RTTY JOURNAL

SEPTEMBER 1978

VOLUME 26 NO. 7

75 CENTS

EXCLUSIVELY AMATEUR RADIO TELETYPE

WR6ACR

AMATEUR TELETYPE REPEATER

147.33 Mhz. Rec. 147.93 Mhz. Trans.

CONTENTS

1978 BARTG RTTY CONTEST RESULTS

A SIMPLE AUTO START

TIPS FOR MAKING HOME BREW P.C. BOARDS

THE AZCD

Subscription Rates

RTTY JOURNAL

Dee Crumpton, , Editor & Publisher
P.O. Box RY
Cardiff by the Sea, CA. 92007

U.S. Canada, Mexico,
Canada, Mexico, Air Mail
Other Countries - Surface Mail
Air Mail

Australia and New Zealand
$9.00 AUSTRALIAN
AIR MAIL ONLY

Published 10 times per year, May-June July-August are combined issues.
Second Class permit Encinitas California 92024.

Subscription rates above.

Business Offices
1155 Arden Drive
Encinitas, California 92024

POSTMASTER SEND FORM 3579 to
Post Office Box 179
Cardiff by the Sea, California 92007

New subscriptions and classified ads are cash in advance as we have no method for billing. New subscriptions will be started with the current issue and one back issue, if requested. . Please do not ask us to start any further back than this. The JOURNAL is mailed about the 20th of the month preceding the dated month. May and June are combined in one issue and July and August are combined in one issue.

BACK ISSUES

A duplicate of any back issue may be obtained from R. Wilson, 4011 Clearview Dr., Cedar Falls, IA. 50613. $1.00 pp. Reprints of all UART articles, $2.00 pp.

RTTY JOURNAL
PO Box RY
Cardiff by the Sea, CA. 92007

FOREIGN SUBSCRIPTION MANGERS

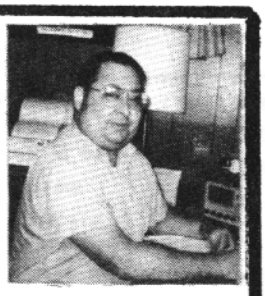
EUROPE
Jean F. Hurtaud – F8XT
Chillac
16480 Brossac, FRANCE

AUSTRALIA – NEW ZEALAND
Norman Wilson – VK4NP
P.O. Box – 81
Albion Brisbane
Queensland - 401 - AUSTRAILIA

ENGLAND
Arthur Owen – G2FUD
Gwenarth
184 Hale Road
Hale, Cheshire ENGLAND

Japan
Toshio Hotta – JA2EFV
4-5-11 Tomida
Yokkaichi City
Mie-Pref., JAPAN 512

VHF RTTY NEWS



Arny Gamson, K6PXA, 8034 Gentry

N. Hollywood, CA 91605

Hi everyone. Wallowing through our correspondence, which is filed: "IN", "OUT" and "TOO LATE", we see some interesting trends this summer amongst the RTTY Clubs and groups. Most of them are saying "very little activity here". Think the weather past and present has a lot to do with it as many are gone from the 100° temperatures in So. Western U.S. and many want "recuperation" from the sub-zero temperatures in the early part of the year in the No.-Eastern U.S. Several Groups are tremendously blooming with activity.

Norman Fitch — G4FPK, V.P. — International of the Amateur Radio News Service (ARNS) — briefs us on the Radio Society of Great Britain (RSGB-ARRL equivalent) "Hamfest." They had a "Ralley", as they call it, at Alexandria PALACE in No. London exhibiting the many facets of Ham Radio including RTTY. The British Amateur Radio Teleprinter Group (BARTG) are also very active in VHF contests. The RTTY JOURNAL will keep you posted on this as much as space permits.

Three RTTY Clubs in particular are also growing and promoting RTTY at an amazing rate; The Bi-State VHF Teleprinter Society, The San Diego Teleprinter Society (SDTS) and The Southern Counties Amateur Teleprinter Society (SCATS). Michael Stone-WBQCD-President of The Bi-State Club (Iowa-Illinois) and Chuck-W6MNO-President of SDTS both report many members and lots of activity in their areas. This is great and our RTTY "Fraternity" sure needs more of this elsewhere.

Our local club is suffering "growing pains" though and we would like to warn others of our problems. The SCATS Group in So. California has grown to over 150 members which sounds wonderful BUT we don't see many at the meetings or on the air. So ironically our Club's policy is WELCOME but please participate and get involved in RTTY and don't just fill up an unwieldy Club Roster. This came to a head at our last meeting where only 10 per cent of the membership could show up (lots of guests though) and yet many hundreds of dollars from the Club's Treasury were allocated for various causes. The question of Constitutionality came up, in essence: Who determines large monetary expenditures? Is it the Officers and The Board of Directors (we have 7), the 10 per cent who can attend the meetings or the majority of the members (who we don't hear from) or some combination???

Traditional routine Treasury expenditures, such as the Newsletter are paid with the Board of Directors unanimous approval — no problem. But we have found out the hard way that our Constitution is extremely vague about other than regular financial allocations. We have looked at several other regular and RTTY Club Constitutions and see the same thing lacking; this problem is not unique to our Club and has happened before. Our Club is taking steps to correct this situation by precisely spelling out in amendments to our Constitution what is required for financial allocation. Also what percentage is required to be official; 50 per cent, 66-2/3 per cent, quorum, majority or unanimous? We strongly urge all to check your Constitution.

Another controversial topic on the SCATS Rptr. is pictures. Many are on autostart and some object to seeing nudes or even Charlie Brown. Several members are presently working on simple-cheap circuits for pix s turn off codes. Those desiring to send pix s could just send PPPP and those who don't want to print them won't have their machines turned on. This would be similar to the standard NNNN which returns those who have it to sel-call (private line) only.

Had an interesting phone chat and information from Tom Aschenbrenner-WB5PUC on his Computer system on the Dallas RTTY Rptr (10/70) which we have partially reproduced. There is great emphasis placed on the weather there and impending tornadoes and storm warnings are broadcast to the public before the News Media can alert the Public. Congratulations to Tom and the Dallas, Texas ARC for truly making RTTY extremely valuable to the Public Service. Due to space limitations we have only reproduced samples of the many command acceses. Write Tom and he will send you 4 pages of all the instructions and commands and more. The "price" — is just inform him on your computer, present and future plans (if any). Keep us posted too.

The TU-Boro ARC in Whitestone New York is heavily involved in all phases of Ham Radio; not the least of which is Computers and RTTY. Though relatively small in number (35) they've made themselves known through demos of RTTY emergency preparedness during Field Day etc. The Pioneer Club was first formed in 1939 and still continues to assist those who want to get started in RTTY. Thanks to Clyde Tower-WA2MXB V.P. for the info.

Does anyone have information on the "mysterious-closed" Repeater reported heard weakly in the Minneapolis, Minnesota area on 10/70?

Hope to see you allll at the ARRL National Convention in San Diego 23 Sept. RTTY ers will surely make themselves prominent through a 2 hour Forum of several RTTY Clubs (1100 to 1300 Hrs.) and the JOURNAL is sponsoring a large Hospitality Suite. Let's all get together.

CU ENJOY
ARNY

DALLAS, TEXAS RTTY COMPUTER

Tom Aschenbrenner-WB5PUC - 14720 Cherry Hills - Farmers Branch, Texas 75234.

GENERAL

There are a number of things that WB5PUC will do automatically during a normal day.

(A) Each hour on the hour the date time group will be sent
(B) At midnight each day the total channel status will be sent
(C) at 0700, 1200 and 1900 the latest weather forecast will be sent

Command Summary

"WB5PUC?"

This command will cause the date and time to be printed when the requester drops his transmitter.

"WB5PUC:"

This command will cause the status of the channel to be sent. This status consists of:

(A) Minutes of time .70 was busy
(B) Total words sent over .70
(C) Quantity of messages stored at WB-5PUC
(D) Quantity of messages processed
(E) Quantity of idle buffers
(F) The current date and time

Cont. 3rd column next page

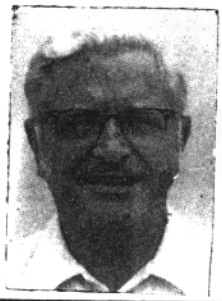
HITS & MISSES

From The Editor and his Mail

CHUCK EDWARDS W6MNO

4726 Barbarossa Drive -

San Diego, CA 92115



How time does fly. I was just thinking the other day about the journal and Don Crumpton W6KCW our late publisher and editor. It was about this time last year that he had made all the final negotiations with Dusty and the new crews that were going to help him get it off dead center. He made a lot of changes in the journal that have helped the circulation and most of those ideas we have tried to carry along. Even we have added some notable changes; such as advertising, larger size, different color each month and many others. We hope all these changes that have been made make the journal more attractive. We even went so far as to increase the beginners' RTTY hand book size, putting in a lot of new material about model 28's and stunt box modifications, filters, etc.

We here at headquarters assume that these changes are for the best. We have had but few letters which say anything but good. So guess that Dee and Yours Truly will keep on making 'em unless we hear differently from our readers.

By the way, now with the price of stamps getting beyond the ridiculous, be sure when you write in for technical information to me that you send along a self-addressed and stamped envelope. Otherwise ya might not gen an answer fer a long time. Hi! We have been getting some mail requesting technical information and answers with no stamps or envelopes and shucks it makes it tough on me to have to go out and buy stamps and envelopes and all that. I don't get paid fer my time or stamps so don't forget fellows, please. Don't mind though about the time as I have a lot of that.

The San Diego Teleprinter Society has been picking up a few out-of-state check-ins on 80 meters at 36075, each Wednesday local time. The group being new and just getting started really appreciate your trying to get into the net. It is a very interesting net with excellent net control managers. Try it — you will like it! They also have their 220 repeater up on a mountain at a six thousand foot level and it is getting marvelous coverage.

Just a reminder about the National ARRL convention here in San Diego. There is going to be a lot of RTTY material in and during the show. For example; we will have a RTTY forum. Skip WB6CYA, Arny K6PXA and W6MNO Chuck and several others will be the guys who will receive the questions and will try to get the answers. K6PXA Arny, will be the moderator and we expect that this will be a broad encompassing forum ranging from RTTY beginners to sophisticated computer adaptions to RTTY. So bring your problems to the convention and the forum and see if ya get an answer.

In talking to the people who make all the reservations, it looks like we will have somewhere in the neighborhood of eight to ten thousand people at the show. So if ya be planning to come, get your reservations in as soon as possible. The journal will have a hospitality room so be sure and look us up and have a 807 and a eyeball. Sounds like fun, don't it!

Very soon now we hope to get the newly designed tri-mode 300 RTTY-Morse Code-Video from Info-tech for testing. We will, of course, have it at the convention and have it actually in operation. The San Diego Teleprinter Society and the Southern Counties Teleprinter Society plan to have several live demonstrations going on at all times that the convention is on. So this will be your chance to try some of the new stuff on the air. Say, I bought one of those new little tiny Wilson Mark II handy talkies the other day. And one of the first things that I did with it was to test it out on the RTTY Simplex Channel 145.700 and the L A RTTY repeater on 146.10/146.70 and what do you know, they never knew the difference. That is one of the best little rigs that I have used in the walkie talkie line. It has over two and one half watts of power and has very sensitive reception. I was very impressed!

So-o-o if you wanna go RTTY mobile there you are! It is quite simple to adapt to your automobile battery. Just put a diode between the Mark II nicads and the auto battery input. Otherwise you fry the poor little nicads to a fare-thee-well. Remember the diode polarity! Looks like the DX contests went over real good last month. I see that a couple of our local hams KOPJ/6 came in real well and Skip our DX editor got honorable mention. Not too bad when you think about all the fellows who were in those RTTY DX contests. I think that I will have to try it next time and see what I can do. I used to do it on CW but never have on RTTY.

Sure would appreciate getting input letters from you RTTY'ers out there. Golly, during these summer months I have gotten nothing. So I have to sit here and dream up things to say. We have had a lot of inputs but it has been VHF info and other related material so Arny gets it. One thing for sure we will have a lot to say after the convention. I am looking forward to that and hope that I meet a lot of you there.

Don't forget I am on RTTY 14088 approximately at 2:00 to 3:00 local time so come on in and say Hello. Will see ya at the convention 73 DE W6MNO-Chuck.

CONTINUED

"WB5PUC!"
This command will cause three (3) lines of the standard test message to be sent out when the requester drops his transmitter. Upon test completion, the date and time will be sent.

"WB5PUC$"
This command is used as a test function. It will cause whatever text is input to be dumped out immediately after the requester drops his transmitter. For example suppose WA5YPI wanted to have a test line repeated to him.

The following:

"WB5PUC$ Hello this is a test.....RYRY .....Test....(Fig) /" would cause the line "Hello this is a test....RYRY...Test.." to be transmitted as soon as he dropped his transmitter.

"WB5PUC""
This command is used to enable the relay of all weather bureau radar reports to the .70 circuit. These reports will cover the entire state of Texas as well as some portions of the adjacent states. This command is useful if it is desired to trace the path of a storm as it moves across various areas.

"WB5PUC("
This command is used to turn on all emergency reports for relay from the weather bureau to the .70 circuit. Emergency reports are those that the weather bureau requests immediate activation of the "EBS" or emergency broadcast system. This command is useful for the long range detection of storm conditions before the Dallas area could be affected.

A.D.M. Communications, Inc.

Teletype & Communications Equipment

Doug Mathena (714) 747-0374

1322 Industrial Ave. Escondido, California 92025

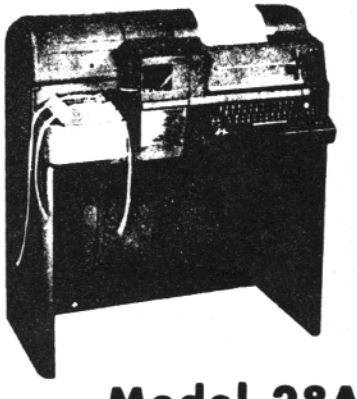
SALES and SERVICE

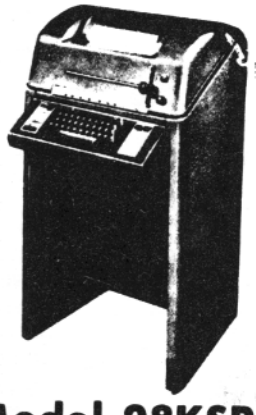
New & Used Teletype Machines

COMPLETE REPAIR ▪ RE-BUILDING

PARTS ▪ PAPER ▪ MOD. KITS

REPERFS ▪ T.D.'s ▪ RE-WINDERS





Model 28ASR Model 28KSR

WA6PMA DOUG

TIPS FOR MAKING HOMEBREW P.C. BOARDS

Nat Stinnette W4AYV
890 Virginia Ave.
Tavares, FL 32778

I am sure there have been many times when you have needed a circuit board either for some gadget appearing in a Ham magazine or for a circuit you have dreamed up yourself. There are many kits on the market which will make these boards but most of them use the photographic process and require either a film positive or negative. This also requires light sensitive boards, developing and other time-consuming stages plus the fact that you must get the positive or negative film some way. If you want professional looking boards in quantities of more than one this is the way to go. But if you need only one board not so professional looking here are some tips which will help you make one cheaply, easily and quickly.

Assuming you have a pet circuit you wish to try and perhaps have breadboarded it and know it works and you need a board do the following in order as outlined.

Make your schematic diagram on a separate sheet of paper. I find it easier to make all diagrams reading from left to right. That is, input at left and the circuit progressing toward the right. This diagram can be any size you wish but check carefully to be sure it is correct.

Secure some .1" grid paper. This is usually called graph paper in office supply stores and is ruled in soft green or blue ink. The horizontal and vertical lines are .1" apart and larger squares of 10 small squares are ruled in heavier lines. These larger squares are 1". This will be used to make the foil side layout. Gather up all the components you wish to mount on the board. Also, a small ruler graduated in .1" will be helpful.

For a simple illustration let's use a one transistor emplifier. See Fig. 1. Start at the left-hand side as in the schematic diagram and move toward the right making small dots where there is to be a hole for component leads. Measure the lead spacing of each component so that the holes will be correctly spaced. Spacing of resistors and capacitors have been pretty well standardized. For instance, holes for ¼ watt resistors are spaced .3" if mounted flat and .2" if mounted vertically. I prefer to mount resistors vertically as this conserves space. As you move from left to right making dots remember that there must be one hole for each lead of a component. See point "X" in Fig. 1. There must be four holes here as three components join to the transistor lead.

Be sure to get the right pin numbers in the right place when making dots for ICs. Most manufacturer's diagrams of pin numbers show a **top** view for the DIP package. There will be a small circle over pin one at the top left corner. If there is no circle the notch in the body of the case will indicate the No. 1 end. The numbering continues downward on the left side and then across and upward counterclockwise so that on a 14 pin IC, pin No. 14 is across from pin No. 1. On the metal can type where leads are in a circle the tab indicates pin No. 8 (for an 8 pin IC). Numbering moves counter-clockwise with the first pin to the left of the tab being No. 1.

This numbering method should be thoroughly understood because when working on the foil side of a board the numbers are reversed with No. 1 pin being in the upper right-hand corner of a DIP package and the numbers progressing clockwise.

If you want to use push-in terminals for external connections, make small circles to show that the holes are to be larger. I find it more convenient to use push-in terminals for external connections. Here the leads can be soldered and unsoldered easily or clip leads used which is often the case when a new circuit is tried.

After you have finished making all the dots and circles for holes, these should be connected with a line to conform to the schematic diagram. If, as is sometimes the case, you cannot draw a line from one dot to another without crossing another line, extra holes must be made for a jumper wire to be mounted on top. When this is finished draw lines to indicate the outer edges of the board.

Next, tape a piece of transparent onion skin paper over the drawing and make all the small dots and circles on this paper. This will be used as a drilling template. The first drawing made of the foil side could be used as a drilling template but it will be needed later when putting in the circuit trails.

Cut a piece of circuit board the same size as you have made on the drawing. Use 1 oz. copper clad board. Fiberglass boards are preferred although phenolic will do, however, in time it will begin to sag and warp especially if it is a large board. The 1 oz. copper boards are preferable since it takes less time for the etchant to work on the copper.

Drilling is next. Tape the onion skin template over the foil side of the board. Use a #60 drill for all holes except the push-in terminal holes. These should be #50. The #60 drill is a compromise size which will take the smaller leads as on a ¼ watt resistor up to the larger leads of a compacitor. These drills can be found at most hardware stores. Carbide steel is best but these are expensive and easily broken. Right here I would advise a small investment in a drill press. It is almost impossible to drill a board with a hand drill or an electric drill. Sears and most hardware and discount stores have a drill press that holds a ¼" electric drill for under $20. This is invaluable for drilling boards as well as other construction. A foot speed control sold by Burstein-Applebee Co. is most helpful leaving both hands free.

After all holes are drilled remove the onion skin template and look for burrs around the holes. If there are any use a larger drill such as 1/8" to ream off the burrs by hand.

When drilling holes for DIP ICs use a small piece of perf. board with holes spaced .1" taped over the spot where the IC goes. This will give you perfectly spaced holes.

Now you are ready to draw in the circuit trails using the original diagram you made for the foil side. Use an etch resistant pen which can be purchased from Radio Shack and various mail order houses. This is a felt tip pen which has ink in it which is impervious to liquids. Wherever this ink is put on the copper the etchant cannot attack the copper so that it will remain in its original state. A "Sharpie" (black) felt tip pen made by Sanford works find too and can be found in all office supply stores. The lines need not be very wide but should be heavy and with no breaks or thin spots. A sort of doughnut should be drawn around each hole making a small area to which the component lead can be soldered. The same applies to transistor leads and IC pin holes. If you make a mistake just scratch off the etch resistant with a knife or other sharp object.

After you have drawn in all the circuit trails, draw a circle around the various cluster of holes which have no connection to ground. These little "islands" will stand alone when the final etching process is finished. All other areas should be blacked in up to the circles of the "islands". See Fig. 1. On very large areas of the board Scotch Tape can be used instead of the etch resistant pen.

Etching is done in a small plastic tray. Do not use a metal tray. I keep several sizes of plastic trays on hand so that the smallest one can be used cutting down on the amount of etchant used. The etchant should be ferric chloride and can be purchased from Radio Shack and other places that sell printed circuit material. Ferric chloride powder can be bought which when mixed with water will give you a good supply of etchant economically but for an occasional board it is more convenient to buy a quart already mixed.

The etchant will work faster if it is warm. I usually put some of it in the tray

and place it on a heating pad covered with newspaper for protection. This can be done in advance so that the acid will be quite warm when the board is immersed. The board should be agitated in the solution during etching which further speeds up the process. When all the exposed copper has been eaten away remove the board and wash it thoroughly. Don't try to save the etchant you have just used as it will work poorly next time. Also, don't pour the etchant down the sink drain as it will work on the copper pipes unless you use a tremendous amount of water to flush it through.

After the board is washed thoroughly and dried, remove any Scotch Tape and scrub off the etch resistant with a nylon pad and Comet.

Mounting holes can be drilled at the 4 corners and ground connections made through the mounting bolts and metal spacers if board is mounted on a chassis. Or #50 holes can be drilled for push-in terminals for ground connections wires. I always try to leave the four edges of the board with copper which will be the ground.

The "AZCD" by W2LTJ -

The AZCD is short for automatic zero centering device. It was originally designed to compensate for drift in the sub-audio rtty reception used on the WR2AIS repeater. The AZCD has been shown to have great value in hf rtty demodulators. It performs for both functions of the ATC and the DTC in the famous TT/L-2 rtty demodulator and it is superior to the ATC in the ST-6 demod. The AZCD produces perfect copy with slow keyboard typing, mark-only, space-only, and machine copy. The ACZD is not affected by selective fades to zero even if they occur in the time frame of one character.

The AZCD, ATC, and DTC all strive to do the same thing, namely, center the mark voltage and the opposite polarity space voltage about zero in a balanced or symmetrical way in spite of the way they are presented from the output of a low-pass filter. An excellent and elaborate paper on this, the DTC, and the ATC was given by Hoff and Petersen in the December "RTTY" (journal) 1964 pages 2 to 10.

The circuit of the new AZCD is shown in Figure 1. Operational amplifiers of the 741 type are used which can be of single, dual or quad packages. Since the type is not critical 741, 558, 1458, 747, LM2902, 2900, and 3900 as well as many others are suitable. Key points in the circuit are labeled a, b, c, d, e and f from the input to the output. At the input a, M volts appear during the mark condition while S volts appear during spacing. M and S are peak detected separately and are briefly stored at b and c respectively. The summing amplifier produces -1/2(M+S at d. The next two resistors now combine 1/2 of either mark or space input with 1/2 of the voltage at d. The voltage at f is simply twice the voltage at e.

The Figure shows the math involved to find the output voltage for both the marking and spacing conditions.

For marking the output is:
$1/2\,(M-S)$

For spacing the output is:
$1/2\,(S-M)$

Now, we can punch in some numbers for mark and space and see how well the AZCD balances in a theoretical way. The actual way will depend on how long the time constant is in the peak detector compared to the marking and spacing times. But for now ignore the time constant.

Assume a mark of +5 volts and a space of -1 volt:

For the marking condition:
$(+5-(-1))/2 = +3$ volts

For the spacing condition:
$(-1-5)/2 = -3$ volts

Thus you see that a large unbalance of the mark and space input to the AZCD is perfectly balanced about zero on the output. Now you should put in any value for mark and zero for space... and you will see perfect balance about zero again, which is why the AZCD can copy mark-only or even space-only perfectly.

Performance data on the AZCD

The critical operations which require the best of performance by any threshold correction or balancing device are the reception of keyboard typing and mark-only (or space-only) situations. Almost any device, including a simple coupling capacitor, will produce acceptable copy at machine speed. However, rapid fade of mark or space or both puts a real demand on the correction device.

To test the action of the new AZCD the letter "Y" was chosen because it is alternating mark and space, and for the display the input and output of the AZCD were simultaneously recorded at high speed with a HP7402A recorder. The response of this recorder is capable of reproducing the rtty signals and resolving the individual bits at a chart speed of 125 millimeters per second. First the mark condition was established for a long time then the letter Y was sent and after 1/2 a second another Y was sent. Figure 2 shows the results. The top line is the input and the bottom line is output simultaneously recorded. The bits are numbered 1, 2, 3. Analysis shows the first bit is distorted 11% from the input while the last two are not distorted at all. The printer responded perfectly. 11% distortion is of little concern since a properly operating printer will tolerate 45% distortion. For comparison the same type of data was obtained on a borrowed TT/L-2 rtty demodulator since it is well known to give reliable print on keyboard sending when the DTC is active. These data are given in Figure 3. Analysis showed the first bit was 15% distorted and the next two 5% and 2% respectively. Thus you can see there is really no significant difference between the DTC in the TT/L-2 and the AZCD in my demodulator.

Another test was performed on slow keyboard typing using a Western Electric 164C2 Telegraph Transmission Measuring Set. This time I was able to include the ST-6 demodulator in the test series. Single letter keyboard sending produced 20% distortion on my unit with the AZCD, the TT/L-2 (DTC) gave 18%, and the ST-6 (ATC) gave 35% distortion. The latter point was checked with another ham and he observed the same thing on his ST-6. The ST-6 does not have a DTC position probably because of the Elmer Thomas patent which clearly covers the DTC. The patent number is 2,999,925 issued Sept 12, 1961 so it will expire this year (1978).Here again there is no difference between the AZCD and the DTC. The poorer response of the ST-6 is expected because it lacks the DTC or the equivalent. Many hams have noted that the ST-6 likes fast copy best, especially if the printer is a bit out of adjustment.

High speed recording data on the AZCD response to very raped fade and mark-only copy are given in Figure 4. In this example the AZCD output can be seen to stay perfectly centered as the signals fade up to a maximum and even when the space tone completely disappears. The printer gave perfect copy all the way through the run. In a similar test when space was deliberately dropped to zero in 50 milliseconds while sending machine RY's, not a letter was lost or misprinted. This test was more severe than could be obtained on the air.

The AZCD use on sub-audio rtty

The WR2AIS repeater transmits normal voice on 147.06 MHz using 147.66 MHz voice input. There is also a rtty input on 146.565 MHz which uses 2125 Hz mark and 2295 Hz space tone at 60 wpm. The rtty is accomplished by frequently shifting the voice output (147.06) in much the same

way that it is done on the hf bands. Since rtty shifts at a maximum rate of 37 Hz (for 75 baud 100 wpm speed) the keying frequency is not heard by those using the voice channel. A convenient way to demodulate the fsk rtty is to first pass the output of the fm receiver discriminator through a large coupling capacitor to remove drifting dc components, then through a low pass filter to remove any voice frequencies, and then recover the rtty by passing through the AZCD which corrects the distortion made by the capacitor coupling. Without the AZCD, only machine copy is practical. Details on the WR2AIS system will be published by the repeater group in the near future.

Summary and Conclusions

The results of testing the new AZCD showed that it could perform both duties of the TT/L-2 DTC and ATC. It was not a surprise that the AZCD copied mark-only as well as the ATC since both systems act in a similar way on the steady mark, that is, the outputs go to one-half of the marking input and then go to minus one-half mark when zero space occurs. Thus both AZCD and ATC produce balance on mark-only copy. The good comparison to the DTC is gratifying since now one device can be used for fades, slow typing, and mark-only reception. In addition the AZCD will operate from the millivolt level up to the power supply voltage level which is not a capability of either ATC or DTC.

The General Processor, a new firm in Florence active in the microcomputer field, offers his microprocessor named "CHILD Z" for a prize to the participants of the RTTY championship.

To obtain this prize is sufficient to make one or all of the RTTY contests of the World RTTY Championship with equipments including home-made microprocessors or use commercial equipment but have introduced an original and personal software.

The persons wishing to enter this portion of the contest send with your contest logs, sufficient doccumentation (photos, schematics, etc) of your system to:

Prof. Franco Fanti
Via Dallolio n19
Bologna Italy

Most important is the software entry in fact a low score will have little value in this part of the contest.

This prize has a high value in money but for me it is more important to introduce to the RTTY contest a new element that is not the manual ability of the operator but his ideas and advanced techniques. Many thanks in advance and Best 73

Franco Fanti signs

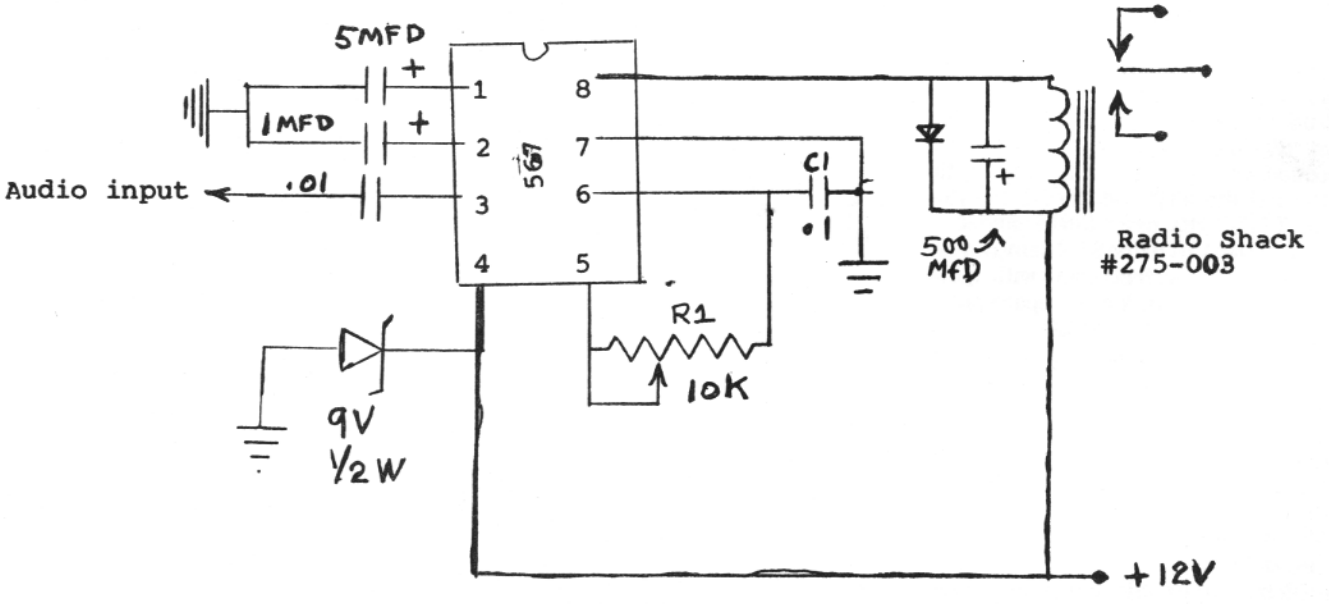
P.S. — the winner will be determined by a commitee of experts after the 1978 World RTTY Championship that will finish with the Giant RTTY Flash Contest in 1978.

GB2ATG

New bulletin transmissions have commenced on 14.090 MHz. At the time of going to press the times — all GMT — were 0830 (to VK & ZL), 1530 (far East) and 1600 (North America). For propagational reasons these times may have to be varied — listeners are advised to monitor GB2ATG for advance warning.

Reports of the test transmissions made during March have indicated that this "DX" service will be very popular. The test of this transmission will differ to that of the "home" bulletin — there being little point in telling Joe in Wogga Wonga of an RTTY lecture in Bogglethorpe! This, however, will compound the problem of finding sufficient news material to put in the bulletins so if you have any information at all, be it 'new from home,' DX news or local events please send it to Eric, G3IIR. (Eric Yeomanson, 32 Gaynesford Road Forest Hill, London, England SE23 24Q) Note that items should reach Eric at least ten days before the Sunday of transmission.

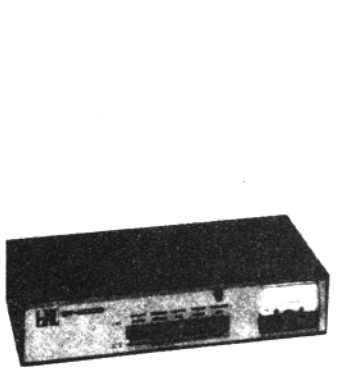
(BARTG Newsletter June 1978)



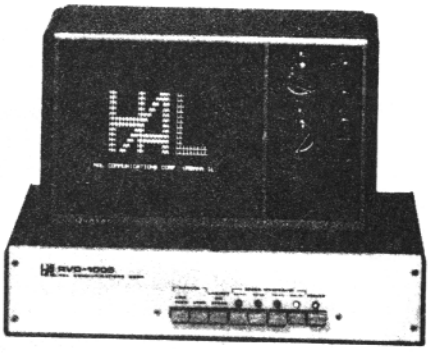
SIMPLE AUTOSTART
Melvin Leibowitz W3KET

Here is a simple autostart circuit for use on VHF RTTY. It is nothing more than a 567 tone decoder such as is used for Touchtone decoding. The combination of R1C1 determines the operating frequency and is set to correspond to the mark frequency in use. C1 should be a high stability type such as Mylar. Note that 9 volts is the maximum that should be applied to pin 4 although as much as 12 volts may be applied through the load to pin 8. The capacitor across the relay establishes a short time delay on the opening of the relay equal to about 3-5 seconds. This value may be changed to suit operator preference, larger values giving longer time relay.

A Component System for RTTY



ST-5000



RVD-1005

DKB-2010

Active amateur, short wave listener, beginner, or old-timer—you'll enjoy RTTY with the HAL component system. Shown above are our ST-5000 Demodulator, RVD-1005 Visual Display Unit, and DKB-2010 Dual-mode Keyboard. The RVD-1005 is a time-proven display generator that converts BAUDOT coded RTTY pulses into a video display. It receives the 4 standard RTTY speeds (60,66,75, and 100 words per minute) and generates a 25 line, 40 characters per line display. The low-bandwidth video output can drive either a TV monitor or a modified TV Set (power transformer and video connection required). The DKB-2010 will transmit these same four RTTY speeds as well as MORSE code at 8 to 60 wpm. The DKB also features N-key rollover, adjustable CW weight, HERE IS message, and internal CW side-tone oscillator. The 3-key standard buffer can be extended to 128 keys with the EMO-128 buffer option. The ST-5000 is the newest of HAL's line of RTTY equipment, offering 2-shift operation with high-performance active filter circuitry. It also has built-in AFSK oscillator and loop supply and can be factory tuned for either the "High" or "Low" frequency tone pairs. Autostart and printer control circuitry make the ST-5000 ideal for both electronic and mechanical RTTY terminals. For a high-performance and cost-effective RTTY station, the RVD-1005/DKB-2010/ST-5000 combination is hard to beat!

ST-5000

- 170 and 850 Hz Shift
- Low or High Tones
- Integral Tone Keyer
- Active Filters
- Autostart
- Meter Tuning Indicator
- Internal Loop Supply
- Attractive, Small Cabinet
- High-gain, Wide-bandwidth Limiter
- For either HF or VHF operation
- 120/240V, 50/60 Hz Power

ST-5000 ..... **$275.00**
(Specify High or Low Tones)

RVD-1005

- 4 RTTY Speeds (60, 66, 75, 100 wpm)
- Crystal Controlled
- Baudot RTTY Code
- Unshift-on-Space (Switch Selectable)
- Loop or RS-232 Input
- 40 Character Lines 25 Line Display
- Table or Rack Cabinet
- Use with modified TV Set
- 120/240V, 50/60 Hz Power

RVD-1005 ..... **$395.00**
(Specify Table or Rack Cabinet)
RVD-2110 Quasar TV **$150.00**
(Shown above)

DKB-2010

- Baudot RTTY & Morse Codes
- 4 RTTY Speeds (60,66,75,100 wpm)
- Crystal Controlled
- 8 to 60 wpm Morse Code
- Programmable HERE IS message
- N-Key Rollover
- 3-Key Buffer Standard (128 Key with 128 EMO option)
- Quick Brown Fox test message
- Automatic FIGS/LTRS for RTTY
- Internal CW Sidetone Oscillator
- 120/240V, 50/60 Hz Power

DKB-2010 ..... **$395.00**
(Specify HERE IS message)
EMO-128 Buffer Option .... **$ 85.00**

Write for our new catalog and RTTY guide.

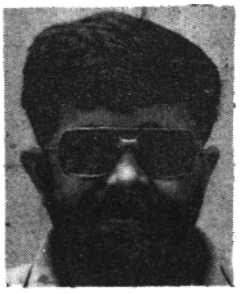
HAL COMMUNICATIONS CORP.
Box 365
Urbana, Illinois 61801
217-367-7373

For our European customers see HAL equipment at:
Richter & Co.; Hannover
I.E.C. Interelco; Bissone
Primetek Systems; Handen, Sweden
Radio Shack of London

• RTTY-DX •

SKIP PRINSEN WB6CYA 714-276-3182

3611 Merrimac, San Diego, Calif. 92117



Greetings to all:

Al, WA6QFN is in the spotlight again and promises to continue for some time to come. Al has been on from Swaziland Africa as WA6QFN/3D6 being very active primarily on during the weekends. Al says that he will be active from Lesotho as 7P8BC and in Transkei as 58AHC in Botswana we didn't get a callsign. Look for him on 20 meters Saturday and Sunday around 1400Z. He is also on in the evening here Friday and Saturday.

Grand Caymen was active on RTTY for a short time last month. ZF2AC also there was another operator there with Joe but I didn't work him. QSL via N3JL P.O. Box 2346 Garthersburg, MD 20760.

AH6 stations are not rare DX, it is part of the new call sign format that the FCC has come up with for Hawaii. I have had several questions about them. Also the KA calls may no longer be an American in Japan and it is sure causing problems for the QSL buro's. I would recommend QSL'ing direct for the guys and gals that have the KA type calls. Yours truly has applied for call sign change and will no doubt be a KA1 call as I want to get my stunt box coding etc. done prior to my move back East in a couple of years. From CT1EM who has been putting in a fine signal to the West Coast in the evenings on 20 meters we find out that he has shipped an AFSK generator to CR9AJ who may by now be active.

VS6EK has been active at around 1400Z on 20 meters a few W,K stations have been lucky enough to work him. He is in a tough location to work the U.S. and Canada. He has a sked with Colin on Sunday mornings at about 1400Z so look for him and 9M2CR. Colin has a super signal to the West Coast in the early mornings.

Gin JA1ACB is becoming more active again and says that GD3YEO is on around 2300Z and that it should be a permanent station listed in the callbook.

John W5PTD worked VK8HA in Darwin Australia on 20 meters on the 23rd of July at 04:30 local Texas time.

EA81Y on the Canary Islands had a super signal on 15 meters several days ago around 2300Z. There sure isn't much activity on 15 meter RTTY for as much as the band is open. Come on guys lets get on there and at least make some noise.

A number of awards were earned this summer and of very special note is DXCC number 30 which goes to a very dedicated ham who has now earned his second such award.

Edward "Mac" McGinley K7BV
4091 West Red Wing Street
Tucson AZ 85704
Very well done Mac!!!
Also the following:

WAC 15 July 1978 to I5NOD Moreno Collodi.

WAC 15 July 1978 to G3UUP Ealing and District Amateur Radio Society.

WAC 30 July 1978 to WB1CRG Peter Harris

WAC 15 July 1978 to IOLVA to Silvano Ricci.

WAC #57 all on 20 meters to WA9BOW Terry Pfeiffer

WAC #58 all on 20 meters to SWL Barry Niendorf

WAC #59 all on 20 meters to K8NN John Limbach

WAC #60 all on 20 meters to K4RN Dan Dolan.

S8AHC, Al his stateside call is WA6QFN and has been active as /3D6 is active this weekend only from Transkei. His latest address is P.O. Box 999, Secunda, TVL, Republic of South Africa. Also look for him from Lesotho as 7P8BC and also he plans a trip to Botswana, but I don't have any callsign info from him as yet.

W1GKJ Norm Davis received his number 120 endorsement stickes on the 7th of June 78.

From Ken Mabie W2PSU comes a list of some of the action on the East Coast.

FM7WB, EL2AG, DM3Y1, KL7RW, A4XFW, LZ1KDP, EA6BW, H18PM, KL71FP, VP2AR, A4XFW.

Ken says that Robby A4XFW will be on from Bolize (British Honduras) shortly.

John W3KV writes that he had a super trip to Europe for 5 weeks. He had obtained reciprocal licenses before he left and carried a Drake TR33C. Call signs he used were W3KV/DL, W3KV/HB, W3KV/OE, ON8KV, G5CIJ and F0EEK. He says he is very grateful to the RTTY boys and for their wonderful hospitality shown him on his visits. He sends his sincere thanks to all.

AH6D is a new call
for Paul KH6AG

QSL Addresses.

C31PS OSL via DL5NJ

5N2AMT P.O. Box 1150 Kaduna Nigeria

6Y5SS R. Stratton % Knox College, Spaldings Jamaica his speed is 50 band no gears.

PY2DRH P.O. Box 22 Sau Paulo

EL2AG Carlo P.O. Box 3849 Monovia Liberia

4X4QG P.O. Box 92 Heryelia Israel

A4XH11 Juergen P.O. Box 8835 Salalah Sultanate of Oman

ZF2AC Grand Cayman OSH via N3JN

ZF2BN Grand Cayman OSL via W4HET

5Z4PD Wolfgang OSL via DL3WL.

3A2FB Ray De Vos is now a Silent Key — from GARTG Magiyine "RTTY"

GD3YEO Richard, quite active, Europeans with short skip try him on 80 meters.

UTRP (Ukraine) He is printing but not transmitting. He will answer your RTTY on CW.

As I finish this up the time is 0400 and the "Woodpecker" is 20 over S-9. Sure wish that someone would clip his tail feathers.

Thanks to everyone for their inputs to make this article what it is. To the following W2PSU, WB6RWP, K0PJ16, CT1EM, VK2SG, JA1ACB, W5PTD, HB9AVK and again a very special thanks goes to John W3KV for his many inputs.

Thank you fellas
for your support
73 de "Skip"

1978 BARTG RTTY Contest Results

Anyone monitoring the HF bands early on the morning of Saturday the 25th of March would have quickly realized that the BARTG Spring Contest was underway once again. Signals from VK and ZL were coming in together with short skip stuff from Europe and even VE stations were audible quite early in the morning. The band conditions on 21 and 28MHz improved rapidly during the day and the 21 MHz band was still busy with RTTY traffic until well into the hours of darkness in Europe with signals from many of the

more westerly W call areas.

Our sincere congratulations go out to Barry, W3FV for his efforts which put him in top place this year. This was the result of much hard work and also no doubt to much encouragement from John, W3KV who until recently was the DX Editor of the RTTY Journal and who knows what it is all about! SM6 GVA in second place was able to improve on his placing of 7th last year and I3FUE moved up from 20th to 3rd place this year. It is very nice to see F9XY well up in the listings as in the past French stations have not featured with the high scoring stations and it is also interesting to note that almost 50% of the first 20 places are occupied by W and VE stations and gives some indication of the support this contest is receiving from that part of the world these days.

The interest in the RTTY mode seems to continue to improve and the number of logs received this year is the highest ever and would appear to be the highest in any of the major RTTY Contests which are held during the year. The top scores and the number of QSO's made by the leading stations are very similar to those of last year which may indicate that we are approaching some sort of saturation point as far as the single operator stations are concerned.

Associated with the general improvement in propagation conditions in the past year, there was a very marked change in the pattern of band utilization this year, with much improved conditions on 21 and 28 MHz. 21 MHz was especially useful to the W and VE stations who managed to push up their country multipliers and these two bands were also very useful to stations in the Far West and Oceania. In marked constrast to this, the 80 metre band was rather disappointing as it suffered from a very high noise level expecially late on Sunday which is when a lot of operators tend to move to this band in order to seek the last few country multipliers. The 40 metre band was very poor and in fact many entries from the more active stations show no contacts at all on this band. As usual 14 MHz carried most of the DX traffic but 21 MHz is now becoming a serious rival and the next few years should be worth watching.

The number of stations who managed to work (or hear) six continents was 51 and is about 40% higher than the previous year. Surprisingly the difficult one this year was South America, and only the fine work done by YV5GU assisted by CE3EX saved the day. As far as Europe was concerned, UA9PP and A4XGB in Oman were the best bet as not too many JA stations were worked by European stations. Quite a selection of VK stations were available, no doubt taking advantage of the decision to count VK call areas as separate countries and another welcome call from the Far East was Colin, 9M2CR. The African Continent was represented by several ZS6 stations and also 5T5JD was very active but unfortunately no entry was received from the later station. Two other calls worthy of mention are those of SM0IIB who put in a very good first entry and is a holder of a Swedish Novice Class license and the other is WD8CQN who is a YL operator, so welcome to the ranks of the RTTY gang, Mary Anne!

Most of the countries active this time were well known but the appearance of some of the new N type American call signs and also CG6CL from the VE6 call area caused large question marks in some logs. Favorable comment has been received concerning the increased activity by U.K. stations as GI, GM and GW (at least 3) were in evidence. It was a pleasant surprise to see how many U.K. stations took the trouble to send in entries of one sort or another because when it comes to the point of other stations making claims for awards, a G contact can be just as vital as any other prefix.

The number of countries active with RTTY signals during the contest was at least 56 and include the following: Alaska, Algeria, Antigue, Asiatic Russia, Austria, Australia, Belgium, Bulgaria, Canada, Canal Zone, Canary Isles, Chile, Christmas Island, Czechoslovakia, Denmark, Dominican Republic, East Germany, Eire, England, European Russia, Finland, France, Guadeloupe, Hawaii, HongKong, Hungary, Indonesia, Israel, Italy, Japan, Latvia, Luxembourg, Malaysia, Marshall Islands, Mexico, Martinique, Mauretania, the Netherlands, New Zealand, Norway, Oman, Peru, Sardinia, South Africa, Spain, Sweden, Switzerland, Syria, Uruguay, United States, Vatican City, Venezuela, West Germany, Wales and Yugoslavia.

As a direct result of the contest, 12 Quarter Century Awards have been issued and also in due course existing holders of this award will have their country totals up dated. Several claims have been received for the WAC award issued by the RTTY Journal but many of these cannot be sent forward because several of the vital stations did not send in any form of log.

In general the entries were of a good standard although several stations were penalized for errors in recording the call sign of the station worked and in one case a station lost 70,000 points for this reason alone! Another point overlooked is the request to use separate log sheets for each band used. The reason for this is to try and lessen the work load of those checking logs as it is always a problem to segregate contacts in the various bands when these are all listed on one sheet. You probably know how you hopped about between the bands but we don't. One other surprise was to receive a very bulky envelope from East Germany which contained no less than 14 logs of one sort or another and is one way of keeping the postal costs lower. It kept us busy for several evenings.

Despite the fact that the contest had to be held over the Easter weekend (this was due to other contests in March) the response was very gratifying. The W and VE call areas gave us tremendous support and account for about 30% of the total entry and once again indicates that BARTG's Contest is the ONE to which many people look forward each year. Thank you all for your interest.

The contest work this year has received some extra help this year and I would like to place on record my grateful thanks to Dave, G8HQL for his interst and his practical help in some of the log checking and which has enabled us to get the results out within a reasonable time. Certificates will take us just a little while longer but it is hoped to get these posted by the first week in July. Also my thanks to Eric, G3IIR who gave the event excellent publicity through the GB2ATG RTTY News Bulletins.

One or two comments selected from the many contained in operators logs and letters.

"Thanks for the contest which was really enjoyable. Rather good condx and glad to find activity on 10 meter. C U next year."

OZ1AKD

"I had a handicap. My rotator was frozen in direction to the States. I heard several VK stations but I could not move the rotator."

LA3YU

"I was puzzled by the German RTTY contest running on the Sunday. Some stations were not identifying which contest they were in and consequently I lost a lot of points.

BRS27262

Also in part from a recent letter from Ted Double G8CDW I quote the following: "Speaking of mailing problems, there is an 'add to' note to go on the end of the contest results. Owing to problems with surface mail from the states there was a batch of logs from W1MX, K4CG, W7MI and WA9BOW which arrived on the 17th of June which was well after the closing date and in fact the results had already been published via the GB2ATG News Bulletin, these logs carried postmarks around the middle of April! Moral seems to be, get it away fast but fast and preferably by Air Mail." ENUFF SAID!

Classified Ads

30 words $2.00. Additional Words 4 c ea. ***Cash with Copy - Deadline 1st of Month.***

HW-16 MODIFIED FOR AUTOSTART. 80-40-20 meters. Receiver crystal locked or VFO. XT-1 transmit oscillator. Regulated Bt. Rack mounted with all controls on front panel. Crystals for 14075 and 3607.5 included. Modifications documented. $95.00. K7FE. Frank Exum, 1244 Granada, Casper, WY 82601. (307) 265-8083.

WANTED: Model 28 Keyboards (10), Model 40 Cabinet, Lou Carbaugh P.O. Box 398. New Cumberland, PA. 17070 717-938-6978.

TU LOOP SUPPLY BOARD. Contains all necessary for +12 -12 low voltage supply with provisions for high voltage loop supply. Similar to that of ST-5. Ideal for most TU's including DT500 and DT600 units. $5.95 per board plus 85c shipping. Dayta Pro Electronics, formerly Nu Data Electronics, 104 N. Emerson Street, Mt. Prospect, IL 60056.

ELECTRONIC KEYBOARD CABINETS. Six Sizes available. Depth 8.4 in. Height 3 in. Width 14 in. $15.20, Width 17 in. $18.35 Width 20 in. $19.25. Depth 11.4 in. Height 3 in. Width 14 in. $16.50 Width 17 in. $18.80 Width 20 in. $20.75. Alum top and base. Shipping incl in price. Blue base with choice of black or white top. 10 Minute timer kit, variable 1-20 min. $8.95 Board alone $4.20. Daytapro Electronics, formerly Nudata Electronics. 104 N. Emerson St., Mt. Prospect, IL 60056.

RTTY ID GENERATOR. Accepts 5 or 12 volt supplies, 31 characters available, please include ltrs. figs. spaces, etc. Your pre-programed answer-back must be supplied with order. Example: "DE K 9 WRL". Neil Mt. Prospect". Board same size at ST-6 boards. $34.99 kit, board alone $8.50. 5V power supply for above $11.95. Daytapro Electronics, formerly Nudata Electronics. 104 N. Emerson Street, Mt. Prospect, IL 60056.

NEW CW ID UNIT. Includes many extras, on board interface for FSK and AFSK plus H.V. Interface, 10 minute timer, variable speed 5-24 WPM, on board 7805 allows 5 or 12 volt use. $37.90 kit. Mini version of above, ID only with 7805 regulator $21.95 kit. Board alone (same for both units) $9.45. Power supply for above 5V 1A $11.95 kit. Daytapro Electronics, formerly Nudata Electronics. 104 N. Emerson Street, Mt. Prospect, IL 60056.

NEWS—NEWS—NEWS—Amateur Radio's Newspaper, "Worldradio", Trial subscription — Two issues for one dollar. "Worldradio" 2509-F Donner Way, Sacramento, Calif. 95818

HAM RADIO Magazine
The no-nonsence state-of-the-art technical magazine. Dozens of exciting - projects and an emphasis on quality un-matched by any other radio magazine. Subscribe no and see for yourself. 1 year ... $12.00...2 years.....$22.00 and 3 years .....$30.00.
HAM RADIO Magazine,
Greenville, NH 03043

TELETYPE FOR SALE: Model 28 ASR's, KSR's, typing reperfs, and TD's. New and used parts available including cabinets, tables, mod kits, gears and gearshifts. Paper, ribbons and supplies. Send SASE for complete list and prices. K9WJB, Lawrence Pfleger, 2141 N. 52nd Street, Milwaukee, WI 53208.

ATTENTION FAKSIMILE OPERATORS A list with more than 200 frequencies of faksimile weather stations transmitting on SW is airmailed to you for $3.00 or 10 IRC. It includes frequency, callsign, name, drum speed and cooperation index of each station. Write to: Joerg Klingenfuss, Goethestrasse 14, D-7400 Tuebingen 1, West Germany.

TELETYPE PAPER—50¢ per roll or $5.00 per case. You pay shipping charges. 54 pounds per case. Call (714) 276-3182 or Write: Skip , WB6CYA, 3611 Merrimac Avenue, San Diego, CA 92117.

DYNAMIC MUTUAL Conductance tube tester model TV-7U. Very Handy to test many of the early receiving as well as industrial tubes. Outside appearance rough, Inside good. $19.95. Harmon, 5628 10th Ave., South Birmingham, AL 35222.

HAL COMMUNICATIONS will buy 88 MHY toroids (unpotted, as furnished in the ST-6 Kit). Contact Jim, Box 365, Urbana, IL 61801. (217) 367-7373.

WANTED: CRYSTAL IMPEDANCE METERS TS-683, TS-330, TSM-15 RFL Models 531, 459 or 1207. Glenn Kurzenknabe, K3SWZ, 403 Centerview Ave. New Cumberland, PA 17070.

EXPERT REPAIR WORK done on Non-commercial teletype machines. Chicago Area only. Trouble with working machine $20.00 plus parts. Others by estimate. Call 312/392-2358 and ask for Neil.

YOU NEED INFORMATION ON COMMERCIAL RTTY STATIONS? News Agencies, Telex, Weather . . . on shortwave? I have up-to-date frequency, callsign, schedule, code lists. Write for details. Joerg Klingenfuss, Goethestrasse 14, D-7400 Tuebingen 1, West Germany.

SPECIAL — MODEL 28 compact receive only teletypes with 32/33 pedestal and sply with 3-speed gearshift only $175.00. Model 28 ARS's $350.00, with printing perforator $375.00. Model 28 receive only in console $175.00. Model 28 typing, printing perforator's w/32/33 pedestal $50.00. TWX units add $50.00 for modem. Send SASE for list. Goodman, 5454 South Shore Dr., Chicago, IL 60615, (312-752-1000)

TELETYPE PAPER single copy 50¢ per roll, have 60 rolls. $25.00 for all you pay postage. Call 919-447-7536 or write: W.F. English, 46 Alexander Rd., Cherry Point, NC 28533.

PRINTED CIRCUIT BOARDS: RTTY Selcal with TTL logic, (73 magazine, Nov. 72) $12.00. ST5A-W/P.S. (2 boards) $6.25. AK-1 (AFSK) $4.25. CW IDer (Feb.73, 73 magazine) $4.75. New CW IDer(dec. 76, 73 magazine) $8.50. Synthesizer-75-S Collins rec. (Dec.75 Ham Radio)(2 boards) $12.50. Digital capacitance tester - W/PS (Radio elec. Dec 77) (2 boards) $11.00. Speech compressor (QST Mar.76) $9.50. New logic probe (board and parts) READ: TTL-open -low-high $6.95. Hefty 12v. supply regulator 5A.-50A $2.50. Warble alarm/siren (5w) (board & parts) $3.95. Instructions and parts list included: S.J. Zalewski, 29307 Red Cedar Dr., Flat Rock, MI 48134. 313-782-9316.

FOR SALE: VIDITYPE video convertor. Direct readout, all speeds, from any loop circuit to TV display. Perfect condition. $140 delivered. Claude Sweger. Box 1842, Ft. Stockton, Tex. 79735.

MODEL 28 RO TYPING REPERFS; 3 speed gear shift (60-75-100); excellent, appear unused since reconditioned. $60.00 each FOB S.M. Gaston, 2117 Westlake Drive, Plano, TX 75075.

28 GEAR: KSR, $185 - Keyboard typing Reperf, $100 - Stand-alone TD (LXD), $75 - all excellent. WA2HWJ, 516-582-9364.

FOR SALE: Healthkit SB-104 Station W/SBA104-1 & SBA104-3 $720.00, SB-614 $160.00, SB-634 $180.00, SB-644 $110.00, SB-604 & HP1144 $120.00 (factory alinged) package $1200.00. HD-1410 Keyer $40.00, ST-6 (factory wired) $275.00, Teletype 28ASR W/REPERF $550.00, Thunderbolt Linear $500.00, NCL-2000 Linear $500.00, Robot SLO-SCAN 70A $175.00, KIM-1 Computer W/CABINET $225.00. Truman Boerkoel 513-429-0589. 2050 Brookridge Drive. Dayton, Ohio 45431.

YOUR TELETYPE--professionally overrhauled. Non-commercial TTY machines. $20 p/h plus parts, or by estimate.Try us for that hard to find part-send part # needed. Cash for junk RTTY. E.M.S. 1000 E. Apache Blvd. Suite 114, tempe, AZ 85281. 602-966-0834.

TD 11/16 tape, yellow oiled. Carton of 10 rolls $3.00 Add UPS 13lbs. Carton of 40 rolls $10.00 Add UPS 47 lbs. Harmon, 5628 10th Avenue South Birmingham, ALA 35222.

RM-300, THE COMPLETE TU and AFSK generator on one board. Your CW ID generated from on-board PROM. Thinking of VHF RTTY through your local repeater? This premium quality board is ideal. Complete documentation$2.00.RM-300 board just $21.25.. Complete RM-300 kit)less PROM)$71.25 PROM programmed with your call $7.00.RP- 400 power supply (plus 5v. & plus and minus 12v. and dual loop supply) board only $21.25. Complete kit with heavy duty transformer and solid state autostart relay $71.25.Calif. residents add 6%. Postage and handling $1.00. Eclipse Communications, 5 Westwood Drive, San Rafeal, CA 94901.

WHAT! THE ST-5 improved? You bet! The MEG-1 RTTY Demodulator is designed to be built by the beginner, modular, and easy to work on. Curious? For information and prices write to the Midnight Engineering Group, PO Box 349, Galesburg, IL 61401.

PRINTED CIRCUIT Board drill bits! You can now get carbide printed circuit board drill bits for a reasonable price. 1/8" shank , approximately 1" long. Four sizes available; .047"(approx. #56 drill), .043" (#57) , .033"(#66), and .030" (approx. #68-69). $1.25 each, includes shipping, Minimum Order Is Two Drill Bits. Illinois residents add 5% sales tax. Midnight Engineering Group P.O. Box 349, Galesburg, Il 61401.

UT-4 COMPONENT UPDATE. FC33512DC fifo price reduction - now $1200 each. Uarts choice of GI-AY5-1013A or TMS60-11NC $6.00, MC 1408L6 (MC3408L) D/A $3.25, 74LS221N $1.25, MJE-340 $1.25. Programmed VE3CTP ASCII/Baudot conversion PROMS (Aug 77 Ham Radio) and TVT-6 Scan and Decode Proms $3.25 each. Also reprints of 4 UT-4 troubleshooting art articles from 1976/77 Journals $1.00 PP. (courtesy airmail overseas). Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA 92109. 714-274-7060.

HAL RVD-1005, DKB-2010 morse-baudot keyboard, matching HAL 13" professional monitor. Sells for $1100 plus $699 prepaid by UPS. Russ Feran, WA5OXK, 2519 Holid

by UPS. Russ Feran, WA5OXK, 2519 Holiday Drive, New Orleans, LA 70114.(504)-392-9101.

NAME TAGS

....WITH "RTTY" IF DESIRED....
BEAUTIFULY ENGRAVED
CALL PLATES WITH PIN
CALL ONLY $1.80 PLUS NAME $2.15
WITH CLUB NAME $2.90
Over pocket with pin ad 75¢

FAST SERVICE

SPECIAL DISCOUNTS TO CLUBS Write for quote
COLORS: Green, Blue, Black / white letters
DESK AND SHACK PLATES ANY COLOR $3.75

Calif. res.please add 6%sales tax
Postage Paid in U.S.A.

EDCO ENGRAVING
P.O. Box 15093
San Diego, Calif. 92115

DOVETRON TSR-200 teleprinter speed converter-signal regenerator is a 5" by 5" card designed as the digital heart of the MPC-1000CR terminal unit. May be simply interfaced to other tus. Consists of programmable UART regenerator, dual crystal controlled clock and a CMOS bilateral steering section. Power requirements: 5/15 volts at 20 mils. Price $99.50 postpaid. Add $15.00 for front panel BCD speed switch and cable. DOVETRON, P.O. Box 267, South Pasadena, CA. 91030. 213-682-3705.

NS-1A PLL DEMODULATOR W/T $26.95 ppd. Parts kit including board $19.95 ppd. SASE for info. Nat Stinnette Electronics, Tavares, FL 32778.

88 mH toroids 5/$3.85 ppd. Nat Stinnette Electronics, Tavares, FL 32778.

"TEKTRONIX 310A oscilloscope, manual, original carton, probe, mint, $250. Demodulator:DT-600, UT-4 and XTR-100 in modu-line cabinet. High quality parts and craftsmanship. Sell for cost of parts... $350. Details upon request including photo Ron Ott, W6XY, 528 Bonita Ave.,Pleasanton, CA 94566".

WANTED, FOR Model 26. Function arm stamped 4-A, Catalog #90464. Function arm stamped 7-C, Catalog #90470. All listed in Teletype bulletin 1073, Issue 1, July 1937. Mark Wilson, 3827 N.Elmwood Kansas City, MO 64117.

MODEL 28 ASR Friction complete wiith TD and keyboard perf $400. with reperf $460. Model 28KSR friction $200. For answerback add $50. For 60-75-100 gear shi $225. Model 28 LPR Reperf (no keyboard) $150

MODEL 28 ASR's – KSR's, Repurfs - Keyboards, TD's - Printers, Parts - All priced for Hams. All in excellent condition. A.D.M. Communications, Inc., 1322 Industrial Avenue, Escondido, Ca. 92025. (714) 747-0374

TELEPRINTER Parts, manuals, gears, ribbons, paper, tape, converters; toroids. SASE for list. Wanted TT, KL, parts; 2BP1/etc., tubes. Typetronics, Box 8873, Ft. Lauderdale, FL 33310

with 60-75-100 gear shift $150. Model 28 LXD stand alone TD $100. All above rewired and ready to plug in. Bill Parker, 984 Amelia Ave., Akron, OH 44302.

ELECTRONIC EQUIPMENT hotline is a new classified advertising newsletter for buying and selling professional, industrial, and surplus electronic equipment. Subscriptions $6/year, ads 50¢/word. Prepublication offer: $1.00 off subscriptions and 20% off all ads postmarked before Oct.1, 1978. Electronic Equipment Hotline, PO Box 4768, Panorama City, CA 91402.

WANTED: MITE AN/UGC38 or 40 Teleprinter or AN/UGC 41 Teletypewriter. Write Mike Harris, PO Box 1002, Cushing, OK 74023 or call 1-918-225-4115.

CUSTOM BUILDING-Amateur radio equip. repair specialist-digital & Solid state circuitry a speciality- large or small projects..John Roache, W1SOG, J&J Electronic Waterbury, VT 05676.

AFSK GENERATOR direct replacement board for AK-1 IN ST-6. Has CW ident with your call.170 shift only. Other shifts available. Stable output. Special at $29.95. Allow 3 weeks for delivery, Sulfun Electronics Services, PO Box 1475, Weaverville, CA 96093.

BUY YOUR RTTY BEGINNERS HANDBOOK **$4.50**

INFO-TECH M-300

THE SUPER KEYBOARD THAT GENERATES:

Morse 4 to 125 WPM
ASCII 110 & 300 Baud
RTTY 4 speeds, 2 shifts using built in function generator AFSK. Built in QUICK BROWN FOX. Built in RY generator. User programmable CWID. Auto CR/LF. 700 character running buffer and 10 recallable message memories of 120 characters each and much more. Price $450.00 F.O.B. factory

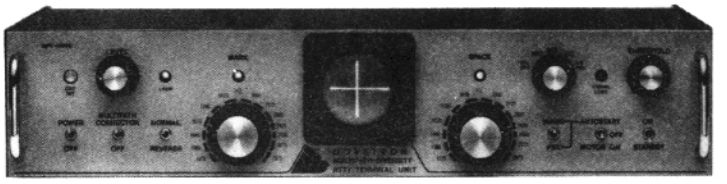
Mastercharge & Visa accepted
For more information write:
Info-Tech, Inc.
2349 Weldon Parkway
St. Louis, Missouri 63141

WATCH FOR THE RTTY JOURNAL 'USERS REPORT'ON THIS KEYBOARD AND NEW INFO-TECH CONVERTER.....SOON.

FROM THE PUBLISHER:
The RTTY JOURNAL MUST INCREASE ITS SUBSCRIPTION RATES DUE TO THE INCREASE IN MAILING AND HANDLING COSTS. I REGRET THIS VERY MUCH. RATES AS OF OCTOBER 1,1978 WILL BE:
US- $5.00 per year.

CANADA and MEXICO -$6.50 per year
Air Mail $7.50 per year.
FOREIGN $9.00 (thru managers) per year
FOREIGN AIR MAIL $12.00 per year.

DOVETRON

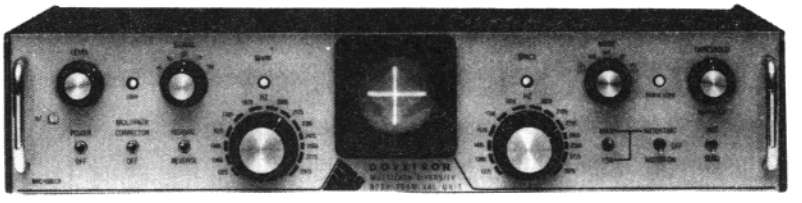


MPC-1000C

Multipath Correction
In-Band Diversity &
AFSK Tone Keyer

Amateur Net: $545.00

Standard features include CONTINUOUSLY tuneable Mark and Space channels (1000 Hz to 3200 Hz), Dual Mode (MARK or FSK) Autostart and internal high level neutral loop keyer (20 to 60 ml). Both EIA and MIL FSK outputs are provided for direct interface to microprocessor and video terminal peripherals.

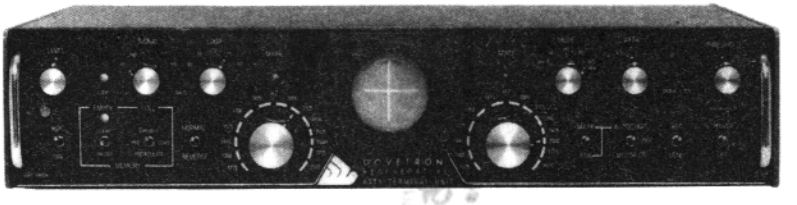


MPC-1000CR

Signal Regeneration &
Speed Conversion

Amateur Net: $645.00

A front panel switch permits internal TSR-200 Signal Regenerator-Speed converter assembly to electronically "gear-shift" between 60, 67, 75 and 100 WPM. All incoming and outgoing signals are regenerated to less than 0.5% bias distortion. Also available with DIGITAL Autostart (TSR-200D): Amateur Net: $695.00



MPC-1000R/-
TSR-500

Dual UART Regeneration,
Speed Conversion, 200
Char. Memory, Word Correction & DIGITAL
Autostart

Amateur Net: $895.00*

The MPC-1000R/TSR-500 provides Preloading and Recirculation of the 200 character FIFO Memory, a keyboard-controlled Word Correction circuit, Variable Character Rate, Tee Dee Inhibit, Blank/LTRS Diddle, a Triple Tone-Pair AFSK Tone Keyer and a Character Recognition/Speed Determination DIGITAL (DAS-100) Autostart mode.

***The MPC-1000R is also available without a TSR assembly and functions as a MPC-1000C with a Triple Tone-Pair AFSK Tone Keyer. This "Basic-R" permits future expansion with a TSR-100, TSR-200, TSR-200D or TSR-500 by simply lifting the lid and plugging in the appropriate TSR assembly: Amateur Net (Basic-R): $595.00**

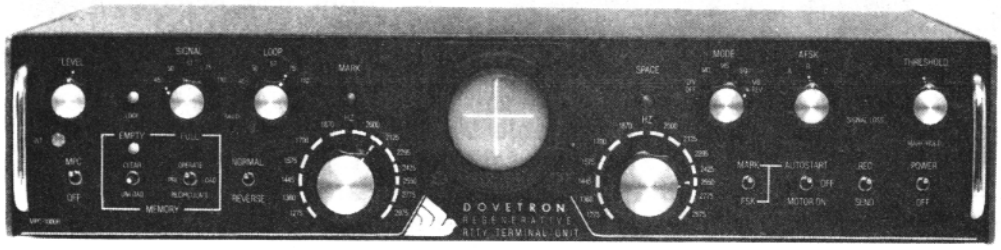
Your QSL will bring complete specifications, or call: 213-682-3705.

DOVETRON

627 FREMONT AVENUE
(P. O. BOX 267)
SOUTH PASADENA, CA. 91030

MPC-1000R BY DOVETRON

MULTIPATH CORRECTION, IN-BAND DIVERSITY, SIGNAL REGENERATION, UP-DOWN SPEED CONVERSION, 200 CHARACTER FIFO MEMORY, KEYBOARD-CONTROLLED WORD CORRECTION & DIGITAL AUTOSTART



THE MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

The DOVETRON MPC-1000R is a complete Transmit-Receive modem designed for optimum radio teleprinter communications on land, sea and in the air.

Standard features include a high level loop supply and keyer (neutral or polar), EIA and MIL FSK outputs, a phase-continuous AFSK Tone Keyer with three selectable Mark - Space - Shift tone pairs, Mark, FSK & Digital Autostart, Automatic Markhold, an internal RY Generator for terminal unit Self-Test and circuit adjustment, and a Signal Loss Alarm circuit.

The MPC Series is available in six different models to meet your exact requirements.

Complete specifications are available on your request, or call 213-682-3705.

DOVETRON

627 Fremont Avenue
South Pasadena,
California 91030, U.S.A.

RTTY Journal

PO BOX RY

Cardiff by the Sea, CA. 92007

SECOND CLASS PERMIT PAID
AT ENCINITAS, CA 92024