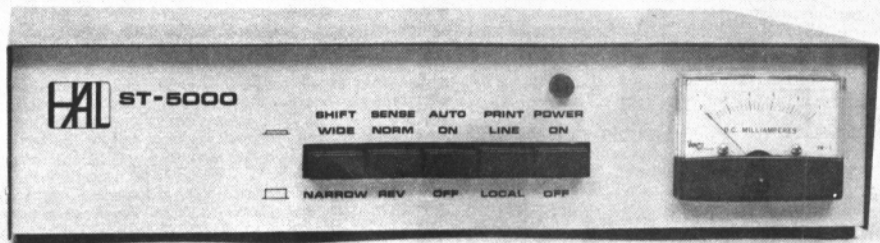


New Demodulator from HAL.



HAL Communications Corp announces the HAL ST-5000 Demodulator/Keyer providing excellent performance at moderate price for the reception and transmission of FSK teletype signals on HF radio bands or on VHF-FM repeater and point-to-point radio links.

The ST-5000 features a hard limiting front end, active discriminator filter, active detector circuitry for wide dynamic range.

Autostart operation with a printer motor control relay is standard. Front panel switches are provided for wide or narrow shift (normally set for 850 Hz and 170 Hz shift), normal or reverse sense, autostart on/off, print line/local (the receive/transmit

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The audio keyer section of the ST-5000 generates stable, phase coherent audio tones. A self-contained high voltage loop supply drives conventional mechanical TTY equipment. The ST-5000 also produces an RS-232 compatible signal which can be used to drive HAL electronic TTY video display equipment.

An attractive blue and beige cabinet completes the ST-5000 package.

Write or call HAL Communications Corp., P.O. Box 365, Urbana, Illinois 61801, 217-367-7373 for more information.

RTTY JOURNAL

MAY-JUNE 1977

EXCLUSIVELY AMATEUR RADIO TELETYPE

Volume 25, No. 5

35 Cents



"Don," W6KCW

"Don", W6KCW is the new Editor and Publisher of the RTTY JOURNAL. Don has recently semi-retired from his own printing business and now has the time and facilities as well as experience to carry on with the Journal that Merrill Swan started nearly 25 years ago. Published continually since then, it is a record for a specialty magazine in Ham Radio.

Started in RTTY right after WWII as soon as machines were available . . . and frequencies were returned to us . . . At that time was more of a builder than operator forced into being a rather lone wolf due to the lack of activity in that area, having been licensed for over 30 years, of course have tried all phases of amateur radio (always returning to RTTY) . . . Have never been in electronics commercially having been a printer for 30 years owning my own business . . . Was a fighter pilot for Uncle Sam during WWII flying P-40 es P-51's for many hours. Spend about 99% of my time on RTTY VHF, still love to build equipment both for myself and others . . . Am on the air daily in the evenings . . . Have built a couple of repeaters for RTTY and at the present am working on repeaters for both 220 and 440 RTTY as you know am recently retired and will be 55 Nov. 30th . . .

Don will have more details on himself and his plans in his first issue after the change.

Remember, all mail should be addressed now to RTTY JOURNAL -- P.O. Box RY. Cardiff by the Sea, CA. 92007.

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FIRST CLASS MAIL

RTTY JOURNAL

P.O. Box 837

Royal Oak, MI. 48068

Visual Requirements for Working on Printed Circuit Boards

Dr. ROBERT SULLIVAN, K9SRL
410 N.E. Seventh St.
LINTON, IN. 47441

With the introduction of transistors and miniaturized circuits in the past years, most everyone dealing with these entities has probably experienced at one time or another difficulty "seeing" components and circuits due to their reduced size. Now with the recent advent of integrated circuit electronic devices which require even smaller printed circuit board layout design, the visual or "seeing" requirement is even greater. When one considers the magnitude of visual anomalies found in the general population, i.e., nearsightedness, farsightedness, astigmatism, or combinations of these, and when one includes problems of binocularity (the ability or inability of the eyes teaming together) such as one eye receiving a larger image than the other, poor eye muscle coordination, cataracts, and any ongoing or past history of ocular disease, it is no wonder many of us end up with solder bridges, improper or unsoldered connections, and components mounted improperly. The fact is that many simply cannot "see" well enough to avoid these pitfalls.

The author recently completed a project that used twenty-nine I.C.'s, three of which were L.S.I. devices, all mounted on four P.C. boards, three of which have circuit paths on both sides. Even though I have 20/20 vision at distance and near and have never had any pathological conditions causing any visual impairment, I experienced great difficulty "seeing" my work. I therefore came to the conclusion that if I were having these kinds of problems with what is generally considered "normal" vision, there must be many fellow electronic hobbyists who are having even greater problems. With this in mind, I offer the following observations to help in understanding these visual tasks and indeed allow most to "see" with better efficiency.

First, one must realize that vision in man requires light. But it has to be "useful" light, i.e., not too dim (below the visual threshold) nor too bright (above the threshold and therefore saturating the visual system, especially the retina). Second, visual acuity (how well one sees) depends upon image size on the retina. This is directly related to the object size. The conclusion is that if one has the proper lighting conditions and

magnification, visual acuity generally improves. However, there are limiting factors to this. For example, as the image size on the retina gets larger, the field of view gets smaller.

If you are nearsighted (cannot see well at a distance without your glasses or contact lenses) you might do better visually at the near distances we use in electronic construction without your glasses or contacts. Since a nearsighted eye without correction in place is in effect "too strong", removing the spectacles has the same effect as looking thru a magnifying lens. You will notice that near objects (within about 20 cm. of your eyes, depending upon your prescription) look larger. However, this might not work if you have astigmatism, as your vision could be distorted.

If you are farsighted (cannot see well at near without your glasses or contacts), you should wear your correction at all times for near electronic work. Since a farsighted eye is a "weak" eye without correction, wearing glasses or contacts in effect makes your eyes "stronger". Also, farsightedness involves a problem with the eye's focusing mechanism and without correction, eye fatigue and headaches are more common.

If you normally wear glasses full time and if they are the bi-focal or tri-focal type, you should wear them for near electronic work.

In conclusion, you might consider having a special pair of glasses made especially for electronic work. I made myself a pair with one lens a plus 16 Diopter power and the other lens opaque. This is to force me to use one eye only since such a large prescription for both eyes will create a condition making binocularity impossible. This is a common problem with some of the available "Optical Aids" that are recommended for near visual tasks. These devices are usually binocular in nature (both eyes are used) and in order to maintain this binocularity, weaker lenses are used and the resulting magnification is less. I put the plus 16 lens on my right eye since I am right eye dominant. With these glasses approximately 4X magnification is achieved and the field of view is about 7 cm. The focal point is 6.25 cm so I have to hold things close. I found that with these glasses and a handheld penlight (I use the disposable type that are so popular these days), I was able to examine P.C. boards for errors in component mounting, solder bridges, and general inspection with great ease. Just one thing, these suggestions should be implemented after you have checked with your local eye doctor.

ST-6 Motor Control Modification.

AL HARDY, VE4HE
369 Dunrobin Ave.
WINNEPEG, MANITOBA
CANADA, R2K-0T7

ST-6 MOTOR CONTROL MODIFICATION

About one year ago I obtained a Hal ST-6 demodulator and in the past year have found it almost impossible to improve upon this excellent piece of equipment.

However, on my equipment, when the autostart drops out, it takes my Model 28 ASR about five seconds for the motor to come to a full stop. As the loop circuit in the ST-6 is switched to a "Space" condition when the Autostart Relay opens, my printer "chatters" or runs "open" while the motor winds down to a full stop.

Figure 1 shows the existing wiring of the Autostart Relay in the ST-6. It occurred to me that, if you could keep the loop circuit in a "Mark-Hold" condition, you could eliminate the printer "chatter". I recalled reading somewhere that it was desirable to keep the loop in a "space" condition during standby periods, to reduce current consumption and heat. It was determined that a five second delay, before switching to a "Space" condition, would do the job.

After some experimentation with various ideas, I incorporated the circuit shown in Figure 2 into my ST-6 and found that the printer "chatter" has been eliminated.

The modification consists of adding only two parts and some minor re-wiring of the

Autostart Relay. A second relay (K2) is added along with a capacitor. The relay should be a small 12 volt D.C. relay with a normally closed contact. (I used a Sigma 65F1A-12DC- but a P & B RS5D-12VDC would do also.) Across the coil of his new relay, place Cx, a 1500 to 2000 mfd electrolytic capacitor rated at 16 or 25 volts DC. (Please note polarities.)

To accomplish this modification, the following steps are taken:

- 1) Remove the blue wire from the normally-closed contact (KY1A) and connect it to the normally-closed contact on the new relay (K2).
- 2) Run a wire from the common contact on relay K2, to ground.
- 3) Run a wire from the positive coil terminal of relay K2 to the 12 volt (positive) terminal of the coil in relay K1. My ST-6 had a gray wire on the 12 volt terminal. (The capacitor, Cx, has been placed across the coil of K2, previously.) Please note polarities carefully.
- 4) Run a wire from the negative coil terminal of the relay K2 to the normally-open contact on relay K1. (KY1A)
- 5) Mount the new relay, K2, at a convenient spot in the ST-6 cabinet, taking care not to come in contact with other components. (Remember the high voltage loop circuit is nearby.)

Basically the circuit works like this:

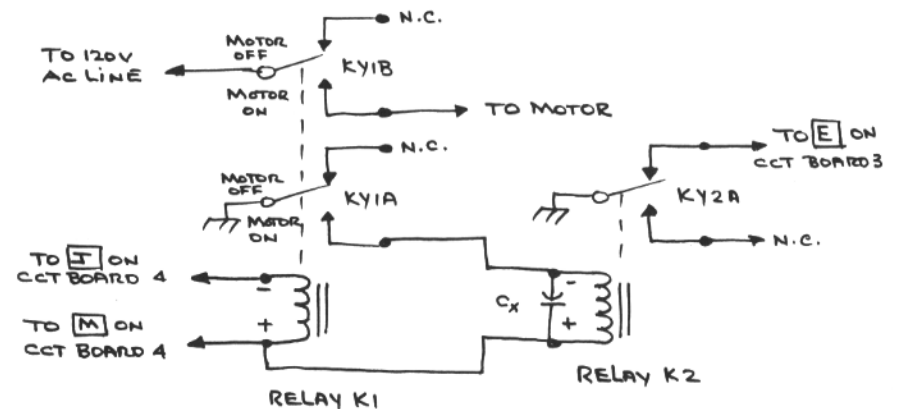


FIGURE 2 - MODIFIED ST-6 MOTOR CONTROL WIRING

when the Autostart is activated, the contacts on relay K1 are operated, turning the motor on (via KY1B). Capacitor Cx is charged when power is applied to relay K2. Contact KY1A opens and places the loop circuit in a "Mark-Hold" condition.

When the Autostart Relay (K1) drops out, power to relay K2 is removed as is the power to the motor. Capacitor Cx however, holds relay K2 on for a period of time allowing the

motor to come to a full stop before placing the loop circuit in a "Space" condition. Increasing the value of capacitor Cx will increase the time delay period.

I believe that you will find that the small amount of time and money expended on this modification is well worth the effort. Why not give it a try and see if you agree?

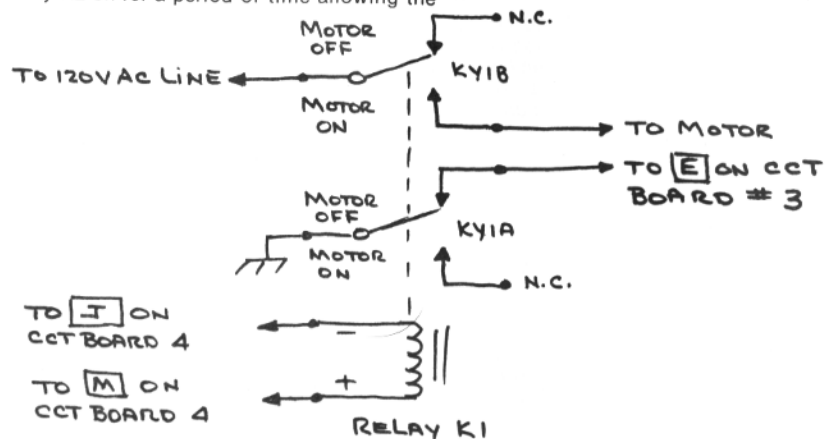


FIGURE 1 - EXISTING ST-6 MOTOR CONTROL WIRING *****

SHIFT WIDTH SCOPE

GIN S NANIWADA, JAIACB
3-4-8 Izumi Hoya
TOKYO, JAPAN 188

There are several methods to measure the shift width of on-the-air signals, but one knows the most accurate yet the most complicated system is the conventional period counter with two D-latches (one for mark tone and the other for space tone), ALU for subtracting operation of two data, and then indicate on digital numeric display. I tried such system, but required very accurate tune-in for accurate measurement, and almost impossible to tune because of intervals of digital displays.

So, one requires such as "cross-pattern scope" for easy to tune and continuous monitoring. The circuit shown on Fig. 1 is the simplest one to measure, however one must have reasonable good scope with trigger mode sweep and accurate stable sweep speed. The scope pattern is shown on Fig. 2, and one can adjust the range of shift width by changing sweep speed.

The input amplifier is quite common sense of the frequency counter, in this case, I use a line receiver with Schmidt trigger

action, 75152, but one can use any amplifier and a 7414. The following stage is divided into two separate timing monostable multi-vibrators, 74121's. One can of course use a 74221 or a 74123 for saving the space.

Any input audio tone is formed into square wave, and following stage; upper 74121 receives a transition from high to low of square wave. The circuit starts to operate at the transition from low to high and upper 74121 generates a pulse which has same period of half cycle of the highest input audio tone. This period must be adjustable to coincide to the start triggering of sweep on the pattern of scope. Then the lower 74121 generates rather sharp pulse of sub-microsecond at the transition from high to low. This sharp pulse must be located at the most left end of sweep, i.e., at the start point of sweep.

One has a scope with delayed sweep, who can use no upper monostable multi-vibrator, 74121, and can trigger directly from the output of input Schmidt trigger. But I know, who can use such an expensive scope for only monitoring? So, in this circuit upper 74121 generates triggering transitions, one is from high to low at Q output and low to high

at Q output.

One decides mark tone such as 2975 Hz, period of half cycle is about 336 microseconds, so timing circuit of upper 74121 should be adjusted with connecting accurate audio generator to the input terminal. By adjusting the timing circuit, sharp pulse on the sweep line moves left or right, then must be fixed at the start point of sweep.

Twist the dial of audio generator to the space tone, such as 2125 Hz, the period of half cycle is about 470 microseconds, the full scale sweep speed of the scope must be about 134 microseconds. Then, one adjusts variable sweep speed of the scope to fix the sharp pulse at the right end, i.e., the end point of sweep. If one requires 100 Hz shift

full scale, the audio generator must set at 1975 Hz, and adjusts sweep speed by same manner.

This circuit is not linear scale for shift width, so one might calculate the scale such as in Fig. 2, but for only use around narrow shift, the linearity is not harmed so badly. If one likes to obtain same as "cross-pattern scope", use a scope with circular sweep. For better monitoring purpose, brightness modulation is quite useful at the point of sharp pulse. More stable operation for temperature change, use an NE555, connect to Q output of upper 74121. I use this low temperature drift circuit mainly.

Hope this tiny stuff will help your "tune-in" and his "shift-width".

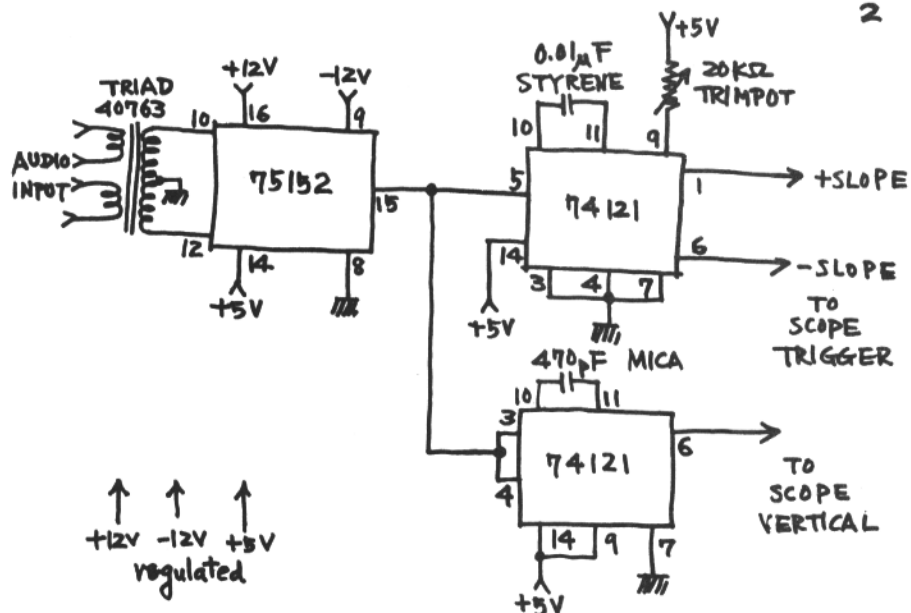


Fig. 1

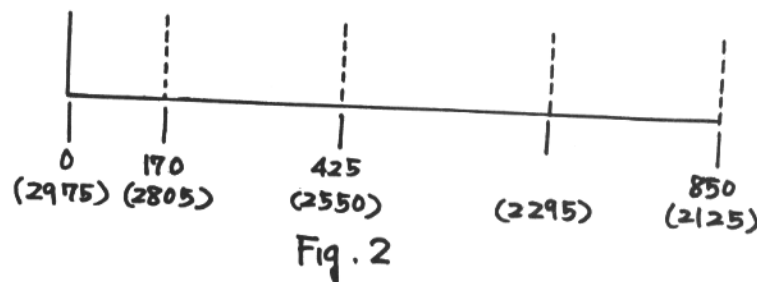


Fig. 2

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As with so many projects errors do creep in. So is the case with the RTTY JOURNAL BIBLIOGRAPHY. It is only through your input that such errors can be corrected. Don, WA6ICW, writes that the article titled "Kleinschmidt Equipment Discussion" is not in the April, 1959 issue as indicated. Future printings will have this correction.

The response to the RTTY JOURNAL BIBLIOGRAPHY has been great. Mail continues to come in from all areas of the world. However, I have moved and my new address is:

Gary Buda WAØND
8212 Douglas Drive North
Brooklyn Park, Minnesota 55443

The Bibliography that covers issues from 1959-1975 of the RTTY JOURNAL is still available post paid for one dollar.

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VHF RTTY NEWS



Ron Guentzler, W8BBB, Editor
212 Grandview Blvd.
Ada, OH.45810

Well, this is my "Swan song" regarding this column. No doubt as you have noted elsewhere in this issue, a new "crew" will be taking over with the next issue. We will still be here, and will be glad to forward mail to the new VHF Editor.

It's been a very interesting 10½ years, to say the least! At times it's been a lot of work, and, of course, it's been gratis. It was done for the enjoyment of it all and to help disseminate "the word" about VHF RTTY. Looking back at the first issue we were involved with (1967 JAN), things didn't turn out exactly the way we planned! (Do they ever?) The idea of a VHF column was to let everyone know what was going on on the VHF bands. We asked for information to print, and, at times, got quite a bit. For a while, we were even "keeping score", as it were, by listing the number of active VHF RTTY stations by area. We also tried to promote, or perhaps more correctly, keep everyone aware of the "standards" so that money wouldn't be wasted by buying crystals "for the wrong frequency". (Things were different then with single-channel rigs being about the only thing available. A lot has changed in 10 years!) Also, there was tendency for VHF FM operators who began with VHF AM to use horizontal polarization - cross-polarization losses are almost unbelievably high on VHF. Also, nothing like using the wrong AFSK frequencies.

Anyway, for those who haven't followed this "column" for 10 years, we found quite early in the game that waiting for the mailman can be quite lonely. Therefore, as a space-filler until VHF new arrived, I started writing on technical topics - little did I realize that it would end up as the basis for a handbook, or be internationally plagiarized. Really, honest, and all that, the column was supposed to contain only VHF news - probably about 60 or 70% of it was technical - happy to do it, but it wasn't planned.

So where do we go from here? First, we wish "the new crew" all the best. Merrill Swan did it for 14 years, Dusty for 10½. It's a real "labor of love".

As probably few if any of you know, I have been doing quite a bit of technical writing outside the RTTY field; specifically, on the subject of noise generators and noise

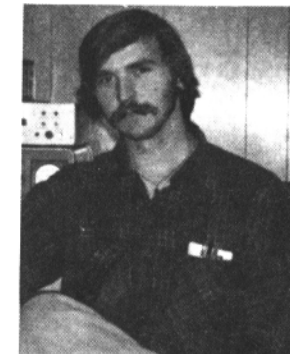
from plasmas. Right now I have three papers in the works, one ready for proofs, one waiting for acceptance, and one in the manuscript state. There's plenty to write about, so it will be nice to be able to turn out articles on a "when desired" basis instead of on a "must once a month" basis.

Thanks go to all who supplied information over the last 10 years, and to those who never quite got around to writing, please do for the sake of the new VHF Editor and for the sake of RTTY in general. Special thanks go to Dusty for a job well done and for providing the opportunity for me to write the column.

73, RG

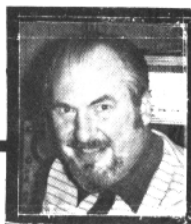


"Curly", W5HDM



"Scott", WB9WFA/W9HHX

RTTY-DX



John Possehl, W3KV, Editor
P.O. Box 73, Blue Bell, PA, 19422

Hello there . . .

The BARTG Spring Contest took place under what could be called good to excellent band conditions and the turn-out for this event tends to prove this. While Twenty Meters still handled the bulk of the traffic, the Forty and Eighty meter bands were quite busy gathering additional multipliers during the hours of darkness. It is a pity that many did not take advantage of fifteen meters as this band was in good shape for long haul DX. On the other hand ten seemed a barren wasteland. All U.S. districts were available on one or more bands and we believe that most all of the Canadian districts were also with the possible exception of VO2 and VE8. Also, we cannot remember printing so many "G" stations as in this year, the boys were certainly out in force. Those in the Contest also appreciated the solo entries by GI4AHP, GM3DJT, and GW3IGG for additional multipliers.

Prior to the Contest we had a contact with Blackie, JY9BB, and gave him the details of the test. He said that he would try to show up. We were not only surprised but flabbergasted to print JY1 and the tremendous pile-ups that ensued. Blackie was at the keyboard but King Hussein was present in the "shack" for a time and personally extended best wishes to the RTTY Contest operators.

Another signal that attracted beams toward the East was A4XGB, with none other than Sid at the controls. This was perhaps Sid's last fling at RTTY from Oman as he sold the gear to A4XFW, but more about that later.

Working all continents from this part of the world was a touch and go situation. There seemed to be no openings to VK-ZL from the Eastern part of North America but a show by Paul, KH6AG, in the final few hours of the Contest saved the day, at least it did at this QTH. Paul crawled out of a sick bed to give out the numbers.

Africa was pretty scarce also but ZS6BLV was there and ended up with pretty high numbers so we are sure many in the contest got that continent. We understand that CN8BB was also available for a brief time.

Asia was very active with JA4ONZ, JA7ML, JA7UZ, JA8ACQ, JA9AID, JY1,

UA9PP, 4X4MR, 9K2EP, A4XGB, and 9M2CR, which all looks like a page torn out of the ARRL DXCC list. In addition to those gems some of the newcomers to the Contest Syndrome could have added to their country totals by the activity of UK2GAX, HA5KCC, OK1MP, FG7XT, ZP5WO, YU3EM, CT1EQ, 3A2GX, CO2FRC, CE3EX, EA3OL, ISOTUP, YV5GU, PJ3AR, 9H1EL, DM2EDL, HB9HK, JX6XF, LA7AJ, TF3IRA, and OHONI. These are just a few in addition to the many European countries that had scores of stations active. CT1EQ and 9H1EL seemed to be having a pretty close race but in a few months we will all see the published results and see who really came out on top.

We had previously mentioned RTTY possibilities from the Falkland Islands (VP8). In a recent contact with Fred, CX7BZ, we were informed that plans for the DXpedition had to be shelved for the present time. The contact that Fred had in Falkland has been transferred to England for a year and Fred cannot undertake this delicate operation on his own.

For a country whose size is measured in acres, or hectares if you prefer, Manaco certainly has a large RTTY following. The latest to show up on the bands is 3A2CR who was putting a good signal into the States just prior to the contest. He is listed as . . .

Robert Scarlot
1 Blvd. de Suisse
Monte Carlo, Monaco

So with 3A2CQ, 3A2FB, 3A2GX, and now 3A2CR, you should be able to log at least one of them before long.

On the day following the Contest A4FXW showed up with a booming signal into the States and Europe. No doubt he was trying out the new gear he had just acquired from Sid. For the present he says to QSL via the Bureau and that QTH is . . .

Robert Muller, A4XFW
c/o P.O. Box 981
Muscat
Sultanate of Oman, Arabia

Jose, F5JD, has recently been putting out fb RTTY signals as 5T5JD in Mauritania and this rare country is certainly welcomed back to the active list. Present speed is 50 baud but proper gears are soon due to make contacts easier. He has extreme difficulty in

printing the 45 baud speed at present. You can QSL direct or via his Stateside manager . . .

Jose Dumoulin Roger Causse, W3EUV
P.O. Box 237 or to 313 Pontiac St.
Nouakchott, Mauritania Lester, Pa. 19113
IRC's and/or SASE are requested for a response.

Uli, DK3CU, passes along some interesting information. He has contacted and already has the QSL card from Geoff, A9XBD in Bahrain. There is a bit of difficulty involved in not only finding him but also in working him. By regulations in that country he is apparently confined to a spot frequency and that happens to be 14334 khz. Statesiders at least are not permitted F1 emissions about 14200 khz so the name of the game is to first find him and then get him to look for you, sort of a cross-band operation. Uli says that 1500z on weekends is the time to start looking. Good Luck!

Bicentennial W.A.S.

D. Paul Gagnon WA6DEI
That is the extent of Awards issued this past month.

We are pleased to announce that the following stations recently received endorsements to their DXCC Plaque as indicated.
Arthur Blave ON4BX 160 DXCC confirmed
Reg Wigg G6JF 130 DXCC confirmed

They say farewells can be difficult at best and maudlin at worst and after a decade of assembling the monthly RTTY-DX column I now find myself in a position of adding my Good Bye to those of Dusty and Ron.

I do consider myself privileged to have been associated with you RTTY-DX fans over these years as you are quite a unique group of amateurs in your willingness to assist others not only in the technical and material aspects of the mode but also, in regard to this column, in supplying the information which made the writing of it possible.

I sincerely request that you extend the same courtesy to Skip Presen, WB6CYA who will be RTTY-DX Editor in future issues. I know that the new team will have many innovative ideas and with your help they will be successful.

I would like to leave you as Jo, CR6CA usually did in ending his QSO's, and that is simply this, "73 and a Strong Shake of the Hands."

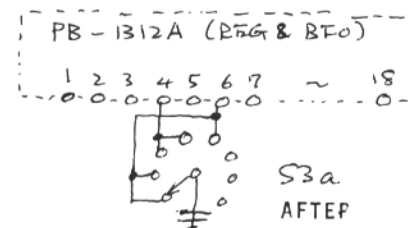
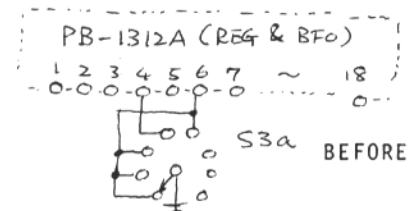
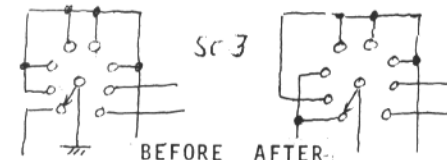
de John, W3KV

RTTY on the FR101 Receiver.

TACHIO YONEMURA, JA1BRK
5-4-18 Zaimokuza
KAMAKURA, KANAGAWA, 248, JAPAN

The new FR101 receiver has a RTTY position on the mode switch. It requires an optional BFO crystal (3177.45 KHz to pass 2125 and 2975 audio through the SSB filter for 850 shift. However since the 170 shift is more popular than 850 it is effective to use the regular CW filter for narrow shift.

The following easy modification will put the CW filter in RTTY mode position and pass 2125 & 2295 Hz in LSB. No extra parts needed --



Please Note - New address of the RTTY JOURNAL
PO Box RY, Cardiff by the Sea, CA. 92007



Thanks, Everybody.

In writing any column the hardest part is the first line.

We started our first column for the Journal with these words and now after ten and a half years they still seem appropriate as we write the last one.

Our subscribers have been wonderful, both with their words of encouragement and subscriptions which have financed the magazine.

Thank you -- subscribers.

Our authors have been wonderful, when we needed articles a mere mention brought many good ones. A great many firsts in RTTY have appeared in the Journal as well as many improvements and modifications to older ideas. We will not attempt to list any names as so many have contributed and we would surely miss some.

Thank you -- authors.

There is one exception we want to honor - Irv Hoff, W6FFC. Aside from being the author of two of the most outstanding and popular RTTY articles, the St-5 and 6 and the UT-4 of the past decade, Irv could always be depended on to supply a well written article on almost anything we suggested.

Thank you -- Irv.

Last but not least we want to mention our two columnists that have been with every issue. Writing a column is one thing - writing one every issue for over ten years is another. John, W3KV and Ron, W8BBB have never missed. Furthermore every column has been good.

Thank you -- John and Ron.

Publishing the Journal has been fun, thanks to all of the above. We have used the same printer since the first issue as well as the same person cutting the stencils and doing the addressing. The proof reader at the printers remarked last month that after ten years she was beginning to understand some of the lingo and now we were leaving. All things must come to an end however and we would rather turn the Journal over to good hands than stumble and see it fall.

Thanks everybody and see you at Dayton...

DAYTON - 1977.

**DAYTON HAMVENTION RTTY FORUM
TO FEATURE MICROCOMPUTER
RTTY APPLICATIONS**
by Keith B. Petersen, W8SDZ,
moderator

Did you ever wonder how Microcomputers might be applied to RTTY? This year's RTTY Forum at the Dayton Hamvention will give you a chance to learn about this fascinating new device and how it will revolutionize RTTY.

The RTTY Forum will start at 2:00 P.M. on Saturday, April 30th. The speakers will be:

(1) Don Alexander, WA8VNP. Don is a Systems Engineer with Microcomputer Ventures of Columbus, Ohio. He was the winner of the 1st World Altair Computer Convention System Contest, where he displayed his Microcomputer-controlled RTTY station. Don has written several articles for "73" magazine. The title of his talk will be "The Microcomputer as a Teletype Machine".

(2) Dr. Robert Suding, WOLMD. Robert is the Research Director for The Digital Group, which is a well-known manufacturer of Microcomputer Systems. He has made many informative talks on the subject of Microcomputers and also on slow-scan TV systems. He has written many articles on these and other related subjects. His talk is entitled "A Microprocessor Controlled RTTY Station".

(3) Lt. Col. David W. LeJeune, K5WNV. Dave is with the Signal Corps, Headquarters U.S. Army Communications Command. Dave has a very unique RTTY message relay system in operation on 20 meters using a Microcomputer and a Floppy Disk system. The title of his talk is "ARCOS - An Amateur Radio Computer Operating System."

All three speakers have indicated that they will have working systems on display at the RTTY Forum. This promises to be a most informative session. I hope you can attend.

For possibly the last time we will have a hospitality suite at Dayton. Same place as the past five years - Kings room at the Imperial North Motel.

The room will be open Friday and Saturday evenings from 7 P.M. until - ?? We hope the new publisher will be present and John, Ron and the editor will be around to greet old friends or make some new ones. Plenty of Kentucky Kool Ade on hand along with some salty chips to keep you thirsty. All RTTY fans and their friends are cordially invited.

Our supply of Beginners RTTY Handbooks is about exhausted. We understand the new publishers plan on making some additions and reprinting the Handbook in the future. Watch the magazine for details.

At present "HAM RADIO" book department have a supply available at regular \$2.50 price. Send to HAM RADIO BOOKS - Greenville, N.H. 03048.

From past experience we know we will continue to get mail addressed to our Royal Oak address. We intend to keep our post office box for some time and will forward all mail to the new publishers. However, there will be some delay. Any mail for the old publisher should be marked "Personal" and we will open it. For personal mail, best bet will be to send to our home address - Dusty Dunn, 1021 Marywood Dr., Royal Oak, MI. 48067 - Any call book is correct for W8CQ.

BACK ISSUES

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. Back issues - if available - may be ordered at 35 cents each at time of subscription. The JOURNAL is mailed about the 20th of the month preceding the dated month. May and June are a combined issue and July-August is a combined issue.

The ONLY back issues available are listed below. 35 cents each.

1972. -OCT.-NOV.-DEC.- [3]
1973. -JAN.MAR.-JULY.- SEPT.-
NOV.- [5]
1976. -APR.-SEPT.-OCT.-NOV.
DEC.- [5].
1977 -JAN.-FEB.-MAR.-APR.[4].

A duplicate of any back issue may be obtained from R. Wilson, 4001 Clearview Dr., Cedar Falls, IA. 50613. \$1.00 pp. Reprints of all UART articles, \$2.00 pp.

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Don Crumpton, W6KCW, Editor & Publisher	
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MORE RTTY! ONLY HAM RADIO MAGAZINE consistently brings you more RTTY articles and better RTTY articles than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also. \$10.00 per year, \$20.00 for 3 years. Ham Radio, Greenville, NH 03048.

HAVE FULL SET OF RTTY JOURNALS. Will duplicate any issue \$1.00 PP. Also duplicate of all 4 UART articles with large drawings. \$2.00 PP. U.S., Canada, Mexico. Other countries 25 cents extra. R. Wilson, WB0ESF, 4011 Clearview Dr., Cedar Falls, IA. 50613.

EXPERT REPAIR WORK. Any Teletype Corp. model. Repair work \$15.00 plus parts no matter how long it takes. Rebuilding by estimate. Write K9WRL or phone (312) 392-2358, ask for Neil.

FOR SALE OR TRADE: MODEL 28 ASR's excellent condition with perf or reper. Will deliver in New England. Trade or \$450.00. George H. Rancourt, K1ANX, White Loaf Rd., Southampton, MA 01073. 413/527-4304.

TELETYPEWRITER PARTS: Gears, manuals, tools, paper, tape, Mod. kits, Gear shifts, ribbons, cranks, keytops, pallets, toroids. SASE for list. Typetronics, Box 8873, Ft. Lauderdale, FL. 33310. Buy unused parts, late machines.

DOVETRON MPC-1000R (E Series) REGENERATIVE RTTY TERMINAL UNIT retains all the features of the MPC-1000/MPC-1000C Terminal Units plus the benefits of the TSR-100 Teleprinter Speed Converter-Regenerator. Front panel controls permit signal speed selection (60, 67, 75, 100 WPM Baudot and 110 Baud ASCII), Memory Functions (Unload, Reset, Preload and Recirculate), and Character Rate Over-ride. Two front panel LEDs indicate the status of the Memory Section (Full or Empty) and the state of the TD inhibit line. The latter is controlled by a unique automatic memory unload circuit that prevents character over-runs even when pulling tape. The BLANK diddle character is generated by the tri-state mode of the UART regenerator and prevents a signal time-delay or first character error on the outputted signal. MPC-1000R: Commercial: \$995.00. Amateur: \$745.00. Shipping and Insurance: \$9.50 Continental USA. Delivery: 30 days ARO. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705.

KIM OWNERS - Add 4K to your KIM - complete instructions to add a commercial low cost (under \$90) 4K memory board to your KIM-1. No hardware additions (except connectors) or board cutting required. Price - \$100.00. The Bit Stop, P.O. Box 973J, Mobile, AL 36601.

PRINTED CIRCUIT BOARDS: RTTY SELCAL with TTL logic, (73 Magazine, November 72) \$12.00. ST-5A-W/PS (2 boards) \$6.25. AK-1, \$4.25; CW ID'er (Feb 73, 73 Magazine) \$4.75. Logic probe (Dec. 74, 73 Magazine) \$1.00. Autostart RTTY encoder and decoder (Jan. 67, 73 Magazine) \$11.00. Synthesizer - 75-S Collins Rec. (Dec. 75, Ham Radio) 2 boards \$12.50. Instructions and parts list included. S.J. Zaleski, 29307 Red Cedar Drive, Flat Rock, MI 48134. (313) 782-9316.

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

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

QSL's, CATALOG 30 CENTS. TELETYPE PAPER single sheet rolls 12, 4 1/2 inch rolls per case wide, \$25.00 per case plus shipping (case wt. 35 lbs.) N & S Print, P.O. Box 11184, Phoenix, Ariz. 85061.

DOVETRON TSR-200 TELEPRINTER SPEED CONVERTER-REGENERATOR is a 5" by 5" PC card designed to mount inside the MPC-1000/MPC-1000C and HAL ST-6 terminal units. It consists of a programmable UART Regenerator, a programmable Dual Xtal-Controlled Clock and a CMOS Bilateral Steering Section, which provides automatic data and clock switching when the TU is switched between REC and XMIT. Power requirements are +5/+20 at 20 mils and -12/-20 at 5 mils. Availability: Stock. Amateur list price: \$99.50 Postpaid USA. DOVETRON, 627 Fremont Ave., South Pasadena, CA. 91030.

RTTY PICTURE PERF TAPES. Hundreds, including nudes, cartoons, animals, works of art, landscapes, all of the RTTY Art Contests entries. Chad type (fully punched, no lids) 11/16 inch standard Amateur 5-level paper tape. Guaranteed COMPLETELY error-free. Run times from 2 minutes to 10 hours. Listing and info free if request typed on 5-level printer, otherwise send 24 cents in STAMPS. For "Intro Pack" of ten picture tapes of the best, various subjects, various lengths (total run time - 2 hours 12 minutes), send \$6.00, immediate delivery, POSTPAID, listing included. Due to popularity of above, "Intro Pack Deluxe" now offered, run time 12 hours 44 minutes, \$30.00, shipped PRIORITY mail in USA, surface postpaid overseas. Joe Dickens, WA9UGE, 601 S. Dodson, Urbana, IL 61801.

DOVETRON TELEPRINTER IDENTIFIER TID-100. Mounts inside of all Dovetron MPC Series (and ST-6) terminal units. CMOS circuitry requires less than 1 mil standby and 8 mils functioning. May be programmed for CW, Baudot or ASCII. 128 bit capacity. Two LEDs indicate CLOCK RUNNING and CODED OUTPUT for easy visual verification of programmed code. All four CMOS chips are socket-mounted and programming instructions are etched right on the circuit board. Includes 50 programming diodes: \$34.95 postpaid. Factory programmed with DE and your call: \$39.95 postpaid. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030 213-682-3705.

MODEL 28 CONSOLES, RO's - \$135, KSR's - \$165, ASR's - \$325, with modems add \$50. Loads of 15's and 19's. Goodman, 5454 South Shore Drive, Chicago, IL 60615 (312-752-1000). Phone anytime.

SALE: BLACK NYLON RIBBONS for all your Teletype machines \$6.75 a dozen, Red and Black Nylon ribbons dual spool \$1.50 each or \$12.00 dozen, Roll paper white 5" diameter \$2.50 roll or case of 12 rolls \$19.50. Perforator Tape 11/16 inch wide by eight inch diameter. Box of 10 rolls \$4.90 or case of 40 rolls \$15.90. Black Nylon ribbons for Kleinschmidt \$1.50 each or dozen for \$10.75. Tuning Forks 96.19 VPS or 120 VPS \$2.50 each. Distortion test set type TDA-2 with Scope \$39.00. Also available Model 14, 15, 19, 28, 32, 33 machines. Send us a list of your Teletype requirements. All prices FOB Brooklyn, N.Y., Atlantic Surplus Sales Co., 3730 Nautilus Ave., Brooklyn, N.Y. 11224. Tel: (212) 372-0349.

AUTOMATIC CW ID UNITS. Programs up to 32 dots, dashes, or spaces, easily programmed. All on one board. Less 5V supply kit, \$13.95, wired and tested \$21.95 (your call must be supplied). Interface for above for ST5 or ST6, AFSK or FSK kit \$4.50, wired and tested \$5.75. Automatic 10 minute resettable timer for ID unit, kit \$8.95, wired and tested \$13.95. 5V 1A fully regulated short proof TTL supply with transformer and plug in or hard wired board, kit \$11.95, wired and tested \$18.95. SAVE on all four units, package of above reg. \$39.35, kits sale price \$35.99. Reg. wired and tested price \$60.60, sale price \$54.00. Cabinet for above, unpunched (Dozy E box) \$7.75 each. Add 75 cents shipping. NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056

DOVETRON TSR-100 TELEPRINTER SPEED CONVERTER-REGENERATOR is a 6" by 7" PC card designed to mount inside of any MPC Series Terminal Unit and is intended to provide signal regeneration and UP-DOWN speed conversion. The 18 socket-mounted CMOS devices include a Uart, two FIFO Ripple Memories (80 characters), a programmable crystal-controlled Dual-Clock, and a bilateral steering section that permits solid-state switching between Transmit and Receive. All Uart functions including Parity are switch-selectable. Both sections of the Dual-Clock are programmable for 60, 67, 75, 100 WPM Baudot and 110 Baud ASCII codes. All 8 parallel data lines are available at the output of the Memory section. The TSR-100 also offers Variable Character Rate, BLANK Diddle and memory functions of Preload, Recirculate and Reset. The BLANK Diddle is Uart-generated (Tri-state mode) and does not contribute time delay or first character errors. A unique Memory Unload circuit prevents character over-runs and provides a TD Inhibit. A pair of LEDs indicate Memory status. All signal input and output ports are fully buffered for easy interface to other terminal units. Power requirements: +5/+15 volts at 85 mils and -12/-15 volts at 10 mils. TSR-100: \$195.00. POSTPAID Continental USA. Delivery: 30 days or less. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705.

MINI-MANUALS, \$3.95 each postpaid - M15/19 Wiring Hints, Diagrams and schematics. CV89/URA8 FSK Converter data. TDA2 Stelma Distortion Analyzer, AN/SGC-1 AFSK Converter, conversion details, etc. Teletype Gear Guide. Schematic for CV57 FSK TU - \$1.20 postpaid. Technical Manuals, Teletype Equipment and Parts, Surplus Electronics. SASE for lists. Jim Cooper, W2BVE, POB 73, Paramus, NJ 07652.

HAL COMMUNICATIONS CORP. announces the DS - 3000 and DS - 4000 series of KSR Video Display Terminals for Baudot and/or ASCII code. Offering error correction capability, multi-speed operation, and 16 lines of 72 characters per line, these terminals employ the 8080 microprocessor in what we believe is the first microprocessor based product offered to the amateur radio communications market. Request data sheet for full information. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, IL 61801. Phone 217-367-7373.

TECH MANUALS - \$6.50 each: TT-63A/FGC, CV-591A/URR, TS-2/TG; following manuals - \$8.50 each: R-388/URR, TH-5/TG, USM-50; other manuals - TGC-14/14A, \$12.50; TT-298A/B, TT-299A/B, UGC-38, 40, 41 - \$15.00. Model 14 TD manuals, \$3.00 each. All manuals mostly new, unused. Thousands more in stock. Send 50 cents (coin) for large 22-page listing. W3IHD, 7218 Roanne Drive, Washington, D.C. 20021.

DOVETRON MPC-1000 (E Series) MULTIPATH-DIVERSITY RTTY TERMINAL UNIT. The new E Series represents the sixth generation and adds Automatic CRT Intensity Control, Keyboard Actuated Autostart, Automatic Threshold Control for unattended operation, Fast-Slow Autostart, and Autostart Delayed-Timeout to the MPC's MULTIPATH CORRECTOR, IN-BAND DIVERSITY MODES, and the continuously variable Mark and Space channels. All IC's, transistors and Cmos logic elements are mounted in low-profile sockets for ease of servicing and maintenance. Interfacing to the TSR-100 or UT-4 speed converter/regenerator is accomplished by removing two jumpers at the rear panel. Your QSL brings full specifications. MPC-1000 (Amateur) \$495.00. MPC-1000C (Commercial) \$795.00. Shipping and Insurance: \$7.50 Continental USA. Delivery: 30 days or less. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030. 213-682-3705.

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

HAL COMMUNICATIONS CORP: Headquarters for electronic RTTY equipment. In demodulators, choose from the incomparable ST-6 or, for a low cost beginning in RTTY, the ST-5. Tailor either to your requirements by selecting the 425 Hz press discriminator, the XTK-100 or AK-1 AFSK oscillators and the ST-5AS autostart for the ST-5. Full details available in our current catalog. Compare before you buy. Bank Americard and Master Charge plans available. HAL COMMUNICATIONS CORP., Box 365RJ, Urbana, Illinois 61801. Phone 217-367-7373.

PUNCHED AND LETTERED 3 1/2 x 6 x 10" BUD BOX CABINETS for HAL ST-5 kits. All holes punched for ST-5, auto-start and AK-1. \$18.00. Don't sweat over hole alignment and punching. Solder your HAL boards and bolt them into my box. David Tancig, WB9YIF, General Delivery, Mahomet, Ill. 61853.

SALE: FEMALE JACK PANELS containing 144 jacks to a 19 inch panel takes standard 1/4 inch plugs \$19.00. Mite Motor, type PD/82U 115 VAC 60 Cy Unused \$35.00. Kleinschmidt Allen wrench on 12" handle \$1.00. Quick Brown Fox Generator Type TS-2B \$39.00. Platen for Model 15 machines \$9.00. Model 15 Carriage return strap \$1.25. 2 copy roll paper (1 carbon) \$2.75 per roll or case of 12 rolls \$19.50. Machines, Parts, Gears, Manuals available - write us listing your needs. Atlantic Surplus Sales - 3730 Nautilus Ave. - Brooklyn, N.Y. 11224. (212) 372-0349.

35 KSR for computer hobbyist in excellent working condition \$700.00 ea. friction or sprocket, A.D.M. COMMUNICATIONS INC., 1322 Industrial Ave., Escondido, Ca. 92025. 714-747-0374.

TELETYPE MANUALS - Model 28ASR, 3-volume set. \$24.50 plus \$7.75 postage. Thousands of other manuals available for military surplus receivers, xmtrs, teletype, radar, test sets. Send \$2.50 (coin) for large 22-page list. S. Convalvo, W3IHD, 7218 Roanne Drive, Washington, DC 20021.

28ASR FOR SALE - Absolutely mint Condition. Mark II Typing unit, typing reper, TD, ESU, cabinet all excellent condition, \$550. Prefer pick up, but will meet you any reasonable distance from Chicago. Joe. 312-690-9571.

MAKE OFFER: 4-1000 tube, socket, chimney, filament transformer, and vacuum variable, all used parts. New paper winder LPW 300; CV89 w/manual. KZ50D; P.O. Box 284; Balboa Heights, Canal Zone.

MODEL 28 STAND ALONE typing reperf with keyboard, full chad punchout, 60-75-100 wpm gear shift, \$225.00. Model 28 stand alone typing reperf chadless, 60-75-100 wpm gearshift, single base, no cover, \$75.00. Both units rewired and ready to plug in. W8UPG, 651 Sanford Ave., Akron, Ohio 44305.

WANTED: INFORMATION as to the different models of Northern Radio TU's. I have one with no identification as to model, type, etc. Floyd Strohmaier, 4110 40th Ave., So., Minneapolis, Mn. 55406.

DOVETRON MPC-1000R REGENERATIVE RTTY TERMINAL UNIT is the logical combination of the MPC-1000C and the new TSR-500 Speed Converter-Regenerator. The Memory Section may be loaded with up to 5 FIFOs for a total of 200 characters of storage. A second UART provides local teleprinter copy during Receive-PRELOAD and Send-RECIRCULATE. ERROR CORRECTION has been provided and incorrect and misspelled words may be erased from the Memory Section by pressing the local keyboard's BLANK key. Front panel controls permit Signal and Loop speed selections of 60, 67, 75, 100 WPM Baudot and 110 Baud ASCII. BLANK DIDDLE, Tee Dee INHIBIT and VARIABLE CHARACTER RATE are standard features. The optional CW IDer (TID-100) displays its coded output on a front panel LED. Both UARTs are the new Intersil CMOS IM6402 and permit a 1.5 CU Stop Pulse. Amateur List: \$745.00 with 80 character Memory. \$820.00 with 200 characters. Delivery: 30 days ARO. DOVETRON, 627 Fremont Avenue, South Pasadena, California, 91030.

HAL COMMUNICATIONS CORP. announces the ST-6000 RTTY Demodulator/Keyer. The ST-6000 is ideally suited for amateur or commercial service offering fixed 850, 425, and 170 Hz shifts for ease of tuning. Standard low and high tone frequency pairs are available, and active filter design allows the use of any set of tone pairs between 1200-3000 Hz. Crystal controlled tone keyer for stability. Self-contained loop supply RS-232C, and MIL-188-C levels for I/O. Scope or meter tuning. Keyboard operated switch. Selectable ATC, and new DTH (decision threshold hysteresis) circuitry allows optimum performance under the most demanding conditions. Complete flexibility in the interconnection of the demodulator and tone keyer allows separate, half duplex, or full duplex operation. Usable at all data rates up to 110 baud ASCII in standard form. The ST-6000 carries the usual HAL one-year warranty, and is an ideal companion to our new DS-3000 KSR microprocessor based communications terminal. Write today for full details. HAL Communications Corp., Box 365RJ, Urbana, Ill. 61801.

SELL: MODEL 28KSR MARK III, \$250.00. 28 Typing reperf \$75.00. 28 Page printer \$75.00. LXD tee-dee \$50.00. Type box \$15.00. L.E.S.U. \$10.00. Wanted: R390A dead or alive. Ed Wagner, 1018 Birch Haven Circ. Monona, WI. 53716.

TELETYPE RECEIVER, R-808, GRC-14, 2-32 mHz, built-in shift converter, 24 tubes, 8 transistors, 115 vac, 1960 vintage, built-in cal., double conversion on upper bands, in waterproof cabinet, with copy of maintenance manual. Approx. 60W. Modular construction. \$175. Will trade for solid state TTY Keyboard. Tom Perdikoylis, WA2ZHL, P.O. Box 176, Wading River, NY 11792. 516-929-6646.

WANTED: AUXILIARY TYPING reperf, chadless, 60 wpm, for under the dome of my 28 ASR. Or a chadless reperf for head to replace the 28 ASR perforator I now have which is equipped with two shafts, VE3RH. Rube Hadfield, 24 Kingsley Court, Guelph, Ontario, N1E 1E4.

WANTED: COVER I.R.C.202 for TT-274/UG model 28 typing reperf and AC sync motor for 28 ASR. D.R. Kelly, K7RM, 7307 SE Thompson Road, Milwaukie, Oregon 97222.

STATION TIMER WITH LED DISPLAY - Single digit LED displays minutes since last I.D. Positive going output pulse every 10 minutes can trigger automatic ID'er or tone oscillator. Complete with all parts, drilled and plated circuit board, and instructions. Order TMT kit (\$19.50) or wired \$24.95, from Flesher Corp., P.O. Box 902, Topeka, Kansas 66601. BankAmericard, Master Charge, phone orders accepted (913-234-0198). No C.O.D.

AFSK OSCILLATOR uses active filter instead of toroids. IC oscillator insures stable operation. 170 and 850 Hz shift. CW ID keying input. Wire in or use PC edge connector. Plug-in replacement for AK-1 universal mounting. Measures 2 5/8" x 2 7/8". Kit includes etched and drilled PC board, all necessary parts and instructions. (Power supply not included). Order FS-1 kit (\$21.00) or FS-1 wired (\$29.00) from Flesher Corp., P.O. Box 902, Topeka, Kansas (66601). BankAmericard, Master Charge, phone orders accepted (913-234-0198). No C.O.D.

COMPUTER ELECTRONIC KEYBOARD CABINETS. Two sizes. Each has 14 x 6.3 inch keyboard surface with a 15 degree slope. Full sizes are 14W8.3D 3H and 14W 11.3D 3H. 14 x 8.3 x 3 cabinet \$11.50. 14 x 11.3 x 3 cabinet \$12.30. Add \$1.25 for shipping. Blue metal base with choice of white or black aluminum top. NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.

FOR SALE: MODEL 28 KSR floor model cabinet excellent condition, \$225.00. Prefer pick up. C. Keeler, W2NQW, 66 Franklin St., Port Jervis, NY 12771. Tel. 914-856-7095.

MODEL 32 ASR MACHINES FOR SALE. Presently in Telex Service. Available after June 1. Machines located in Springfield, Massachusetts; Knoxville, Tennessee; Baton Rouge, Louisiana; Dyersburg, Tennessee; Grand Rapids, Michigan; Centralia, Illinois; Ardmore, Oklahoma; Salt Lake City, Utah; and Los Angeles, California. You pick up. For more information contact Conrad Jahries, WB7DHJ, (800) 453-5300 and in Utah (801) 484-8631, Interstate Contract Carrier, P.O. Box 748, Salt Lake City, Utah 84110.

ACTIVE FILTER DEMODULATOR for 170 Hz shift. Has anti-space, autostart output with adjustable threshold, start delay and stop delay. Available kit or wired. Circuit board measures only 2.95 X 5.25 inches and is notched for 12 pin edge connector. Available wired (\$59.95) or in kit form (\$39.95). Called the DM-170, the demodulator employs cascaded stages of stable low Q RC active filters for high stability and easy alignment. A lowpass filter and hysteresis slicer improve copy under marginal conditions. Oscilloscope "+" display outputs, and tuning meter output. Loop keyer and autostart relay driver transistors included on the board. High quality epoxy-glass etched, drilled and plated board. Instructions included. Flesher Corp., P.O. Box 902, Topeka, Kansas 66601. BankAmericard, Master Charge and Vista phone orders accepted. (913-234-0198). No C.O.D.

WANTED: Synchronized motor for: Kleinschmidt reperf Model TT 76GGC. Send info to Steven W. DiScenza, 212 S. 1st Ave., Upland, Calif. 91786.

AUDIO FILTERS - Precisely tuned 88 mh. toroids + 5 Hz \$3.50 ea. postpaid. Specify freq. Nat Stinnette Electronics, Tavares, FL 32778.

MAGAZINES - RTTY JOURNAL (April 63 to March 77 - \$45). Ham Radio (complete to March '77 except April 68 - \$50). Shipped prepaid. Robert Boyd, Woodlawn Avenue, Kennebunkport, Maine 04046.

WANTED: CRYSTAL IMPEDANCE METERS; RFL Models 459, 531 or 1207. Military versions TS-330, TS-683 and TSM-15 manufactured by RFL, Shalcross, Industrial Inst. Glen R. Kurzenkabe, K3SWZ, 403 Centerville Ave., New Cumberland, PA 17070. Phone: 717-938-3655.

DOVETRON'S NEWEST PRODUCT is the TSR-500 SPEED CONVERTER-REGENERATOR. In addition to Signal Regeneration, Up-Down Speed Conversion, Buffer Storage, Variable Character Rate, Blank/LTRS Diddle and Tee Dee Inhibit, the TSR-500 is expandable to 200 characters of FIFO memory and features ERROR CORRECTION. Incorrect and misspelled words may be dumped from the Input FIFO without disturbing information stored in the rest of the memory section. A SECOND UART provides local teleprinter copy in the Receive-PRELOAD and Send-RECIRCULATE modes of operation. Both UARTs are the new Intersil CMOS IM6402 and may be programmed for 1.5 character unit Stop Bit in the 5 level Baudot code. Designed for installation within the MPC-1000R Regenerative RTTY TU, the TSR-500 also makes an excellent stand-alone peripheral. Best of all, the price (with 2 FIFOs) is the same as the original TSR-100: \$195.00 Postpaid USA. Additional FIFO storage: \$25.00 per 40 characters. DOVETRON, 627 Fremont Avenue, South Pasadena, Calif., 91030. 213-682-3705.

"NEED A SCHEMATIC OR MANUAL for a Northern Radio FS Converter, Type 107, Model 2. W5FLL, 726 Teal Dr., Grand Prairie, TX 75051."

NS-1A PLL TU - Due to continued interest and demand we are resuming production. Board \$3.00, Parts kit (no board) \$15.00, wired/tested \$24.95 all postpaid. SASE for info. Nat Stinnette Electronics, Tavares, FL 32778.

HAL COMMUNICATIONS CORP. announces the MCEM-8080 microcomputer. The MCEM-8080 is a complete operating system on a single PC board, including serial I/O at RS-232C levels or 20-60 ma current loop, 3 parallel I/O ports, 1024 bytes of RAM, 1024 bytes of ROM containing the system monitor program, and switches and indicators to manually control all bus and control lines. The powerful 8080A CPU and its family of chips are used. The system monitor allows the use of either Baudot or ASCII terminals, and enables the user to load hex files, dump or display memory, insert data in memory and transfer program control to a specific location. Whether you are a RTTY operator turned computer hobbyist, or a computer hobbyist turning to RTTY for a communications link, the MCEM-8080 should be your choice. Write today for full details. HAL Communications Corp., Box 365RJ, Urbana, Ill. 61801. Phone 217-367-7373.

PERFORATOR TAPE 5 level case of 40 rolls, \$15.00. Printer paper 12 rolls per case \$10.00 3 copy. You pay shipping. Don Rutledge, Rt. 2, Box 3045, Apache Jet., AZ 85220.

COLLINS 32V2 XMTR WITH FSK, excellent for RTTY, CW, Al Condx, \$150. Also 2 mtr XMTR modulated by 32V2 thru relay system or can convert to FM, \$75. Both for \$200. Spare 4D32 and 5894 available. Northern Radio Model 105 FSK xmtr, \$35. Model 26 TTY, \$25. Beckman 7 digit frequency meter with General Radio 100 mHz prescaler, \$75. Variable 600v, 200ma regulated power supply \$45, more, all perfect with manuals. Make offers. R. Mendelson, 27 Somerset. Murray Hill, NJ 07974. (201) 464-5244.

28KSR, MKII excellent condition. \$225 FOB; 28ASR complete with dome reperf with manuals, \$700 FOB, DON BOHART W7QCN/4, 724 Village Green Parkway, Newport News, VA. 23602.

COAST GUARD COMMUNICATIONS, our 30 page book includes frequencies for Voice and RTTY 400KHz to 400 MHz. Addresses, ship lists etc. \$2.95 postpaid. Catalog 25 cents. HANDLER ENTERPRISES, BOX CC, NORTHFIELD, IL 60093.

WANTED: REGENCY TME-8A or TMR-8A (or equivalent) aviation band scanner. Cash or will trade for police scanner. Also have several tri-band scanners for sale. Elmer Rowekamp, 209 Carriage Lane, Upper St. Clair, PA 15241. 412/833-5983.

HAL COMMUNICATIONS CORP. announces the ST-5000 Demodulator/Keyer. Housed in an attractive blue/beige cabinet, the ST-5000 provides excellent performance at moderate price for HF and VHF-FM operation. Active discriminator filters and detectors assure wide dynamic range. Autostart operation, switchable wide narrow shift, and switchable normal/reverse are some of the features provided. The audio keyer generates stable, phase coherent audio tones for each shift. The ST-5000 has a self contained loop supply, and also generates RS-232 data levels for use with HAL electronic TTY video display equipment. \$275.00 postpaid. Write or call for further information. HAL Communications Corp., P.O. Box 365, Urbana, Illinois 61801, 217-367-7373.

TELETYPE EQUIPMENT: Models 14, 15, 28 machines, assemblies, parts, supplies. Fresh roll paper (case of 12) 4 1/2 inch dia., \$17.50, 5 inch dia., \$21.00. Fresh ribbons, \$1.80 ea. pp. Metal model 15 table, \$5.00. Model 19 keyboard, \$20.00. Save shipping on these or any item - meet me at Dayton. SASE for equipment list. P. Andersen, 115 Boyken, Rochester, MI 48063. 313/652-3060.

FOR SALE: ST-3 TU -- 170/850 shifts, two bandpass filters, meter, autostart. Two new ST-5A TU's - 170/850 shift, meter, autostart. All built on 3 1/2" rack panels. Commercial appearance. \$95 each. Vern Schroeder, 607 Pine St., Batavia, Illinois 60510.

500 LABELS ON GOLD PAPER - return address with CALL, up to 4 lines, beautiful. \$1.00 postpaid. QSL's regular or double style, printed, low cost, post pd., details SASE. DMT-rj, 390 Lincoln Ave., Newark, N.J. 07104.

UT-4 COMPONENTS. Continuing to supply all major components plus few others. See March and April ads for details and prices. Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA, 92109. 714-274-7060.

THE DOVETRON DCM-100 is a poly-phase Direct Conversion Modem employing BASEBAND techniques that completely eliminate the need for input bandpass filtering and channel filters, permitting the error rate to approach the theoretical minimum. A high degree of selectivity is not required in the companion receiver, since this technique also eliminates all the image windows. The Mark and Space channels are both continuously tuneable from 1200 to 3000 Hertz and a dual LED display on each channel permits fast and precise tuning. Full IN-BAND Diversity provides automatic single channel copy during deep selective fades. Auto Markhold, anti-space and anti-CW are standard. FSK and MARK Autostart is offered, and the MARK Autostart is adjustable for Fast or Slow response. The high level loop supply is strappable for either 60 or 20 mil operation. The phase-continuous AFSK tone keyer may be preset with two different Mark-Space-Shift tone combinations, which are operator selectable from the front panel. Rear panel connectors permit plug-in interfacing of the speed-changing regenerators (including the Dovetron Microprocessor and the UT-4). The TSR-200 and TID-100 may be mounted internally. Twenty of the 25 integrated circuits are identical and all are socket mounted. All digital circuits are high noise-immunity CMOS. Availability: January 1977. Amateur list price: \$295.00. FOB. DOVETRON, 627 Fremont Ave., South Pasadena, Ca. 91030.

ST-6 CW IDENTIFIER designed for HAL ST-6 terminal unit. Plug in circuit board measures 2.75" x 5". Will work with most other keyers. Easiest to program 127 bit diode matrix, adjustable speed, sidetone speaker output. Can be programmed for RTTY-ID. Complete kit for HAL ST-6 includes 50 programming diodes; \$26.50. Wired and programmed: \$36.50. Flesher Corp., P.O. Box 902, Topeka, Kansas 66601. BankAmericard, Master Charge, phone orders accepted (913-234-0198). No C.O.D.

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