testing Battery Operation

Warning: The testing method described in this section makes the assumption that a safety ground connection has been made to the ground screw located on the back panel of the Model 737's enclosure. This dedicated

ground ensures that a safety ground connection is maintained even if the AC power plug is disconnected from the AC outlet. If you are uncertain whether this safety ground connection has been made, review Section 3.7 of this practice.

The Model 737 does not include a direct means of placing the unit under battery operation. This design decision was made to enhance the reliability of the system and prevent "button pushers" from accidentally placing and leaving the unit in a test mode. To test the Model 737's back-up capability simply unplug the unit's power plug from its associated AC outlet. The AC input LED should no longer be lit, while the DC output LED should remain lit. If the status contact has been connected to other equipment, ensure that this AC power fail state is recognized. After observing correct battery operation, reconnect the Model 737's power plug into the AC outlet. The AC input LED should again light; the DC output LED should remain lit.

4.5 Placing the Model 737 in Service

The unit should now be ready for a long, uneventful life. Normal operation should find the two status LEDs lit steadily.

5. Technical Notes

5.1 Battery Charging Time

The rate at which the Model 737 will charge its internal batteries is directly related to the output load. The greater the output load the longer the battery recharge time will be. This is because the battery charging and DC output functions share the same DC energy that is generated by the circuitry. With the DC output loaded to its 5 ampere maximum rated value, the recharge time for fully discharged batteries is on the order of 24 hours. As the output load decreases, more energy is available to charge the batteries. An output load of 1 ampere will reduce the recharge time to something less than six hours. With no load on the DC output, the recharge time will be in the range of just three hours. Note that in most "real world" cases the batteries will supply energy for only limited periods of time before being recharged. This is because most AC failures are of a relatively short duration. A recharge process will generally start with batteries that are not in their fully discharged state. In this more typical scenario the recharge time would be considerably less than the 24-hour worst-case figure.

5.2 Optimizing Battery Life

As previously mentioned, two 12 volt, 7.2 ampere-hour sealed lead-acid batteries are contained in the Model 737. A large book could be written on how various factors impact the long-term performance of such batteries. But instead of boring you with a book, we'll simply review a few of the issues. The battery charging voltage, charging rate, discharge rate, and discharge depth all greatly impact the length of time a battery is able to provide adequate performance. (This "adequate" performance is typically measured in years of life.) The Model 737's circuitry was carefully optimized to correctly handle these parameters. This approach is conservative, sacrificing a faster charging time but providing a more "gentle" treatment of the battery's internal chemistry. When the Model 737's output is supplying power from the batteries the maximum discharge rate is limited. The output also automatically "shuts down" when reaching a specified voltage value. By limiting the maximum output current and preventing deep discharge the batteries are protected from damage.

The one factor that is installation dependent is ambient temperature. A simple rule of thumb is to strive to locate the Model 737 in an environment that is maintained at a 68-degree Fahrenheit (20-degree Celsius) ambient temperature. This is an excellent temperature as it promotes both optimum battery life and good battery performance. Locating the unit where there's that an elevated ambient temperature will serve as a very effective destroyer of battery life. For example, changing the ambient temperature to 104 degrees F (40 degrees C), compared to the recommended 68 degrees F (40 degrees C), will reduce the battery life by well over 50%! But whatever the ambient temperature, the Model 737's air vents must remain clear. This ensures that air flow can be maintained.

6. Incorrect Operation

6.1 Review Practice

Should problems arise in the operation of the Model 737, please review Section 3–Installation and Section 4–Testing and Operation in this practice.

6.2 AC Outlet

If the AC input LED does not light, re-confirm that the AC outlet is functioning by plugging another piece of equipment into it. If the AC outlet is okay, but the AC input LED doesn't light, the Model 737 needs to be returned to the factory for repair.

6.3 Output Overload or Short Condition

Finding the AC input LED lit, while the DC output LED is not, would typically indicate that an overload condition is being placed on the Model 737's DC output. This will occur whether the output is being fully shorted or has a load that is attempting to draw more than approximately 5 amperes. Carefully recheck the wiring and equipment being powered. "Shed" some or all of the load to ensure that an overload is not present. Once an acceptable load is connected, the Model 737 may restart and the DC output LED will light steadily. In some cases the output protection circuitry may require that the entire load be removed before the DC output again becomes active. Simply remove all loads from the output, observe the DC output LED until it lights, then reconnect the loads. Note that it may take several minutes for the protection components to cool sufficiently to again allow normal operation.

6.4 Internal Fuses

The Model 737 contains two internal fuses. One is connected in series with the incoming AC power. This fuse will open ("blow") if the unit experiences serious trauma. The other fuse is connected in series with the batteries. It will open if the batteries are incorrectly connected or if excessive current is drawn from, or sent to, the batteries. An open fuse always indicates that the unit must be returned to the factory; neither fuse is intended for user replacement. Removing the unit's cover will expose you to hazardous voltages.

6.5 Application Limitations

The Model 737 was designed to operate correctly in many applications. However, Gordon Kapes, Inc. does not guarantee that the Model 737 will be compatible with every specific application. All functions of the installed Model 737 should be thoroughly tested before the unit is placed into service.

6.6 Save Time

You are encouraged to email or call Gordon Kapes, Inc. for technical support. Please refer to the web site, www.gkinc.com, for the applicable email address and telephone number. We do not mind "walking" you through an installation, or performing a verbal review prior to you actually getting started. Please have these items with you: a copy of this technical practice, system configuration documentation, and adequate tools, including a digital volt-ohm meter (VOM).

7. Maintenance

7.1 Maintenance

The Model 737 requires no normal maintenance. It is recommended that the unit be examined not less than every three months to ensure that the vents on the enclosure are unobstructed and free of dirt.

7.2 Battery Replacement

The Model 737's internal batteries should provide reliable service for a minimum of three years. Refer to Section 5.2 of this technical practice for details. Variables that can affect battery life include the number of charge/discharge cycles and ambient temperature. A label, attached to the back of the enclosure, indicates when the batteries were installed at the factory. This can be used to "guess" when the batteries will require replacement. However, the only true test of battery quality is to place a known load across the Model 737's DC output,

disconnect the AC input power to place the unit under battery operation, and then measure the time until the unit automatically "shuts down." If the measured time deviates significantly from the published specification, the batteries need replacement.

Warning: The batteries are not user replaceable, requiring that the Model 737 be returned to the factory or an authorized service center. Removing the Model 737's cover will expose you to potentially lethal voltages—don't do it!

7.3 Manual Battery Shutdown

By design, the Model 737 doesn't contain an on/off switch. The nominal 27 volt DC output is intended to be provided whether incoming AC power is present or not. During battery operation, only when the batteries have discharged to their minimum acceptable voltage level will they automatically disconnect. This protects the batteries from damage due to deep discharge. There may be cases, e.g., testing or storage, where a Model 737 will need to be manually "shut down." The Model 737 provides a "secret" button to allow this to happen. Personnel at the factory use this button to manually shut down new units, allowing them to be shipped with near-fully charged batteries. The button is located on the front panel, between the two output connectors. The button is accessible through a small hole in the panel, preventing accidental activation.

With the Model 737 operating under battery power (incoming AC power disconnected), press the button with a small non-conducting tool. To indicate that the unit has shut down, the DC output LED will not be lit. At this point the batteries are disconnected from any load. The Model 737 can now be stored for up to six months without significant adverse effect on the batteries. Note that the storage temperature should not exceed the recommended 68 degrees F (20 degrees C) value. To return the Model 737 to normal operation, simply reconnect incoming AC power; both LEDs should light.

8. Repair and Replacement

8.1 Not So Fast

Statistically, most equipment returned to Gordon Kapes, Inc. for repair actually has nothing wrong with it. An email or telephone call to Gordon Kapes, Inc. technical support can often help get the equipment operating correctly. We don't mind spending time with our customers getting a site up and running.

8.2 Repairs

In the event repairs are ever needed on your Model 737, they should only be performed by Gordon Kapes, Inc. Do not remove the cover as it will expose you to hazardous voltages. If you determine that the Model 737 is defective, we request that you obtain a return authorization number prior to returning any equipment.

9. Specifications

Input Voltage: 110-240 V, 47-63 hertz

Input Current: 3.0 A, maximum

Input Power Cord:

Type: 3-conductor with NEMA 5-15P plug
Length: 6 feet (2 meters), nominal, not detachable

Output Voltage:

27 Vdc, nominal, with AC input voltage present
24 Vdc, nominal, battery operation; no AC input voltage present

Output Current: 5.0 A continuous, maximum

Recommended Minimum Output Load Current: 100 mA (maintains correct charge voltage)

Output Ripple Voltage: less than 100 mV p-p; "talk-battery" quality

Output Protection:

Type: solid-state, automatic reset

Current required for automatic output shutoff: 5.2 A, nominal

Batteries: 2

Type: 12 V, 7.2 Ah, sealed lead-acid (Panasonic LC-R127R2P)

Transportation: classed as "Non-Spillable"

Battery Operating Time (Nominal):

1 hour, 5.0 A output load

2 hours, 2.5 A output load

7 hours, 1.0 A output load

14 hours, 0.5 A output load

Battery Charge Time (Nominal):

36 hours, 5.0 A output load

12 hours, 2.5 A output load

2.5 hours, no output load

Figures reflect charging process beginning with batteries in fully discharged state

Automatic Battery Disconnect:

Type: solid-state

Operating Threshold: 21 V, nominal

Input-to-Output Efficiency: 89%, nominal, measured with 5.0 A output load

Output Connector—3-Position:

Functions Supported: ground, DC output

Type: Phoenix Contact (or equivalent) pluggable terminal strip, 0.2-inch (5.08 mm) contact centers

Mating Plug (included with Model 737): Phoenix part number IC2,5/3-ST-5,08 (Phoenix order number 1786187) or equivalent

Output Connector—6-Position:

Functions Supported: ground, DC output, status contact

Type: Molex® Mini-Fit, Jr.™ 6-position dual row header

Mating Connector: Molex Mini-Fit, Jr. 6-position dual row receptacle, suggested part number 39-01-2060; suggested crimp-on female terminals part number 39-00-0039

Interconnecting Cables:

One or two interconnecting cables required for every installation; purchased separately, not included with Model 737. Various lengths and configurations available from Gordon Kapes, Inc.

LED Status Indicators: 2

Functions: AC input present, DC output present

Status Contact:

Action: normally open (not shorted)

Type: sealed bifurcated relay contact, isolated

Rating: 0.5 A maximum at 60 Vac or 60 Vdc (resistive)

Function: closes (shorts) upon loss of AC input power, defined as nominally less than 85 Vac

Safety Compliance: Underwriters Laboratories, Inc. CUL-60950 ITE Listed

Radiated Noise Compliance: complies with FCC Part 15, subpart J, class A for radiated and conducted emission

Operating Environment:

68 degrees F (20 degrees C), nominal. Intended for operation in commercial environment where air conditioning is present. Operation at temperatures greater than recommended will significantly reduce battery life.

Dimensions (Overall):

2.9 inches high (7.4 cm)
17.0 inches wide (43.2 cm)
9.1 inches deep (23.1 cm)
Figures reflect no mounting brackets attached

Mounting:

Wall, 19-inch rack, or 23-inch rack mounting kits available, purchased separately. Rack mounting requires two standard rack spaces (3.5 vertical inches). A mounting kit is required for every installation; not included with Model 737.

Weight:

32.7 pounds (14.9 kg)
35.2 pounds (16.0 kg), shipping weight
Figures reflect no mounting brackets attached

Specifications and information contained in this technical practice subject to change without notice.