RF

ORANGE COUNTY AMATEUR RADIO CLUB, INC.

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The Prez Sez...
By Dan KI6X

Another month and another attempt at a new missive from the President (and the search for a new picture). We did have fun at our Board meeting collecting old ARRL Field Day shirts and having a group photo taken. You should see that picture around and we are submitting to the ARRL Club News to see if it gets out more to advertise our club.

Please, please, please read the article on Field Day help needed. FD has run stupendously with limited volunteers doing the planning and we would like to spread this planning out. Of course, the band captains and operators are the engine, but the planners are the fuel and mechanics to get it and keep it running (was that an acceptable analogy?)

We have a couple more interesting speakers the next two months. Both will be on Zoom, but I do ask that you attend in person if you can (watch on the big screen). We have a raffle in April, snacks each month, and great camaraderie among the club members. It is part of the club experience being with fellow members. We are doing Zoom so we can get speakers that are not local.

My picture this month needs a couple of explanations. Shirt: 2026 Baker-to-Vegas for Orange PD. I worked first shift in the follow vehicle that follows the runners. 94 degrees this year (last Saturday of March), brutal. It was high 70's last year. Hat: From a guy who is originally from Michigan, now lives in Philippines mostly, some Kyrgyzstan, and came to the US to do his last shipboard operator support before retiring. He has callsigns in all those 3 countries plus the UK. DU7ET is his most used call (he also brought a QSL for our recent 40M phone and CW that I needed DU confirmed). He bought one of my TS-850s and had the hat made for me for holding it for him until he got here (2-3 months).

Dan Violette, KI6X
President

NEXT GENERAL MEETING

Patrick Bolan
KJ7ZSU

Presents
"Geochron World Clocks"

April 17th, 2026, at 7pm
at the
American Red Cross
Orange County Chapter
Santa Ana, Room 208

NEXT BOARD MEETING

Saturday, May 2nd, 2026

See www.w6ze.org for more info

In This Issue

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Monthly Events

Membership Meetings*
Time: 7:00 PM
When: 3rd Friday of each Month
Red Cross Orange County, Room 208
600 N Parkcenter Dr, Santa Ana
(Replaced by the Christmas Party in December.)

Board Meetings
First Saturday of each Month
Board will handle Club business now IN-PERSON.

Club Nets (Listen for W6ZE)

10M ~ 28.375 MHz SSB
Wed- 7:30 PM - 8:30 PM
Net Control: Corey, KE6YHX
Alternate Net Control: AJ, KN6WNO

2M ~ 146.55 MHz Simplex FM
Wed- 8:30 PM - 9:00 PM
Net Control: Corey, KE6YHX
Alternate Net Control: AJ, KN6WNO
Echolink Node: KK6TRC-L

75M ~ 3.883 MHz LSB
Tue @ 8:00 PM
Net Control: Corey, KE6YHX

Other Nets

Catalina Amateur Repeater Association (CARA)
147.090 MHz (+0.600 MHz) No PL
Monday - Friday
9:00AM & 9:00PM
Prg. Director. Tom W6ETC
COME JOIN US

OCARC 2026 DUES:

Membership period is:
1 January to 31 December

Individual New or Renewal:	$30
Family New or Renewal:	$45
Teen New or Renewal:	$15

***New Member Dues** are prorated quarterly and includes a badge:*

Additional Badges[1]	$3

Use one of our interactive online forms to calculate current prices, join, renew, or order badges:

https://www.w6ze.org/FormsShortcut.html

[1] $3 or less + mailing. See form.

FIELD DAY 2026 – Volunteers Will Be Needed

More details on the history were covered last month, but we will need more volunteers for roles to take a lot of the load off the "FD Leader." We will start asking this month so let us know you are interested in one of the following roles:

- Band captains: They plan a complete station (radios, computers, filters, operators, etc.)
- Food: Making sure food is handled (can be served, ordered, tell everyone that they are on their own and have some water and snacks available, etc.)

Friday Coordinator to oversee the following,

- Friday set-up: Verify all club equipment is being picked-up, delivered, a truck is needed. Schedule tower time so we get enough to help raise them.
- Tent order/delivery: Order and accept delivery, return Sunday, and pay the vendor.
- Friday night security: Someone sleeping over to watch the equipment. We have had campers, tents, and even sleeping in a car parked inside the operating tent(s).

Saturday Coordinator to oversee the following,

- Saturday morning opening: Make sure gate is opened early enough so band captains can get in and set-up the rest of the equipment.
- Generator Leader: Make sure generator ready, set-up, enough propane, etc.
- Saturday On-call: Be on-call to help with any panics Sat during the operation.
- Saturday night security: More equipment now set-up from the operating day that both tents need to be monitored overnight. Usually someone parks or camps in/at each tent. Operations do start about 6AM Sun and may not end until midnight Sat night. If we have the overnight operators, we would keep it going, but have not had that in a few years.

Sunday Coordinator to oversee the following,

- Sunday morning opening: Unlock gates for Sunday crews.
- Sunday On-call: Be on-call to help with Sunday operating time panics.
- Sunday tear-down: After tear-down, verify all club equipment is taken back to storage.
- Verify the grounds are cleaned up and we are out of there without leaving a mess.
- We are out by 2PM at the latest, and everything is in storage within another hour or so.

Remember Ron has done a lot of this on his own so if we can assign leaders for these roles then everyone can enjoy the event more.

Dan KI6X

OCARC April Meeting
SPEAKER SPOTLIGHT

Patrick Bolan, KJ7ZSU
Owner of Geochron LLC

This month we are pleased to have Patrick Bolan of Geochron, which is a specialized map/clock that DXers love. He will be presenting via Zoom.
20 years ago, Patrick was working as a construction manager for Home Depot, and saw his 1st mechanical Geochron in a conference room. 10 years later, he bought an old Geochron that – Patrick discovered – he could not repair.

He took the clock to the only place in the world that still made Geochrons… just a mile from his house. He felt a moment of destiny, and told the retiring owners, "If you were ever interested in selling his company, I'd like to be a part of that conversation."

He couldn't afford their price, but offered his own house as collateral to purchase Geochron's tools and inventory.

Today, the mechanical clock is built and restored in Colorado, and Patrick manages the Geochron Atlas product he created from the Pacific Northwest with a small team of local developers. Every Atlas is kitted in his basement.

Patrick has a talent for persistence. He's a 2x Ironman triathlete, 2 graduate degrees, married 30 years, and recently finished a 23,000 mile motorcycle tour to visit 48 Geochron owners in 48 states. And he'd like to install a ham rig on his motorcycle someday.

Impressive Parks On The Air (POTA) Awards Earned by W6ZE Field Days Over the Years!

As announced in the RF last month – Unknowingly, we have earned a bunch of POTA awards, merely by operating in Field Days (winter and summer). We are on the verge of achieving their Worked All States POTA award – all we need is either Maine or Mississippi, because we have the wildcard DC! We have 455 parks worked on our way to 500!
The following is a table of the awards that we have earned, plus 2 more pages of some of the certificates. Congratulations to all of us!

Earned Awards

Date First Granted	Award Name	Description	Badge	Endorsements
2026-02-16 09:12	Bronze Hunter	Working 10 different units		10M, 15M, 20M, 40M, 80M, CW, DATA, FT8, PHONE
2026-02-16 09:12	Silver Hunter	Working 20 different units		10M, 15M, 20M, 40M, CW, DATA, FT8, PHONE
2026-02-16 09:12	Gold Hunter	Working 30 different units		10M, 15M, 20M, 40M, CW, DATA, PHONE
2026-02-16 09:12	Platinum Hunter	Working 40 different units		10M, 15M, 20M, 40M, CW, PHONE
2026-02-16 09:12	Diamond Hunter	Working 50 different units		15M, 20M, 40M, CW, PHONE
2026-02-16 09:12	Sapphire Hunter	Working 75 different units		15M, 20M, 40M, CW, PHONE
2026-02-16 09:12	Arizona Agave Hunter	Working 100 different units		15M, 20M, 40M, CW, PHONE
2026-02-16 09:12	Enrubio Hunter	Working 200 different units		20M, PHONE
2026-02-16 09:12	Ouachita Mountain Goldenrod Hunter	Working 300 different units		PHONE
2026-02-16 09:12	Stenogyne Kanehoana Hunter	Working 400 different units		
2026-02-16 09:12	Late Shift Hunter	Making 100 QSOs as a hunter during the Late Shift	200	
2026-02-16 09:12	Oasis Hunter	Worked a single entity 20 times	US-7490	Pawnee National Grassland
2026-02-16 09:12	DX Hunter	Hunting 5 different DX Entities	5	

75

Sapphire Certificate

HUNTER

That

Orange County Amateur Radio Club

W6ZE

has submitted proof of working **75** unique reference areas in the Parks on the Air program, this certificate is hereby presented in recognition of this outstanding achievement.

02/16/2026
Date

Jason Johnston, W3AAX, POTA Coordinator

75 75 75

Stenogyne Kanehoana

400 *Hunter Award*

That

Orange County Amateur Radio Club

W6ZE

has submitted proof of working **400** unique reference areas in the Parks on the Air program, this certificate is hereby presented in recognition of this outstanding achievement.

Jason Johnston, W3AAX, POTA Coordinator

02/16/2026
Date

Photo: David Eickhoff via Wiki Commons


POTA
PARKS ON THE AIR
Hunter Award
That
Orange County Amateur Radio Club
W6ZE
has submitted proof of
having 200 QSOs
during the late shift.
late shift
Jason Johnston, W3AAX, POTA Coordinator
02/16/2026
Date


DX
HUNTER
POTA
PARKS ON THE AIR
That
Orange County Amateur Radio Club
W6ZE
has submitted proof of having contacts with
5 different DX entities.
02/16/2026
Date
Jason Johnston, W3AAX, POTA Coordinator
5

RadioActivity
April / May 2026

Upcoming Activities:

APRIL

- **Worked All Provinces of China:** 0600 UTC Saturday April 18 through 0559 UTC Sunday April 19.
- **ARRL Rookie Roundup SSB:** Sunday April 19, 1800 UTC through 2359 UTC.

May

- **7TH Call Area QSO Party:** 1300 UTC Saturday May 2 through 0700 UTC Sunday May 3
- **New England QSO Party:** 2000 UTC Saturday May 2 to 2359 UTC Sunday May 3
- ***CQ World Wide WPX Contest/CW:** 0000 UTC Saturday May 30 through 2359 UTC Sunday May 31

* Indicates club entries are accepted
** Indicates team entries are accepted

Note: When submitting logs for ARRL Contests indicate your club affiliation as "Orange County ARC"

State QSO Parties:

- **Georgia QSO Party:** 1800 UTC Saturday April 11 to 0359 UTC Sunday April 12 and 1400 to 2359 UTC Sunday April 12
- **Missouri QSO Party:** 1400 UTC Saturday April 11 to 0400 UTC Sunday April 12 and 1400 to 0200 UTC Sunday April 12
- **New Mexico QSO Party:** 1400 UTC Saturday April 11 to 0200 UTC Sunday April 12
- **North Dakota QSO Party:** 1800 UTC Saturday April 11 to 1800 UTC Sunday April 12
- **Nebraska QSO Party:** 1400 Saturday April 25 to 0200 UTC Monday April 27
- **Michigan QSO Party:** 1600 UTC Saturday April 18 to 0400 UTC Sunday April 20
- **Florida QSO Party:** 1600 UTC Saturday April 25 to 0159 UTC Sunday April 26 and 1200 to 2159 UTC Sunday April 26
- **New England QSO Party:** 0200 UTC Saturday May 2 to 0500 UTC Sunday May 3 and 1300 to 2400 UTC Sunday May 3
- **Indiana QSO Party:** 1500 UTC Saturday May 2 to 0300 UTC Sunday May 3
- **Delaware QSO Party:** 1700 UTC Saturday May 2 to 2359 UTC Sunday May 3

Repeating Activities:

- **SKCC** Weekend Sprintathon (Straight Key CW) on the first weekend of the month after the 6TH of the month. 1200 Sat. to 2359Z Sunday.
- **SKCC** Sprint (Straight Key CW) 0000Z to 0200Z on the 4th Tuesday night (USA) of the month.
- **CWops Mini-CWT** Every Wednesday 1300 UTC to 1400UTC 1900 UTC to 2000 UTC and Thursday 0300 UTC to 0400 UTC
- **K1USN Slow Speed Test:** (CW, 20WPM Max.) Every Friday 2000 UTC to 2100 UTC Every Sunday night at 0000 UTC to 0100 UTC Monday
- **ICWC Medium Speed Test:** (CW, 25WPM Max.) Every Monday 1300 UTC to 1400 UTC 1900 UTC to 2000 UTC and Tuesday 0300 UTC to 0400 UTC

OCARC Club Nets:

- **10 Meter Net:** Every Wednesday night at 7:30 - 8:30 pm Local Time. SSB 28.375 MHz
- **2 Meter Net:** Every Wednesday night at 8:30 - 9:30 pm Local Time. FM Simplex 146.55 MHz

Other Links:

- ARRL Contest Calendar
- VOACAP Online for Ham Radio

Send an email to *Ron W6WG, w6wg@w6ze.org to have your favorite activity or your recent RadioActivity listed in next month's column.*

73, Ron W6WG

Heathkit of the Month #131:
by Bob Eckweiler, AF6C

HOME, AUTO, BOAT.

Heathkit GD-39 / GD-49
The "Informer®" Ultrasonic Intrusion Alarm

Introduction:
Well, it's April again, and in celebration of April Fool's Day, it's time to present one of the more unusual Heathkit products. Our own club VP, Tim – N6GP, passed this kit on to me.

In 1969 Heathkit started a new line of "home protection" kits. A two-page layout in that year's main catalog (810-69 - pages 26 & 27)[1]. announced the GD-77, GD-87 and GD-97. They are a "Receiver - Alarm", a "Smoke - Heat Detector/Transmitter" and a "Utility Detector/Transmitter," respectively. Three accessories were also offered; the GDA-97-1, -2 and -3. They are switches for windows, for doors and a 133° F heat sensor. The GD-77 sits beside your bed; A GD -87 is located wherever fire might likely occur, like the garage, kitchen and furnace room. A GD-97 is located wherever an on-off sensor, or multiple sensors are located. The GDA-97-1 and -2 are switches that can sense a window or door has opened. The GDA-97-3 detects high heat. While these sensors have to be wired to the GD-97, all three devices communicate over the house power lines.

Here is a link to the index of Heathkit of the Month (HotM) articles:

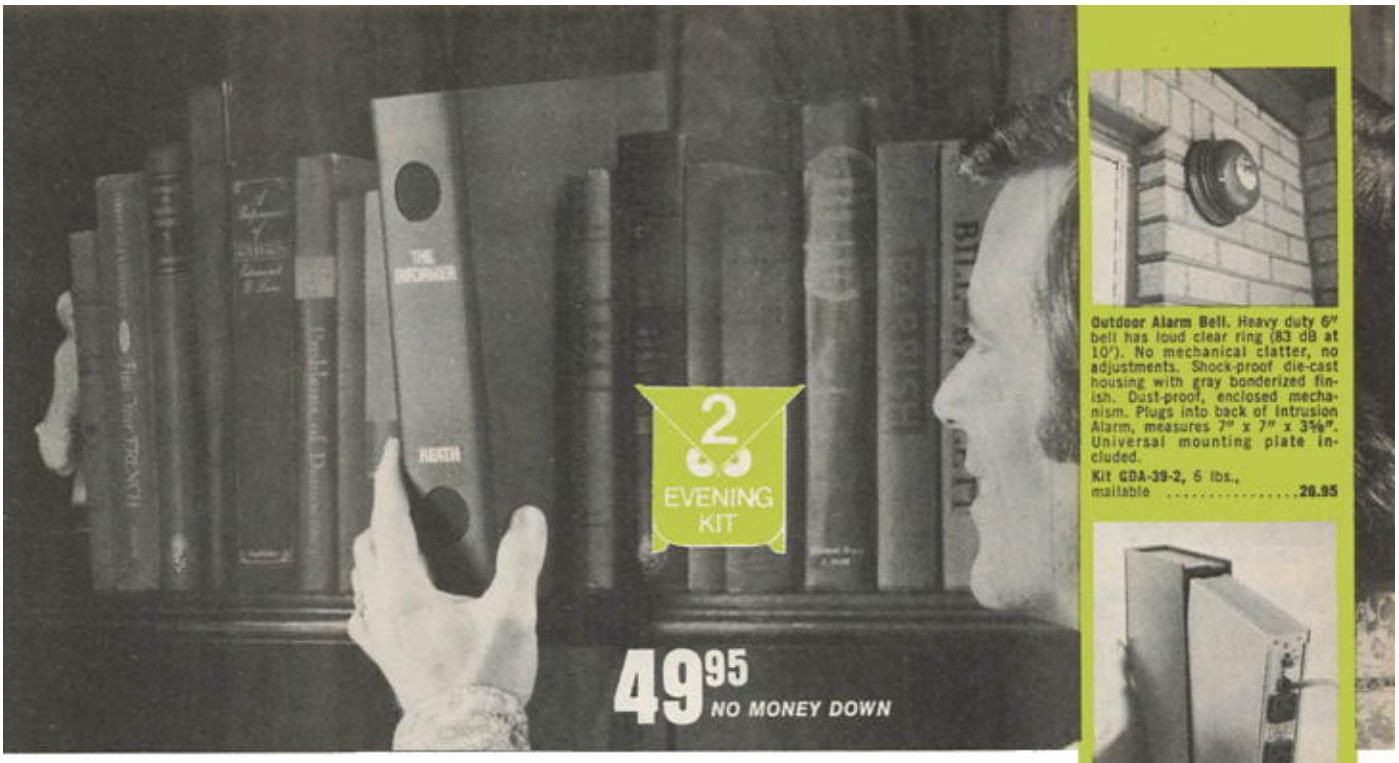
http://www.w6ze.org/Heathkit/Heathkit_Index.html

1. Notes begin on page 19.

Figure 1: The Heathkit GD-39 book-like Intrusion Alarm. On the left is the unit; on the right is the book-like sleeve it slides into for concealment.

In 1973 Heathkit introduced a stand-alone ultrasonic intrusion alarm to its growing home protection kits. It is the GD-39 Intrusion alarm. **(Figure 1)**. Measuring 10-⅛" high x 2-⅜" wide by about 7-½" deep in its book-like sleeve; it is the size of a typical hard-back book. On the book's spine a title is printed - "The Informer" and also "Heath", as if that is the name of the author. Two round "decorative circles" on the spine house the sending and receiving ultrasonic transducers.

The GD-39 first appeared in the Spring 1973 catalog[2] (**Figure 2)**. It initially sold for $49.95.



NEW Ultrasonic Intrusion Alarm

Disguised as your copy of "The Informer", the Heathkit Intrusion Alarm unobtrusively sits on a table or shelf. But behind the two decorative circles on the spine is a sophisticated solid-state ultrasonic transceiver. Flip the out-of-sight switch to activate the system, and the transmitter disperses a 41 kHz signal through the room. This signal bounces off walls and returns to the internal receiver where it is monitored for any change in amplitude. Any movement within the field of surveillance produces a change in the signal that is perceived by the receiver, which then triggers the lamp outlet, followed approximately 30 seconds later by the alarm outlet. This built-in delay time between light and alarm allows you to enter the room and deactivate the Intrusion Alarm without tripping the audible signal. A second hidden switch lets you set the lamp and alarm for automatic reset after the alarm has sounded for 25 seconds. Or this switch can be left in the normal position and the alarm will stay on until manually reset.

The Heathkit Intrusion Alarm also can do double duty as an automatic light switch in a dark hallway or sick room, or alert parents to night-walking children. Here is reliable home protection in an inconspicuous, easy-to-install package. Order one or more for your home. Note: As the GD-39 Ultrasonic Alarm operates in the same frequency range as Ultrasonic TV Remote Controls, interference between the two is possible.

Kit GD-39, 4 lbs., mailable **49.95**

GD-39 SPECIFICATIONS — Operating range: Varies with installation. Typical maximum range is 25 ft. **Operating times:** Turn-on delay: Approximately 10 sec. Alarm delay: 20 to 30 sec. (lamp-on time). Automatic reset delay: 20 to 30 sec. (alarm-on time). **Ultrasonic frequency:** Approximately 41 kHz. **Power outlets:** Two AC sockets: One for Lamp, one for Alarm. **Power outlet current:** Three amperes total for both. **Power requirements:** 110-130 or 220-260 VAC, 50/60 VAC, 50/60 Hz, 1½" W. **Dimensions:** Chassis only, 2" W x 9¼" H x 7" D (approximately). In book-style cover, 2⅜" W x 10⅛" H x 7½" D (approximately).

Outdoor Alarm Bell. Heavy duty 6" bell has loud clear ring (83 dB at 10'). No mechanical clatter, no adjustments. Shock-proof die-cast housing with gray bonderized finish. Dust-proof, enclosed mechanism. Plugs into back of Intrusion Alarm, measures 7" x 7" x 3⅝". Universal mounting plate included.

Kit GDA-39-2, 6 lbs., mailable **26.95**

The simulated book cover leaves rear panel exposed for easy access to switches and plug outlets. Unit can be used without cover if desired.

Figure 2: Introductory Ad for "The Informer" ultrasonic intrusion alarm.
(Spring 1973 catalog #800-65 - page 12)

Two accessories were available: the GDA-39-2 Outdoor Bell ($26.95), and the GDA-39-1 Indoor Buzzer Alarm, ($9.95) not shown in ad. By the fall of 1980 the GD-39 price had risen to $59.95.

The GD-49:

In the Christmas 1980 catalog (#851 - page 6), without any fanfare "The Informer" was shown with a new model number - GD-49, still $59.95. Comparing manuals, there were three non-significant changes: Different transistors were used in the circuit, which remained identical; different model transducers were used and the variable inductor came paired with one of the transducers in the set, instead of as a separate part. A list of changed parts is shown in **Table I**.

The GD-49 continued to sell. It appeared on page 17 of the Christmas 1987 catalog (#208) selling for $79.95. The next catalog in the au-

TABLE I - PARTS CHANGES FROM GD-39 to GD-49						
GD-39			GD-49			
Part #	Desc.	Qty	Part #	Desc.	Qty	Notes:
417-118	2N3393	17	417-801	MPSA20	17	Both general purpose NPN transistors.
417-91	2N5232A	2	417-283	SM07275	2	Both low noise, high gain transistors
73-124	Grommet	2	73-180	Grommet	2	New Grommet to fit new transducers
202-604-2	Metal part	1	202-604-3	Metal part	1	Identical rear panels with differing silkscreen part #
202-603	Metal part	1	202-626	Metal part	1	New transducer mounting panel
40-1626	Inductor	1	Part of 100-1777 Ass'y		–	
85-1217-2	PC Board	1	85-1217-3	PC Board	1	Identical boards except for silkscreening
438-62	RCA plug	2	Not used		–	Only GD-39 transducers have RCA jacks.
595-1481	Manual	1	595-2451	Manual	1	GD-39: 595-1481-11; GD-49: 595-2451-01
473-11	Xdcr pair	1	–	–	–	Matched Transducers w/ RCA jack. (41.2 KHz)
–	–	–	100-1777	Xdcr set	1	Matched Transducers w/ solder terminals. One transducer marked (T) also matched to included inductor.

thor's collection, Spring of 1988. (#211) no longer listed the GD-49, and almost all the items in the security section of the catalog were being sold fully assembled.

GD-39 / GD-49 Specifications:

Table II gives the specifications of the GD-39. The GD-49 is identical. While not mentioned in the specs, the plug power cord and sockets for both "Informer" models are three-wire[3].

Features of the GD-39 / GD-49:

The GD-39 and GD-49 are identical in function and layout. Unless otherwise stated a reference to GD-39 is also true for the GD-49.

The rear panel of the GD-39 contains all the controls and connections. **Figure 3** is a drawing of the rear panel taken from the manual. At the top is the AC **POWER** switch. When turned to **ON** it delays listening for approximately 10 seconds to give the user time to leave the area of detection[4]. Below the POWER switch and power cord exit are two AC sockets. The upper is marked **ALARM** and lower is marked **LAMP**. When motion is detected the LAMP socket becomes energized. Then, after

SPECIFICATIONS GD-39 / GD/49

Operating Range:	Varies with installation. Typical maximum range is 25 feet.
Operating Times:	
Turn-on Delay:	Approximately 10 seconds.
Alarm Delay:	20 to 30 seconds (lamp-on time).
Automatic Reset Delay:	20 to 30 seconds (alarm-on time).
Ultrasonic Frequency:	Approximately 41.2 kHz.
Power Outlets	Two AC sockets (lamp and alarm).
Power Outlet current	Three amps total for both sockets. (360 watts at 120 volts AC)
Power Requirements	110-130 or 220-260 VAC 50/60 Hz. 1-½ watts excluding socket draw.
Dimensions:	Chassis only, 2"W x 9-¼"H x 7" D. In book cover: 2-⅜"W x 9-¼"H x 7½" D.
Net Weight:	Approximately 3 lbs. in book-style cover; approximately 2-¼ lbs. without cover.

TABLE II

approximately 30 seconds, the ALARM socket becomes energized. These sockets can supply up to 3 amperes (360 watts) combined. Larger loads need an external relay. Below the sockets is the **AUTO RESET - HOLD** switch. In the AUTO RESET position the GD-39 will reset after about 30 seconds. In the HOLD position the ALARM and LIGHT socket will remain energized until the GD-39 is manually reset by turning the POWER switch to **OFF** and then back to ON. Below the AUTO RESET - HOLD switch is the **SENSITIVITY** control. This can be adjusted to a particular room or area for positive detection without false triggering.

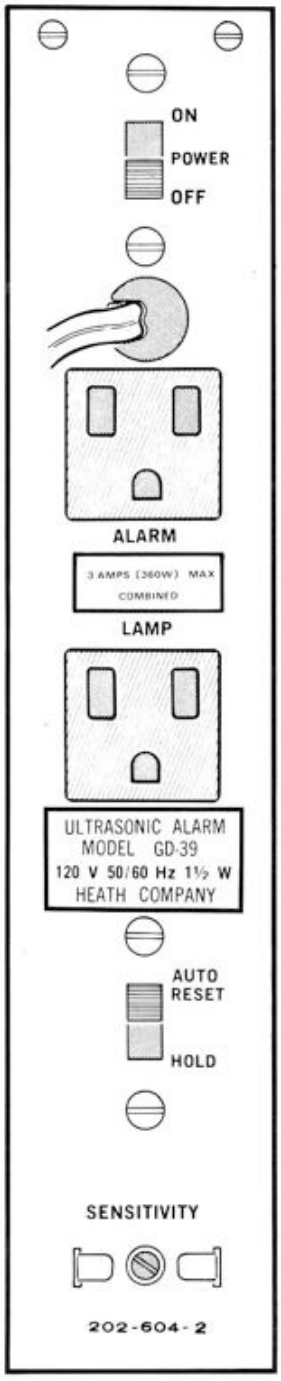


Figure 3: Rear panel of the GD-39, The GD-49 is identical except it is silkscreened GD-49 in the box. The function of each item is discussed in the text.

Assembling the GD-39:

Heathkits have always been fun to assemble. One could consider the assembly itself a hobby. However, unlike most hobbies, after a few days or weeks of enjoying the hobby, you end up with something practical that you can use for years. This kit is considered a two-evening kit; see the little owl caricature in FIGURE 2. One has to wonder if using an owl means these are going to be late evenings? This kit uses a circuit board, and except for the two transducers, two slide switches, two outlets, the SENSITIVITY control and the power cord with its strain relief, all the components mount on the printed circuit board.

Assembly progresses as follows: First, an unusual step. There are two holes in the board that need to be threaded. That is accomplished by screwing a 6-32 ⅜" self-tapping screw into the holes, one-at-a-time, and then discarding the screw. Machine screws will be put into these holes later to act as switches during checkout.

Once the smaller components are installed on the PC board, the same routine is repeated to install the taller components (a few remaining diodes, capacitors, transistors, the inductor, and the power transformer). Then, one or two jumpers are soldered in, depending on whether the device is going to run at 120 or 240 volt power. The board is now complete except for the two relays, which get installed later as they would otherwise interfere with wiring the AC sockets.

Next the chassis is assembled. First two rubber grommets that hold the transducers are installed on the transducer panel. Then that panel is joined with the control panel. Together, they make up the chassis.

The circuit board is mounted inside the chassis, and the components located on the back panel are all mounted and wired to the circuit board.

On the GD-39, two short cables are made with a phono plug on one end. The non-plug ends are soldered to the circuit board. Then the transducers are mounted in their grommets and connected to the board via the plugs. On the GD-49

wire leads are soldered to the transducers; those leads are then soldered to the circuit board, and the transducer is mounted. Finally, the two relays are soldered to the board, and the line cord with the strain-relief is installed and wired to the board and power switch.

Installation and Operation of the GD-39:

While the GD-39 was designed to operate stand-alone, it can be incorporated with the other Heath home protection devices. The GD-39 manual covers this in detail. This section is not in the GD-49 manual because the GD-77/87/97 were no longer in production.

Multiple GD-39s can also be hooked together to trigger one alarm. However, each unit will require an external relay to safely isolate the line hot lead, as some may be on different fused circuits. Failure to do so can create a fire hazard.[5]

When using a single GD-39, the unit should be strategically placed where an intruder would likely enter or pass. The GD-39 is then plugged

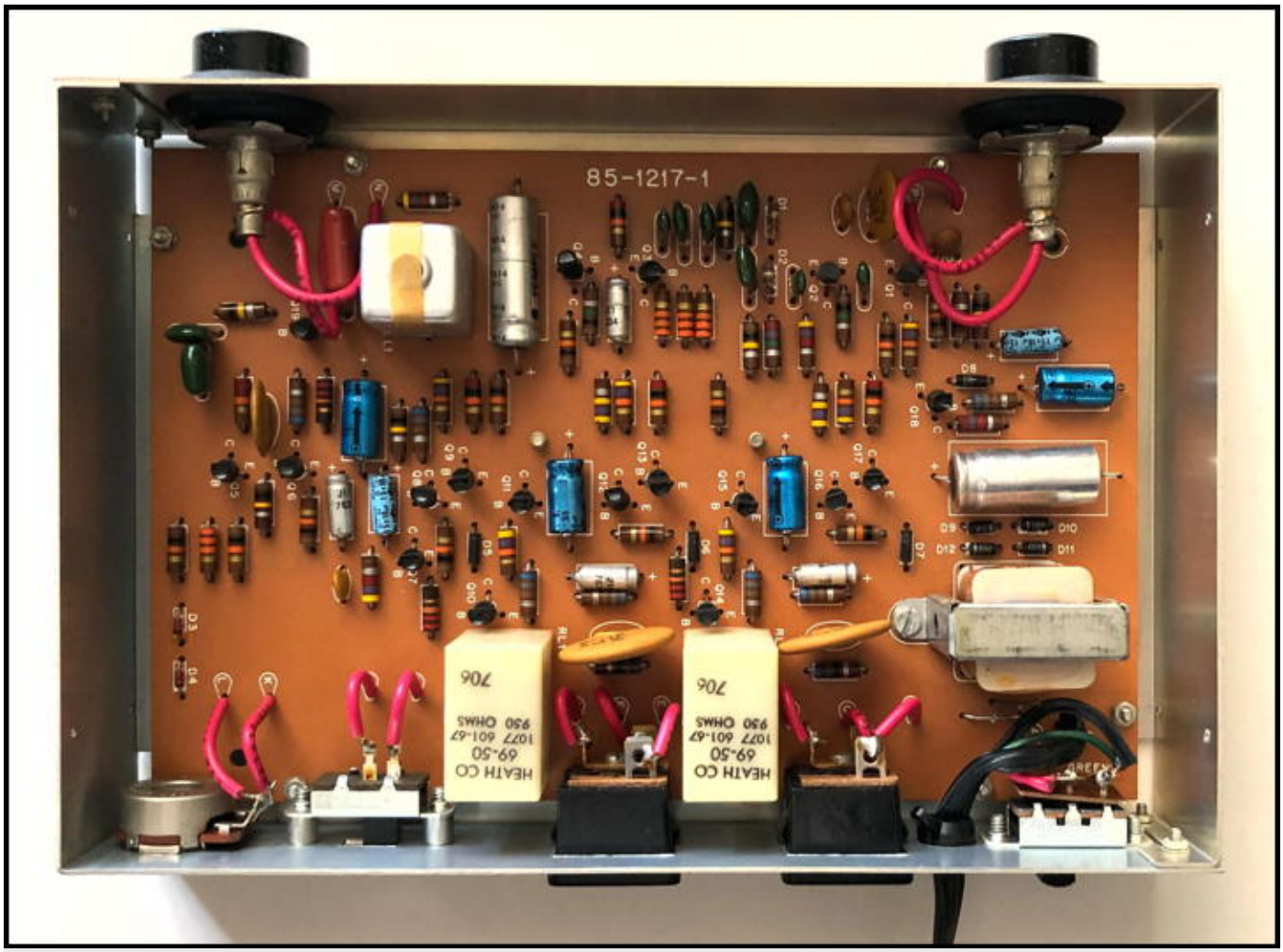


Figure 4: Component-side view of the circuit board installed in the chassis of the GD-39. The transducers are at the top. The one on the left is the transmitter with the receiver transducer on the right. Note the connection to the transducers uses phono plugs. The power transformer is in the lower right, and the two yellow objects (lower center) are the relays. The silver rectangular object near the upper left is the inductor. Tim - N6GP did the assembly back in the seventies. It is very well assembled.

into a wall outlet, and a lamp (or other device) is plugged into the LAMP socket. Whatever you decide to use as an alarm is then plugged into the ALARM socket. The lamp and alarm must be the same voltage the power supply is wired for (either 120 or 240 VAC nominal power.) If you need to drive something requiring a non-compatible voltage, an external relay should be used. If you just want a light to come on when someone enters the room you don't need to plug anything into the ALARM socket.

Once set up, the power switch is turned to ON. The operator then has about 10 seconds to leave the area before the system becomes active.

Should anyone, family member or intruder, enter the room and be detected by the GD-39, the LIGHT socket will be activated. If a lamp is plugged in, it will activate, If an alarm or such is plugged into the ALARM socket it will activate in 20 -30 seconds. The ALARM socket will remain powered either continually until it is

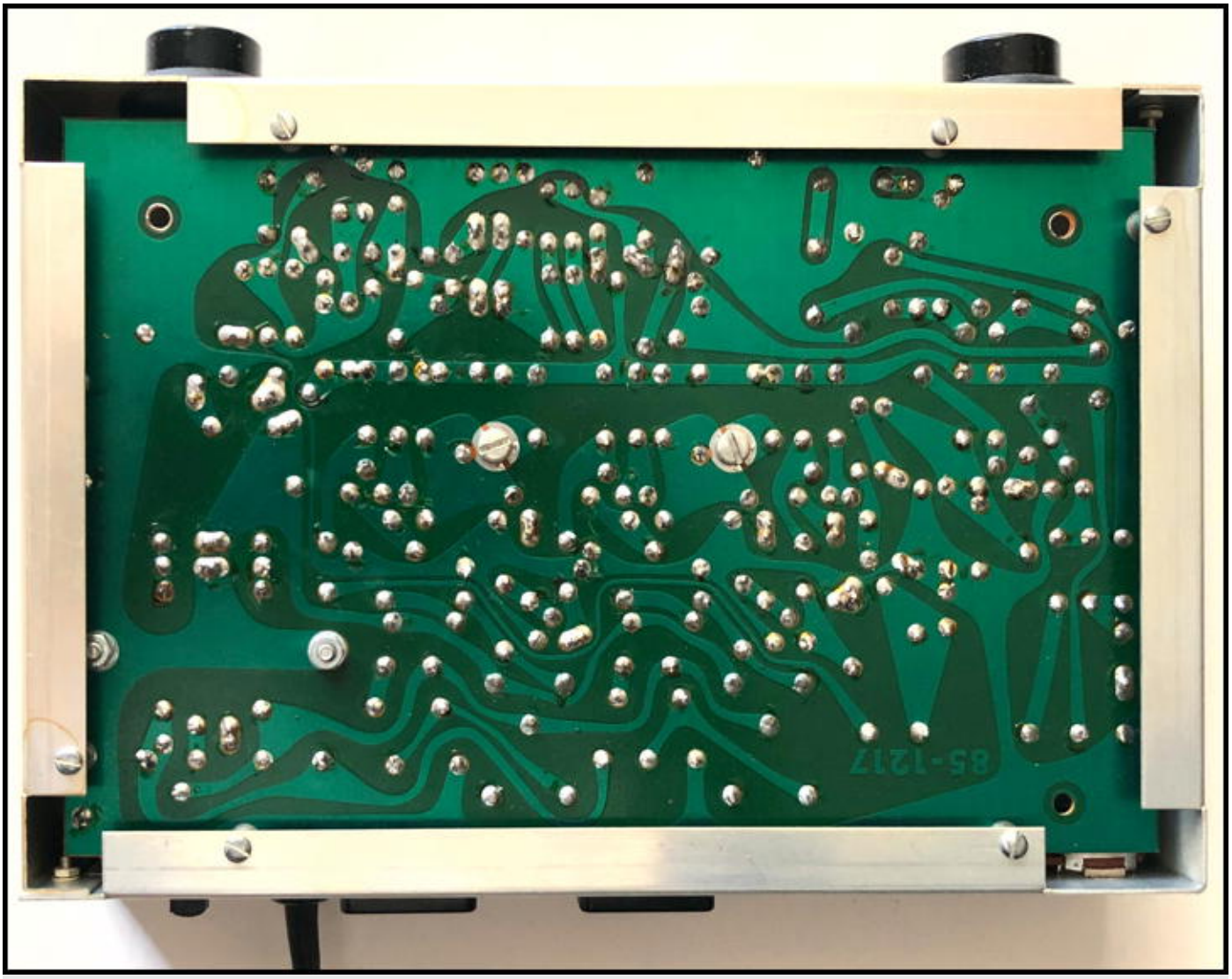


Figure 5: Foil-side view of the circuit board installed in the chassis of the GD-39. The two slotted screw near mid-center of the board can be tightened to shorten alarm and auto-reset times during checkout or troubleshooting. The screws are loosened for normal operation - or removed, fitted with a fiber washer and reinstalled. Nice soldering by N6GP.

manually reset, or until an automatic reset occurs, depending on the position of the ALARM RESET - HOLD switch. The automatic reset will occur after about 30 seconds.

The schematic of the GD-39 is too large to include with the article. However, it may be downloaded from:
https://www.w6ze.org/Heathkit/GD39/GD-39Sch.pdf

The GD-39: Circuit Description:

Figure 6 is a Block Diagram of the GD-39/49. There are 10 blocks: Three are the receiver with its low frequency amplifier and detector. Three more are the Schmitt triggers #1 through #3. Two are relay controls for the LAMP and ALARM sockets. And the remaining two are the power supply and transmitter.

The circuit uses 19 transistors. Q1 and Q2 are low noise transistors and are used in the initial stages of the receiver. The GD-39 uses the 2N5232A (417-91), and the GD-49 uses the SM07275 (417-283). The remaining transistors Q3 through Q19 are all the same general purpose type. The GD-39 uses the 2N3393 (417-118), and the GD-49 uses the MPSA20 (417-801).

Receiver

The output from the ultrasonic transducer is coupled to the base of low-noise transistor Q1

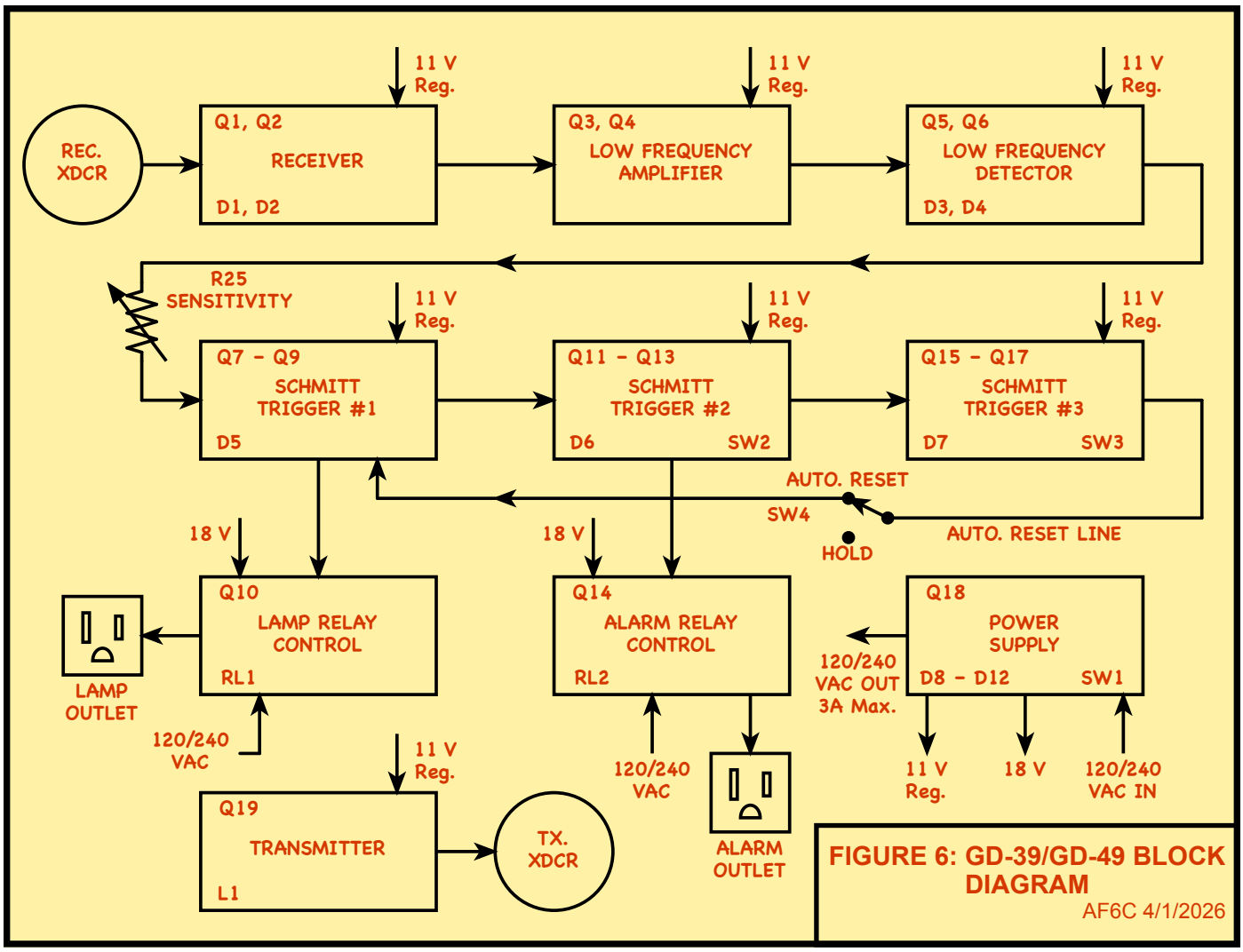


FIGURE 6: GD-39/GD-49 BLOCK DIAGRAM
AF6C 4/1/2026

through a low-pass filter composed of R3, in series with the impedance of the transducer, and C2. The collector is coupled through C4 to the base of Q2, another low-noise transistor, which further amplifies the 41 KHz signal. The signal is then fed to D1 and D2 that act as a voltage doubling detector. R9 forward biases the diodes by passing a 3.5 μA current through them, increasing their sensitivity.

This detected signal follows the amplitude of the received 41 KHz signal.

When "The Informer" is initially turned on the emitter of Q1 is at 3.5 V due to the voltage divider of R5 and R6. Meanwhile the base is at just under 1 V since C1 is fully discharged. As C10 charges, the base voltage increases until Q1 starts to conduct and amplify the signal from the transducer. This instills a delay, giving the person turning the unit on time to leave the area without triggering an alarm.

Low Frequency Amplifier

The detected signal is filtered by a three-pole low-pass RC filter with a cutoff of just a couple of hundred hertz. Q3 is an emitter follower to present a high impedance to the output of the filter. The output of Q3 is then coupled to Q4 through C13 where it is further amplified. The amplified signal is coupled to the low frequency detector via C27.

Low Frequency Detector (LFD)

The sensitivity control, R25, controls the level of the signal reaching the LFD and Q5. R23, D3 and D4 set a fixed bias level for Q5 that puts it barely into saturation. Any fluctuation on the base will un-saturate Q5 causing a pulse at its collector. This pulse is fed to Q6 which is across R31, the upper side of a voltage divider

THE SCHMITT TRIGGER

Figure A shows the basic circuit of a Schmitt trigger. When power is first applied Q_B starts to conduct receiving base current through R_A. R_B and R_C make up a voltage divider, resulting in both emitters seeing around 3.4 volts, and the output is just a bit above 3.4 volts.

As the input voltage increases, nothing happens until the voltage reaches about 4.0 volts and Q_A begins to conduct, drawing base current away from Q_B, reducing the emitter voltage, which, in turn causes Q_A to turn on more. This positive feedback quickly causes Q_A to saturate and Q_B to turn off completely. Now the emitter voltage is determined by the voltage divider action of R_A and R_C, and the emitters see a voltage of around 1.9 volts. With Q_B cutoff the output voltage quickly rises to 11 volts.

Now, as the input voltage decreases, nothing happens until the voltage drops to about 2.5 volts and Q_A starts to turn off, turning on Q_B and increasing the emitter voltage. Again positive feedback will cause Q_A to turn off and Q_B to saturate very rapidly, returning the circuit to the initial power on state.

Thus the input has a 1.5-volt hysteresis effect turning on at 4.0 volts and off at 2.5 volts. The Schmitt trigger is very useful for contact debouncing and positive switching in noisy environments.

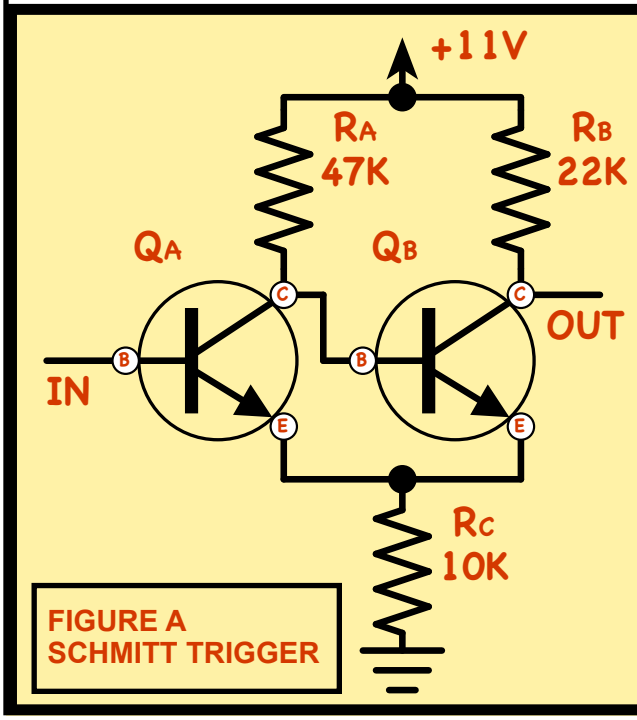


FIGURE A
SCHMITT TRIGGER

consisting of R31 and R32. This pulse is fed to Schmitt trigger #1. However, to prevent false actuation C19 is located across R32 and integrates the pulses preventing a single short pulse from triggering the alarm. A low-pass filter, comprised of R33 and C22, further prevents a false triggering.

Schmitt Trigger #1 & the Lamp Cntl. Relay

The basic operation of the Schmitt trigger is discussed in the sidebar. It is suggested the reader become familiar with it before continuing.

The normal input bias to the Schmitt trigger is set at about 3.4 volts in the LFD by R32 and R33. The LFD is incapable of sending a voltage low enough to reset the Schmitt trigger. When a pulse does make it through, the LFD, Schmitt #1 triggers. Q9 goes high and turns on Q10. Zener diode D5 acts as a level converter and also isolates R22 and Q10 from the R37 – R38 voltage divider. With Q10 on, relay RL1 actuates applying AC voltage to the LAMP socket. R42 and C24 protect Q10 from any voltage transients created when the relay coil turns off. Likewise R62 and C32 protect the relay contacts when they open under an inductive load. When Q10 turns on, its collector drops from a bit under 11 volts to almost zero volts. This signal is sent to Schmitt trigger #2.

Q7 is normally off. When turns on it shorts the base of Q8 to below the reset level and Schmitt trigger #1 resets. C23 prevents noise from resetting the alarm. Q7 is triggered by Schmitt trigger #3 and will be discussed there.

Schmitt Trigger #2 & the Alarm Cntl. Relay

The signal from Schmitt trigger #1 is connected to the base of Q11, which is normally on and holding C25 totally discharged. When Q11 turns off, C25 starts to charge through R45. When the charge reaches about 4 volts, which takes about 20 – 30 seconds, Schmitt trigger #2 triggers. As in the previous paragraph, Q14 turns on, the relay is activated powering the ALARM socket and a signal is sent to Schmitt trigger #3.

Schmitt Trigger #3 & Reset

Schmitt trigger #3 operates just as Schmitt #2 does, and is triggered after C27 charges to about 4 volts after another 20 – 30 second delay. The only difference is that there is no relay operated. Instead, depending on the setting of the AUTO RESET – HOLD, a signal is sent back to Q7, discussed earlier, resetting, Schmitt trigger #1, and cascading via Q11 and Q15 to reset Schmitt #2 and #3 respectively.

Power Supply

The transformer, T1, has a dual primary that can be wired for 120 or 240 VAC. This is the voltage that will appear at the LAMP and ALARM sockets when activated. SW1, in the primary controls the power. The 15 VAC secondary is rectified by D9 through D12, which make up a full-wave rectifier. Filtering is accomplished by C57, resulting in about 18 VDC which provides power for the relays. The 18 VDC is fed to the collector of Q18, The 18 VDC is further filtered by R61 and C29, through R59 to the base of Q18. The voltage at the base is held at 12 volts by zener diode D8. A nominal 11 regulated volts appears at the emitter of Q18 and is further filtered by C28. This 11 volts is distributed to most of the blocks.

Transmitter

The transmitter is a single transistor (Q19) Colpitts oscillator using emitter feedback. The signal at the collector is stepped up by L1 and fed

to the ultrasonic transducer through R22 which swamps out the varying impedance of the transducer around its resonant point. L1, C15 and C16 set the initial oscillator frequency to approximately that of the transducer. The transducer's influence then pulls the oscillator frequency towards its resonant frequency, stabilizing the frequency.

Personalized Timing:

The GD-39/49 comes with three preset times: The time to be clear of the device after turning it on; the time after the LIGHT socket is activated before the ALARM socket turns on; and the time after the ALARM socket is activated before reset occurs, assuming the AUTO RESET is on.

Turn-on Delay

The turn-on delay, initially 10 seconds, is governed by R1, R2, R4 and C1. None of the resistors should be changed. To change the turn-on time change C1. An approximate value is 1 μf per second of delay. Changing C1 to 30 μf will change the delay from 10 to 30 seconds.

Lamp-to-Alarm Delay

This delay is governed by R45 and C25. C25 should not be changed. A new R45 can be installed to change the delay time. R45 must be in the range of 10 KΩ to 2 MΩ, allowing a delay time from 0.5 seconds to 100 seconds. A formula is provided in the manual:

$$R = \frac{T}{50}$$

Where:

R = value of R45 (or R55) in Megohms
T = desired delay time in seconds

Alarm-to-Auto Reset Delay

Assuming AUTO DELAY is selected, this delay is governed by R55 and C27, and is initially 20-30 seconds. C27 must remain 50μf and R55 is chosen as in the equation in the last paragraph.

Heathkit suggests you order the required parts for changing the timing from a local source.

Shortening Timing During Checkout:

When checking out your GD-39 or GD-49 it is possible to shorten the lamp-to-alarm and alarm-to-auto reset times to about 2-seconds by closing SW2 and SW3 respectively on the circuit board. These switches are closed by tightening the screws which shunt the timing resistor (R45 or R55) with a lower value resistor (R44 or R54). Be sure to loosen them when done.

The GD-39/GD-49 and Interference:

While in operation "The Informer" puts out a steady ultrasonic tone at about 41.2 kHz. Heath warns in the manual that it can cause interference with local TV remotes that also operate in the ultrasonic region.

While one wouldn't be in the room watching TV with the intrusion alarm on, Heath included a warning in the manual (**Figure 7**).

The GD-39/GD-49 and Pets:

Many animals can hear sound up into the 40 -

WARNING: As television remote control devices and the Intruder Alarm operate on or near the same frequencies, false triggering of the remote control circuits may occur when the television set and the Intruder Alarm are both turned ON at the same time.

If your television set is equipped with a wireless remote control device, turn your television set OFF when the Intruder Alarm is turned ON. It is also IMPORTANT that you turn the television set off at its main power switch instead of using the remote control. Otherwise, the remote control circuits of the television set may be damaged.

Figure 7: The Heathkit GD-39 and GD49 manuals contain the following warning:

50 KHz range. The Heath manual doesn't mention this. It only mentions: *"If a pet may be moving on the floor in the surveillance area, aim the unit higher to avoid tripping the alarm."*

None of the specifications give the decibel level of the transmitted sound. Some research on the web mentions that sometimes ultrasonic devices will attract a dog or cat, who are trying to find where the sound is emanating from. If you are using 'The Informer' or other ultrasonic device, just be aware that it might affect your pet.

General Comments:

In 2021 Chuck Penson – WA7ZZE published the third edition of his ***Heathkit: A Guide to the Amateur Radio Products***, a significantly updated edition. The book sold out quickly, as had his two previous editions. Recently, Chuck announced that the third edition is again available by "Print-on-Demand" process from Lulu. The "tiny URL" link for more information and to order is: https://tinyurl.com/7n7c787f. I've ordered five or six "print-on-demand' books from Lulu and have always well been satisfied.

I recently acquired a Heath HG-10 VFO, I plan to use with a DX-40 I'm restoring (slowly). The band switch on the VFO is frozen solid on the 2-meter band. Unfortunately, that makes it very difficult to access the shaft coupling screws, and difficult to get heat onto the shaft to start to free it up. I have put it aside as my 'bench' is currently occupied by an H.J. Leak "Point One" TL/10 Hi-Fi tube amplifier from the fifties. I have rebuild the odd four-section filter capacitor (**Figure 8**), and am in the process of re-capping the unit. The Leak amplifier was made in Britain and uses an EF86, a 6SN7, a pair of KT-61 output tubes and a 5Z4 rectifier.

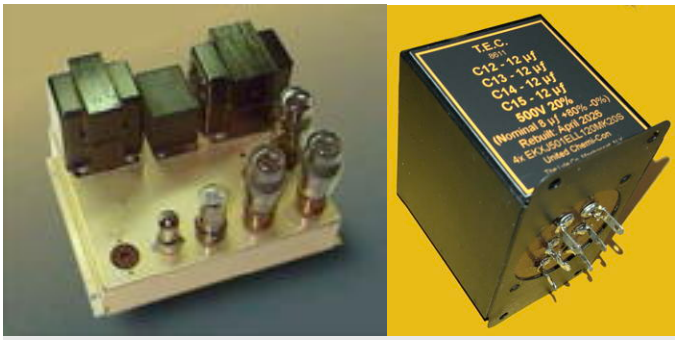


Figure 8: At left the H.J. Leak HiFi amplifier. Empty socket is the preamp input. At right is the rebuilt 4-section filter capacitor.

The next article will possibly be on the HR-10 Basic Amateur Band Receiver,

73, from AF6C

Notes:

1. The two-page ad may be found at: https://www.w6ze.org/Heathkit/GD39/p26-p27.pdf
2. Catalog #800-65 is available at the World Radio History site. Though it says 1972, it is actually the Spring 1973 catalog: https://www.worldradiohistory.com/Archive-Catalogs/Heathkit-Catalogs/Heathkit-1972-800-65.pdf
3. Neither the unit itself, the LAMP nor the ALARM sockets are fused.
4. This time may be changed by changing a capacitor (C1) inside the unit.
5. Failure to do this may connect two house circuit breakers in parallel, highly increasing the current needed to trip the circuit breakers in an overload condition.

Remember, if you are getting rid of any old Heathkit Manuals or Catalogs, please pass them along to me for my research.

Thanks - AF6C

? PUZZLER ?

Members of the OCARC were excited to learn that an ARRL convention was coming to Orange County (CA). The last local convention was held at Disneyland back in 1988. Club members Fried Heyn - WA6WZO was our ARRL SWD Director then, and Ken Konechy, W6HHC was head of the security committee, assisted by other OCARC club members.

For this convention, the club was asked to organize a CW competition. Three of the club's top CW ops got together and developed a one-on-one CW contest that would always have a winner (no ties) and would take, on the average about, ten minutes to fully conduct. The club figured, if lucky, they might get about 50 entries, but in this age expected less.

To their surprise, when the applications came in, they had 175 eager contestants. Everyone concerned with the event was panicking. They met at the bar of the local hotel where the convention was to be held to discuss how many testing venues they needed to have to conduct the contest in an eight-hour period. The bar had three areas they could use for venues. If they needed more, they would have to find more venues.

The club member heading this event for the club groaned. "This means I need to set up a branching tree to solve for the number of contests. I was dreading having to do one for 50 participants, but for 175, I'll never figure it out. I'm lousy with numbers."

Sitting at the bar, nursing a scotch, was an old old man. He looked at them and said, "I can answer that without even a piece of paper and a pencil. I studied under Einstein as a young protégée. He taught me, among other things, to *"always think outside the box before attacking a problem the hard way."* He then told them the answer and explained why. The explanation was so simple no one had to ask him a question. They now knew how many venues would be needed

The question is:

How many contests need to be held to determine the final winner? And, how did the old-old man at the bar figure it out so quickly?

As usual, submit your brilliant answer to: **puzzler@w6ze.org**. Anyone can submit an answer, whether it is serious or wrong, but clever. No prizes, but recognition in our newsletter.

73, from AF6C

New OCARC Members
2026

JANUARY

KJ6ZEY Chris Chubbuck
K6QQP Randy Poth
KO6LJY Josh Berk
AA6RC Morgan Fine
N6IRN Sepehr Sahraian
KK6OYR Gregorio Valdivia
KM6RTE Scott MacGillivray

FEBRUARY

KO6DUT Debra Campbell

MARCH

KO6MZU Bijan Ghofranian

OCARC Membership Director
Ron W6WG, membership@w6ze.org

VE Report
March 2026

On Friday March 20, 2026, we had 4 candidates registered who took tests.

There were 2 Technician exams, 1 upgrade from Technician to General and 1 upgrade from General to Extra. All four passed their exams.

The Technicians were **Bijan Ghofranian (KO6MZU)** and **Jeffrey Stewart (KO6MZK**). Bijan became a member of OCARC that evening.

Harold Valenzuela KO6HRN upgraded from Technician to General and **Dave Janisch currently KN6HEE** upgraded from General to Extra. Dave currently has a request in for a 2x1 vanity call. We will report in the April VE report on the results of his request.

Congratulations to all four from the VE exam team.

Ken Simpson W6KOS
Team Lead

General Meeting Minutes
March 20, 2026

General Meeting held at the American Red Cross, 600 N Park Center Dr, Santa Ana, CA, was called to order at 7:03PM by President, Dan KI6X. After the Pledge of Allegiance, introductions were held with 28 in attendance, including two new technicians, one General Upgrade, and one Extra upgrade from the testing session prior to the meeting.

Vice-President, Tim N6GP, introduced the evening's speaker, Fred Osterman, W0PE, who presented the history, fun, and fantasy of his 22 years at Disneyland and the trials and tribulations of the Disneyland Amateur Radio Club, N6MM. Fred was also present opening day as a youngster who crossed the drawbridge into the castle and delighted us all with stories and pictures. The presentation was dedicated to John Thompson, K6OHM (SK), the force behind all the ham radio related Disney events and park openings in other countries. A break was called at 8PM.

Meeting resumed at 8:15PM with roll call; all Board members present except Director-at-Large, AJ W6OTO.

Vice-President, Tim N6GP, advises next month's program will be via ZOOM from Oregon and Patrick at Geochron, the first world clock to display day and night and the bell curve of light and darkness on a world map. The May meeting will host Chris, N1CLC, and his SOTA operations. June will concentrate on W6ZE Field Day efforts.

Technical Advisor, Joe KM6SVV, advises the club has collected a fair amount of equipment from SK estates, and if anyone wishes to help out with any future collections or referrals, to contact Joe directly.

Treasurer, Tim N6TMT, reports two new members, Brian and John, paid tonight, and Membership Chairman, Ron W6WG, followed up with a report of 123 members currently on the roster, of which 83 have renewed so far. An email reminder was sent to all who have not paid that dues are due by April 1, 2026.

Activities Chairman, Corey KE6YHX, reminded all of the opportunity drawing at the upcoming April meeting.

Director-at-Large, Dave N3BKV, gave an update on the set up of the Flex 6600 remote, with testing currently in progress. If all goes well, the remote should be in use around the end of April.

ASK ELMER:

Harry KN6NXJ, inquired about SWR change under certain circumstances and was given direction as to what changes affected SWR and what changes affected frequency coverage. Assembling an R7000 vertical is becoming a learning experience.

SHOW AND TELL:

Harry KN6NXJ, is becoming involved in Winlink and displayed his emergency go kit, including radio, battery, touch screen, and PC being used with a wire j-pole. He's working on eliminating RF and it was suggested a metal can inside the box to protect the PC would benefit.

GOOD OF THE CLUB:

Heavy planning for Field Day coming up starting next month. More help needed with three separate people heading up each day individually, sharing responsibilities...besides band captains and volunteers for food and security and other functions. A Gift Certificate for Stater Bros was picked up to give to Rick to help offset some of the expenses he incurred for food during Winter Field Day.

A last minute comment was made for general information that CBS News Radio Service is shutting down at the end of May.

With no further business being heard, meeting was adjourned at 8:42PM.

Submitted by Janet Margelli, KL7MF, OCARC Secretary

Board Meeting Minutes
April 4, 2026

Meeting held at the Streamliner Lounge, 186 Atchison Street, Orange, CA and called to order by President, Dan KI6X, at 8:15AM. All Board members except Director-at-Large, AJ W6OTO, present, as well as a visitor, Bob AF6C.

No reports provided by Vice-President, Secretary, Publicity, and Technical Directors. Treasurer, Tim N6TMT, sent out cash flow this morning and distributed it to the board. For the period 1/1/26-2/28/26, cash inflow of $1203.37 and outflow of $983.45 for an overall current cash total of $219.92. Tim N6TMT, Tim N6GP, and Bob AF6C will team up soon for an audit.

Membership Manager, Ron W6WG, reports 104 members have paid their dues as of the end-of-March deadline. The end-of-quarter membership information will be sent to Bob AF6C for updating web. Discussion over late renewals and how to handle members who only renew occasionally and not every year.

Activities Director, Corey KE6YHX, reports proceeds from the last opportunity drawing of $100, $91.54 of which was spent on prizes for future drawings (including a 2-posn coax switch, waterproof kitchen scale, video doorbell, and batteries). $49 was collected from refreshments at the last meeting, $47.18 spent for prior and next meeting.

MONTHLY PLANNER REVIEW:

Treasurer, Tim N6TMT, confirms IRS Form 990N, CA FTB 199N filed as required. Dan KI6X, verified Affiliated Club info is up to date. Renewal of Special Services Club rating (explained by Dan KI6X to newer Board members) not due until 2027 (every 2 years).

OLD BUSINESS:

Newsletter Editors: April, Dave N3BKV (template received and instructions regarding insertion of Heathkit article from Dan KI6X); May, Tim N6GP; June, Tim N6TMT.

Entertainment: April meeting presentation will be via Zoom from Oregon by Patrick Bolan of Geochron, somebody who loved the product so much he bought the company, and led the development of the Digital 4K clock. Tim N6TMT will be point of contact since VP Tim N6GP will not be at the meeting. May meeting will also be a Zoom presentation by Christian N1CLC on SOTA. June meeting will primarily feature Field Day plans, but may combine with a presentation on OC Firewatch.

OCARC Remote Station: Director-at-Large, Dave N3BKV, brought along a laptop for a quick demo of the Flex 6600 now installed at Janet's KL7MF QTH and ready for the Board to test. Step-by-step instructions were passed around to login and operate. There is also a video link as well. Flex Smart SDR software needs to be installed by each user. Discussion covered various circumstances, including how many to allocate to use. Every user will receive a separate user name and password. As set up, radio keys by VOX; PTT possible with extra connections. FT8 also possible, but a bit more complex and another learning curve. Antenna is a triband (10-15-20) yagi at approximately 75 ft.

Meeting temporarily paused at 8:50AM and resumed at 9:15AM after breakfast.

Field Day 2026: Dan KI6X and Dave N3BKV discussed rehashing the Field Day article for the next RF Newsletter. Ron W6WG confirmed Rick N6NH OK with overseeing food, and use of the field has been approved and insurance verified. Two 20 x 20 tents to be ordered. Ron W6WG to write up the detailed description of the daily duties for the RF. Friday: oversee pick up of towers, generator, and equipment at storage, tower erections, tent set ups, and overnight security. Saturday: kick off operations on time, make sure all stations manned, check generator, overnight security. Sunday: make sure all stations operating, begin to dismantle areas not in use, make sure all scores are taken from computers before completely shut down (Tim N6GP will compile when he returns from time away), make sure group picture is taken, stay on site until tents are picked up. Discussion of having a separate server that is not a logging station to make things run smoothly. Tim N6GP mentioned N3FJP contesting software is unforgiving if lose connection to server. Dave N3BKV will do some testing also with N1MM, with a reminder to make sure we have enough laptops with ethernet ports, and associated switches (Dan KI6X and Michael KO6FAR volunteered as sources), recommending wire and not wifi. Suggesting 2 to 3 radios in the CW/digital tent where a CW Captain is still being recruited and volunteers are needed. 3 radios in the SSB tent along with GOTA, which should be positioned separately so as to not cause possible distraction.

NEW BUSINESS:

Bob AF6C, advises W6ZE license renewal is up August 2027, and he would like to pass on the trusteeship of the call sign to Tim N6TMT.

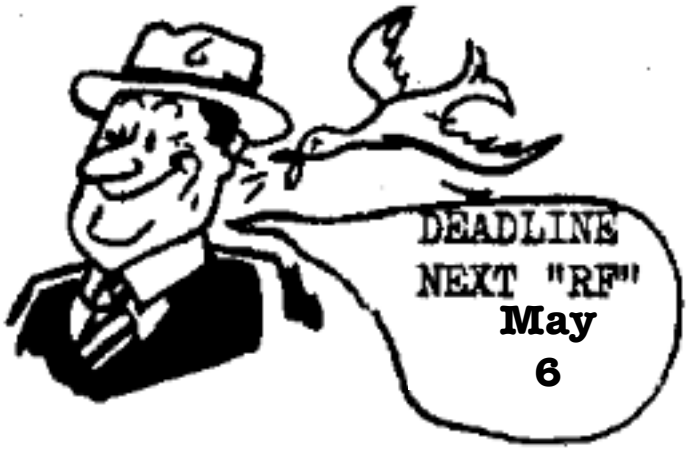
Good of the Club: Corey KE6YHX reports the Club's Echolink is down for good. Bob AF6C is trying to update the Associate's List (former presidents, out of town members). Ron W6WG spoke with Nicholas AF6CF, who is now settled into his new home in TX, about getting into his storage locker here locally to check out items for the club. PayPal accounts also have to be researched since they are in former Club President's names.

With no further business, meeting was adjourned by vote at 9:51AM to meet outside for a picture of all Board members wearing different year ARRL Field Day shirts. Picture will be submitted to ARRL for possible inclusion in QST or other Field Day related publication, as well as put into the RF and our Facebook page. Next Board Meeting May 2, 2026.

Submitted by OCARC Secretary, Janet Margelli KL7MF

Cash Flow	**1/1/2026 - 2/28/2026**
INFLOWS	
Dues 2026	495.00
Dues, PayPal 2026	675.00
Refreshments Income	33.37
TOTAL INFLOWS	**1,203.37**
OUTFLOWS	
PayPal Fees	35.94
Prizes	214.34
Refreshments Expense	98.88
Software License	77.88
Speakers Meal Reimburse	49.06
Website	57.70
WFD Food	130.00
WFD Gift	22.00
WFD Propane	77.65
WFD Tent Rental	220.00
TOTAL OUTFLOWS	**983.45**
OVERALL TOTAL	**219.92**

Tim Millard, N6TMT, OCARC Treasurer



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RF - VOLUME 67 ISSUE 4 – April 2026
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