

RTTY

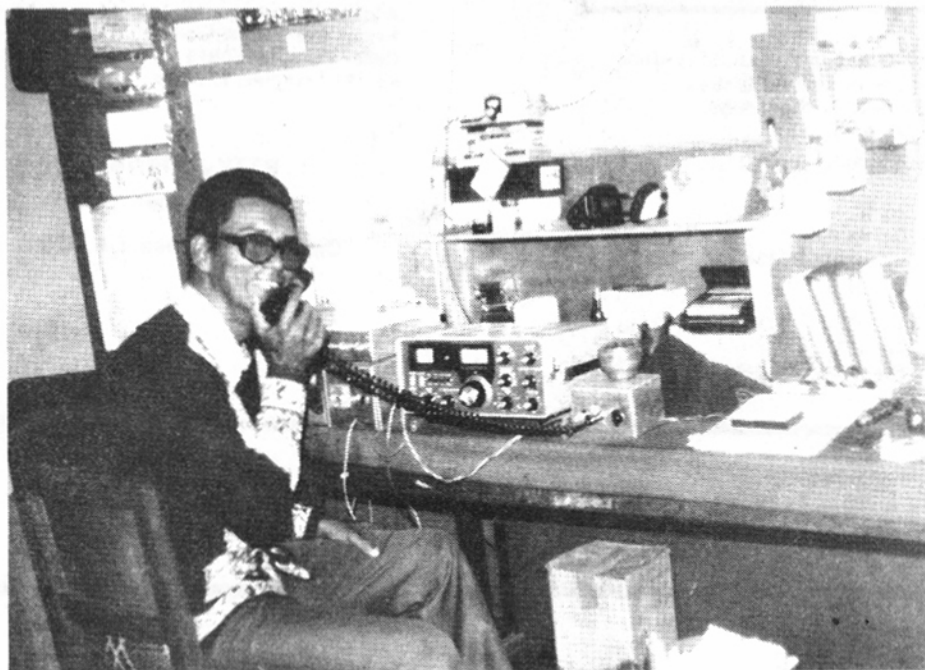
MAY-JUNE 1978

JOURNAL

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CONTENTS

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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

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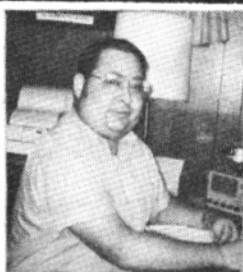
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VHF RTTY NEWS



Army Gamson, K6PXA, 8034 Gentry

N. Hollywood, CA 91605

WE GOOFED!!!!!!!!!!!!!!
'Shige' JA8ADO was on the cover of our February 1978 issue.

March 1978 bottom of page 17 should read
'The RM-300 kit (less prom) is \$71.25.
The RM-300 Circuit board only is \$21.25

April 1978 in the article on the Kenwood
TS-820 Deck 2 and Deck 3 BOTTOM are
reversed.

Apologies to all de DEE.

The A.R.R.L. has gone to computeri-
zation of their 1978-79 Repeater list.
Unfortunately, not enough advance notice

was given for New and Changed entries.
As a result some may be incorrect
or not listed at all. What follows are

the known operating RTTY Repeater
listings as of April 1978. Please send
me any omissions or corrections!

CALL SIGN	FREQUENCY	LOCATION/AREA SERVED	SEE 4INFO	SPONSOR
(WN6CYA)	222.78/4.38	San Diego	W6MNO	San Diego Teleprinter Soc.
WR6ACA	146.10/70	Southern California	K6PXA	So. Counties Teleprinters
WR6AOU	146.10/70	Central Calif.	K6YDW	Cent. CA Am. Tele. Soc.
WR6ACR	147.93/33	San Francisco Bay	WA6DNR	Amateur Comm. Society
WR7AJL	147.78/18	Portland, Oregon	W7WWG	Portland RTTY Society
WR7AJW	147.78/18	Kenniwick, Washington	WB7CNJ	WA7VDH
VE7COT	146.10/70	Vancouver, BC, Canada	VE7CFC	British Columbia Tele. Grp.
WB0QCD	146.10/70	Rural Iowa	WB0QCD	Bi-State Tele. Soc.
WR5ABY	146.10/70	Dallas, TX/Oklahoma	WA5HTT	Dallas Am. Radio Club
(W0BP)	146.10/70	Minn./St. Paul. MN	WA0NDN	Radio Am. Tele. Soc.
WR1AFU	147.75/15	Burlington, Conn.	W1EH	Insurance City Rad Club
WR1AHJ	147.855/255	New Haven, Conn.	W1EH	So. Counties A.R. Assn.
WR4ANC	147.81/21	Washington, DC	WB4APR	Am. Res. & Dev AMRAD

Out here on the West Coast we tend to think that certain Magazines are too East Coast oriented; such as QST which doesn't feature Repeaters and RTTY which are more popular here. We have heard mentioned on the Lo bands that the 'JOURNAL' is too West Coast oriented. This may also be true BUT please realize that we can only print what we get. If it is predominately from the West Coast, where are the inputs from elsewhere? Also we've seen requests for everything from extremely technical computer articles to the Basics of getting started in RTTY. As you can see it's very hard to please everyone. However, we are trying with more technical articles and the New Beginners RTTY Handbook. Let's hear from you; articles and suggestions. Is there a potential Technical Editor out there? If so don't be bashful let's hear from you.

We wish to thank the British Amateur Radio Teleprinter Group (BARTG) for the good words about the RTTY JOURNAL in their superior Newsletter. It also has some interesting articles we will be sharing. Especially got a kick about their report on RTTY in Argentina; would you believe that there is only about 7 active RTTY stations there and about half of them are in one family?

We have had some requests to further elaborate on the WR6ACA Repeater block diagram published last month so here is the Terminal Unit Audio Tones board. Next month we will publish the T.U. Digital Board.

AMATEUR SECONDARY STATION licenses for individuals will be phased out as their present terms expire as a result of the first report and order on Docket 21135, adopted by the FCC Wednesday. Special events stations and callsigns were also eliminated as the Commissioners attempted to reduce the Amateur Radio workload at Gettysburg to within budgetary limitations. For Amateurs who presently hold more than one station license the effect will be a decision on their part as to which callsign to keep when it is time to renew; the freeze on issuance of new secondary licenses, in effect for almost a year, is now permanent.

Extra Class Requests for specific 1x2 or 2x2 callsigns will no longer be honored under the newly adopted rules, though they will still be able to request an unspecified 2-letter-suffixed callsign. Eventually it's planned to offer 1x3 callsigns to all holders of Advanced or Extra Class licenses who wish them, but the present process by which a 1x3 callsign holder receives a 1x3 "preferred" callsign when changing call areas is to be eliminated. However, as the rules now permit an Amateur to retain his former callsign even after moving permanently to a new call area, it's likely many present 1x3 and 1x2 callsign holders will elect that option. Along that line, future initial callsign assignments are now going to be based on the applicant's mailing address rather than station location.

Club, RACES And Military Amateur station licenses are to be further considered under a new Notice of Proposed Rule Making on Docket 21135. Distinctive prefixes for club stations (WK) and military stations (WM) are also proposed in that NPRM, while RACES stations would continue with WC callsigns as at present. It's also proposed that the criteria for a club station license be tightened considerably, requiring that the organization demonstrate a "compelling need" (distinctive use, past and present) for a club license before one would be issued or renewed. RACES licenses would also be reduced to only one per Civil Defense organization, and licenses for all three classes of organizations would be issued to the organization, not an individual trustee.

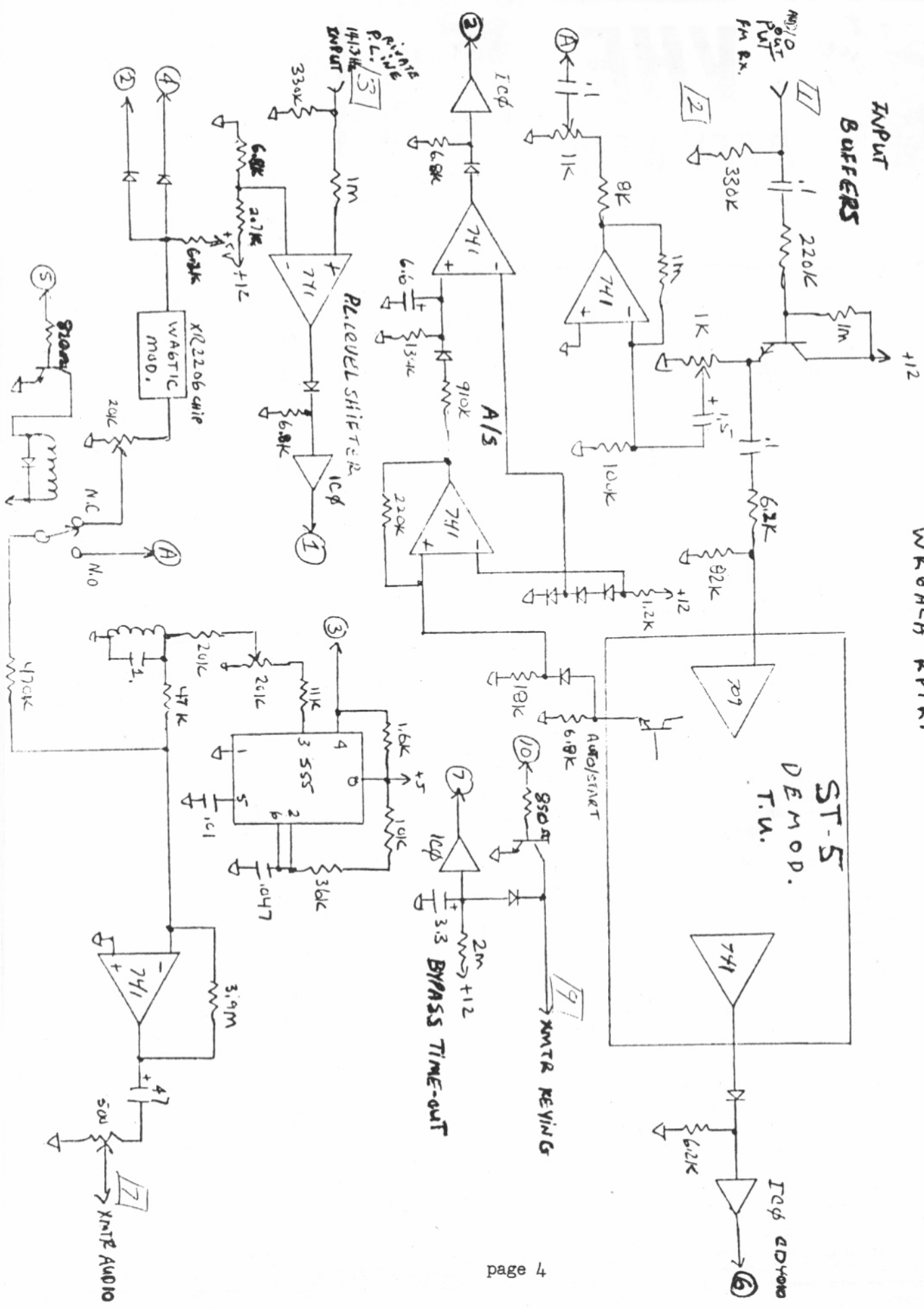
CU Enjoy

Army

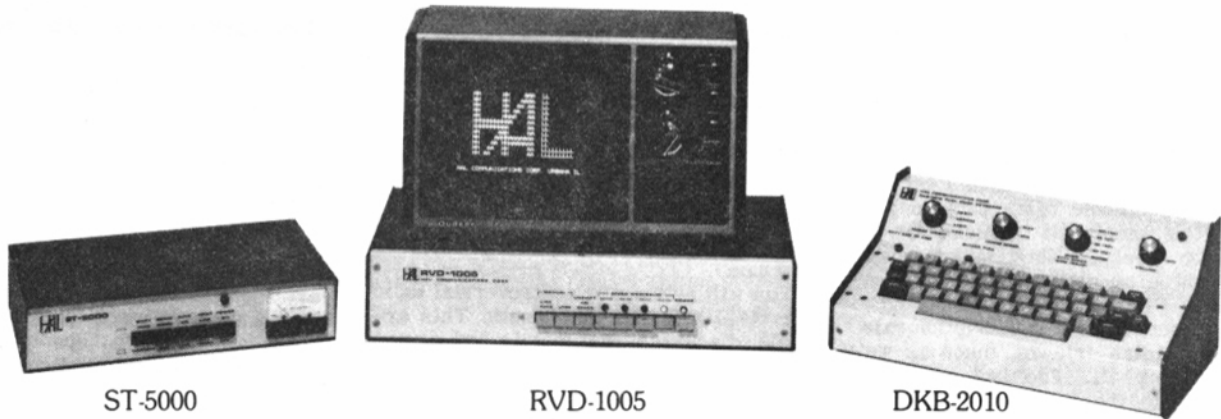
DIAGRAM ON PAGE 4

PAGE 3

TERMINAL UNIT
 AUDIOD BOARD
 WR64B RPTR.



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.



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HITS & MISSES

From The Editor
and
his Mail

CHUCK EDWARDS W6MNO

4726 Barbarossa Drive -

San Diego, CA 92115



HITS & MISSES

Looks like we have a lot of Canadians mad at us for late, late delivery of the JOURNAL. It was, however, not our fault this time! The Canadian Post Office sent the whole batch back to our office, after keeping it in limbo for about three weeks. They said that we had to put a special wrapper on each magazine. From the way it looks now that will increase the subscription rate to our Canadian friends, much as we deplore doing it.. Too bad a staple would not do the trick. At any rate we are sorry for the delay and the JOURNALS have been immediately resent, with wrapper to Canada.

The San Diego Teleprinter Society has started their low band net on RTTY. KØPJ/6 Paul has taken the job as the organizer for this net and will be the net control manager. Take a listen for it on 3.6075, seven o'clock Pacific time, each Wednesday eve. The San Diegans will be thrilled to hear an out of state check-in.

We have had a comment or two about the JOURNAL being 'too west coast oriented', I believe that this true-but think about it for a minute-why is it true? We have not been getting sufficient input from our brethren towards the north, east or south which means that we must look to the west for news. Sooo how about getting information in to us from other areas of the country and we for one will be happy to become 'all over the country oriented'.

I shall be on a long trip during the month of April. Plans are to hit the near east with countries such as Egypt, Greece, Israel, and many others. We sure hope that we can meet some of our old DX friends in our travels. We're going to look 'em up anyway. We also hope to be able to work some CW in those countries as well. So look for us on the low end of twenty and fifteen. Sure wish that I had room for a teletype machine! Don't have any idea at this time what the calls will be but maybe you will catch my American accent.

We received a letter from Info-Tech, Mr. Kelce, offering to send me his new model 200E to complete the tests I had started about two months ago. He says that he will send this brand new model during the early part of June. This new model has a lot of new features that promise to be very exciting.

We also have a letter from the R.L. Drake Company who, hopefully, will soon send one of their brand new three bander (144-220-440) VHF rigs for test and evaluation. This one I am really looking forward to testing being an avid VHF fan. So stay with us and we will have these two reports out as soon as we can.

You will note a new controversial topic in the JOURNAL this month. This article discusses the merits and disadvantages or shifts other than 170. Also different speed (bauds) and their effects. This report was originally prepared for and by the United States Navy. I hope that each of you will digest this report and send me your comments. I will make up a special article containing your letters on the subject. It should be very interesting.

Skip, our DX editor gave me a report on the local BARTG activity here in San Diego. The leader is Paul, KØPJ 6. Just guessing it would seem that Paul should be somewhere in the overall top honor roll. When you consider that Paul is about as far away as it is possible to get from most of the contacts, it is an excellent score. Skip did very well as did Terry and Steve, WB6BDY.

I never cared much for contest work but we San Diegans have a new wrinkle and I just might try it next time. What the new wrinkle is, is that the contestants talk via fone on 220 and keep fellow contestants aware of who was on what band and how they were coming in and which countries were coming in. Then the other fellows would go after the reported stations on RTTY low bands. Sure made it sound like a lot more fun than just sitting and wearing your fingers out hoping for answers to your CQ DX bit.

The NEW 'RTTY BEGINNERS HANDBOOK' will be a little late due to problems with some photographs and trouble in keeping everyone's head dry at the JOURNAL office. The roof still leaks and cannot be repaired until we have some dry weather. It rained this morning in sunny California again. The New HANDBOOK will be ready for mailing April 15th. New price will be \$4.50. It will contain additional information for the beginner and old timer as well and quite a lot of information concerning stunt boxes and filters. Hope you all like it.

I bought a beautiful Model 35 teletype, that is almost new. I plan to start making a converter for it ASCII/Baudot and will also have a KIM-1 going with it, in the not too distant future. It is my plan to report on how all this system goes together and what can be done with it. Hank, W6SKC, of Dovetron makes an ASCII/Baudot converter that is a very sophisticated electronic 'black box'. I am looking forward to trying out his gadget as well. We hope to have a lot of new and interesting discussions going on in the future in addition to our regular technical articles.

73 de W6MNO -CHUCK

THE D.S.I. FREQUENCY COUNTER,

CONTINUED FROM LAST MONTH

CABINET:

A cabinet was formed out of two pieces of 1/16-inch-thick sheet aluminum, suitably bent so as to form a box when fitted together. The front panel and bottom was from an L-shaped piece, while the top cover was made from an U-shaped piece. Sides were thus taken care of, and the back area was left clear. Later it was covered with a piece of thin Bakelite, with cutouts to permit entry of the various connectors on the rear panel. The top cover and its sides were perforated with patterns of holes using a 5/16 inch sheet-metal drill.

This is important, in order to permit ventilation and resultant maintenance of the timebase crystal at a near-ambient-room temperature to allow it to be as stable as possible. This is important so that adjustment should seldom be required to maintain the accuracy of 1 part in 4 million.

Take note that the Triad transformer is mounted on the bottom of the cabinet of the cabinet between the front and rear printed circuit boards. Incidentally the ceramic trimmer, across the crystal was replaced with a glass-piston trimmer in order to provide ease of

PLEASE TURN TO PAGE 7

Please come to Dayton and meet with me in the Kings room -traditional meeting place of RTTY Journal and all RTTYers. You may find a surprise in what your Editor Publisher looks like. See ya, DEE.

adjustment. The counter is calibrated, using a 4 MHz crystal, previously adjusted to exact zero beat on WWV.

The cabinet was finished off with a coat of 'Auto-Primer' gray spray made by Rust Oleum, obtainable from any hardware store. Be sure to sand the cabinet with fine sandpaper first to enable the spray paint to adhere well. Afterwards stick-on lettering was applied, and the cabinet was finally given a coat of clear Krylon. The photographs show the complete DSI counter, with front, rear and topside views given.

AUDIO FREQUENCY MEASUREMENTS:

The DSI, as it originally came, was somewhat erratic on audio-frequency inputs. It would not offer a stable readout; i.e. it would wander a few Hz around the correct value. Also, the amount of audio voltage needed was somewhat uncertain. Hence, it was decided to build up a supplementary amplifier stage. There is enough space on the back board to permit the addition of a RCA CA3130 integrated circuit amplifier along with a few small parts. Using a small drill, holes were drilled to pass the wires involved, forming the Schmitt Trigger input stage -- a circuit of which is shown in Figure 2.

The pin connections on the CA3130 are the same for a 741; however the amplifier is in a small metal can with 8 wires coming out. The 3130 was chosen on account of its ability to have its inputs operated at ground level; in other words the amplifier operates well on a 5-volt single-ended power source, same as the rest of the DSI counter circuit.

At any rate, the Schmitt Trigger generates precise square waves, given any sine wave input of .03 volt RMS and up. Input frequency can be as low as 5 Hz; it can be as high as 400 KHz. Note that a second RCA phone-jack was mounted to operate into the system, and a plug was provided to engage the system into the DSI input whenever needed for audio measurements.

COMMENTS:

The DSI counter, thus fitted with an AC-operated power supply and a Schmitt Trigger, is a fine instrument for frequency measurements from 5 Hz to some 300 MHz. It is in a small metal cabinet, very light, and very handy for carrying around. The 8-digit readout is visible through a rectangular cutout on the front panel; the 4-position prescanning switch is accessible through the same front panel as well. The system operates well down to 102VAC input, at least, which is reasonable, in view of the reliability of the public-utility power source generally available. We feel that the voltages involved are just about right, leading to minimal heating in the heatsinked regulator; the cabinet runs cool. This is desirable in order to protect the timebase crystal from

excessive heating during the operation; note the placement of the power transformer and the ventilating holes in the cabinet. At least, the counter provides an immediate, accurate (to one Hz) readout of any input frequency, even a transmitter frequency, upon power application (cold start), and it maintains the same calibration accuracy even after running some time. The counter is, of course, ideal for measuring clock frequencies as involved in UART systems for 45.45 Baud RTTY operations, the UART frequency is set to 727 Hz, and

it can be checked at any time merely by applying it to the audio-frequency input on the rear of the counter package. And for tuning up audio filter as used in RTTY terminal units, the counter is just perfect!

No. 3250-K, frequency counter assembly Diversified Security Industries, 741 Ronson Road, Suite G, San Diego, CA 92111. It is understood that DSI will continue to make these assemblies, inquire thereof if you wish to purchase such things. This is an excellent counter capable of more than adequate accuracy for audio-HF-VHF frequency measurements.

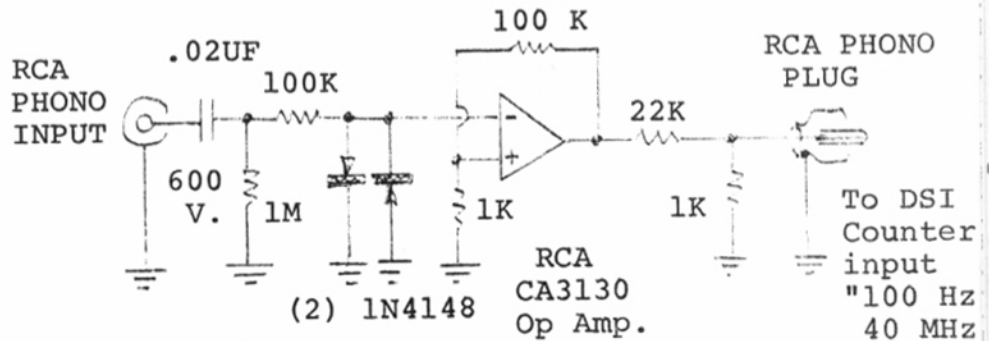
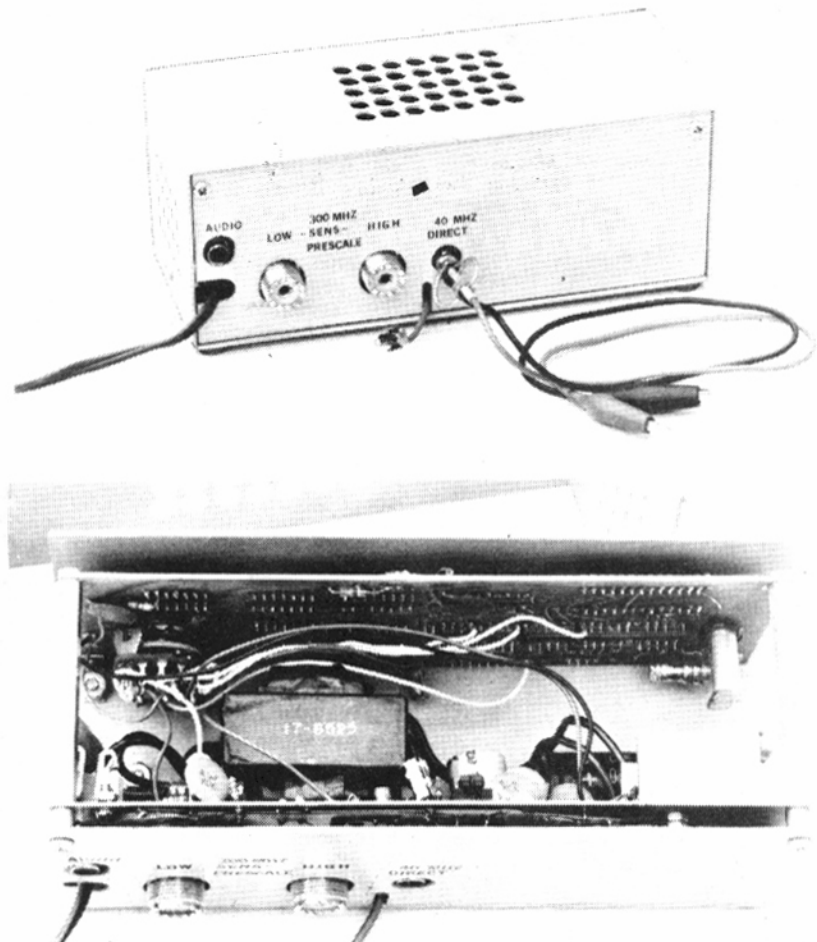


FIG. 2



• RTTY-DX •

SKIP PRINSEN WB6CYA 714-276-3182

3611 Merrimac, San Diego, Calif. 92117



Greetings to all

Test transmissions from the RTTY bulletin station GB2 ATG operated by members of the B.A.R.T.G. on behalf of the Radio Society of Great Britain (RSGB), they have now started test transmissions for the next few weeks before starting an 'overseas' service. The test schedule is: Sundays 0830 GMT long path to VK on 14,090 KHZ; 1530 GMT short path to the Far East; 1600 GMT beamed to W and VE all on 170 Hz shift!

The BARTG has reports from several countries and would like reports from stateside stations in order to evaluate their plans..

I listed Jack Taylor as K700 and should have been N700 (sorry Jack), ALSO Jack noticed that we had TF 3IRA as TF3JRA, sorry to Guys in 'sunny Iceland'.

Ray La Belle, W6RUL and I have been discussing the various contests when he asked why no American sponsored contest? Is there any group that might be interested? If you have any ideas or suggestions please drop either Ray or myself a line. Also, we are kicking around the possibility of forming an American RTTY Club, wonder if anyone has tried that?

RTTY news services seem to be springing up all over the place. From down under VK2SG Syd reports that a 30 minute broadcast is run on Sunday at 0830 GMT and 0930 GMT. The 0830 run is on 7045 KHZ and 14090 KHZ. The 0930 GMT broadcast is on 3540 KHZ.

9M2CR, Colin from Malaysia sends the following 'We often get good propagation 9M2-W6/7 1400-1600 GMT but rarely see any RTTY from your direction: of course it is early in the morning-but maybe Sats/Suns?

and hope more of you fellows will work on ID. It is full of surprises.

We plan to publish the next RTTY DX Honor roll list in the July-August issue, so please have your totals of worked/confirmed to me by the end of May. If you print me on the air feel free to pass them on to me at that time.

For newcomers to RTTY DX the 'Quarter Century Award' issued by the British Amateur Radio Teleprinter Group has a charge of \$3.00 US or 15 IRC's. Claims are to be sent to Ted Double, G8CDW.

89 Linden Gardens, Enfield, Middlesex, England EN 14 DX

1978 ARRL National and the QCWA

National Convention are being held in San Diego, California, September 22, 23 24 at the Town & Country Convention Center. K6BWT Sam Dear, General Chairman reports that the rooms are filling up fast so get your requests in as soon as you can if you plan on attending.

I presently have plans of attending the Los Angeles Radio Convention on the 20-21st of May. I hope to see some of you there.

From Bob, WA9AKT on the BARTG, It started about 0530Z with several Europeans being worked in about 10 minutes. Then the VK's could be heard along with the JA's. Most of the VK's were coming in about 569 to 589 while the JA's were weaker with signals of 549 to 559. I did not manage to work any of the JA's and I thought for sure that I was going to miss ASIA again this year.

I did work several VK's to include VK 2NM, 2KF and 2SG. I still could hear the VK's and JA's when I heard and worked ZS6AKO. Also heard around this time, was UA9PP. Just a super opening for the Mid-west. It lasted about 3 hours before it was over. . . also from Bob, WA9AKT, I think I should make special mention about two good friends of mine who were also in the contest this year for the first time. WA9BOW was operated by a brother team of Terry Pfeiffer, and Larry Pfeiffer, WA9JCO. Both have been long time friends.

To make a long story short, back in February when my T4XB was down for repairs, I lent Terry my ST5. Terry had an old Model 15 in the corner of his shack just collecting dust. So one Saturday I took the ST5 over to Terry's house and we hooked it up. Before long the old Model 15 had come to life and we were printing RTTY. Well, the bug bit Terry and he ordered a ST6/XTK 100 unit. Now get this: just four hours before the contest started Terry and Larry finished construction and alignment of the ST6. Terry's VERY FIRST RTTY contact came just three hours before the contest started. Right then and there Terry and Larry decided to jump in the contest with both feet. neither one of them knew how to type or had ever been on RTTY before that day. By the time the contest was over and the smoke and dust had cleared, they had equaled my total number of contacts and I think that they may have out scored me too!

PAGE 8

Just a super first time effort by two newcomers to RTTY. Look out WIMX you have competition now.

It pays to listen the night after a contest also. Monday night Bob WA(AKT heard VP2FV and also JY9BB both on 20 meters. W8JIN, Jim racked up QSL card #110 for his endorsement for his DXCC award..

W2LFL reached 140 countries for his DXCC asuper listing which gives us a lot to work for.

Syd, A4XGB will be going to the Dayton Hamvention with Syd, W2LFL. Isure wish that I could be with you there guys, have a good time and be sure to stop in to say hi to the RTTY JOURNAL Publisher on Saturday.

WAC All on 14 MHZ #55 on April 1st 1978 to 15KPK. WAC ALL ON \$ MHZ #56 on April 6, 1978 to SM5 EIT. Good work fellas, keep it coming.

From Bruce, K0BJ, 'lots of good RTTY DX lately with EL2AG, 5Z4PD, GM3 ZXL, VP2SV and HI8XDF being new ones worked recently.

QSL manager for HI8XDF Glenn, K3SWZ reports that Tony has all of his problems solved and is very active on the bands.

QSL's for contact with JY1 -(King Hussein's station) on RTTY are coming thru via his US manager, WA3HUP, Rd 2, Box 5A, York Haven, PA 1&#amp;).

Jeff, 9H1EL, QRT with his gear doing duty on the commercial links. John, 9H1ET is filling in nicely until Jeff returns to RTTY, which should be soon.

Pat, 9Y4MP, could be QRV but needs assistance to convert ASCII machine to baudot (electronically). Write to Bob, Box 234, Kingston, Jamaica.

The T19CI DX expedition to Cocos Island in late March was QRV on 75 band. Worked by W2LFL and very few others.. They are now QRT.

Jean, FG7XT, very QRV on RTTY via

Oscar and low bands during BARTG.

Welcome to KX6HC on RTTY - Norm Tetreault, Box 1544 APO San Francisco, 96555. .

B.A.R.T.G. Contest very active. 1st day, great condx. 2nd day condx down quite a bit. 1st contest in years where 10 and 15 were open dawn to dusk.

Both K0PJ/6 and myself worked W.A.C. on both 15 and 20 meters. 80 meters from here was a disaster and 40 meters wasn't much better.

PLEASE TURN TO PAGE 11



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Doug Mathena

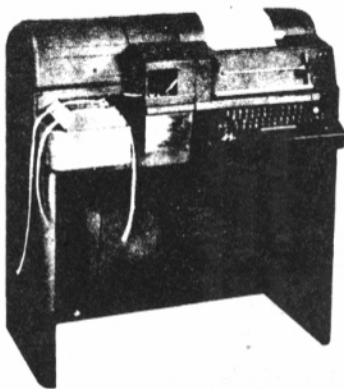
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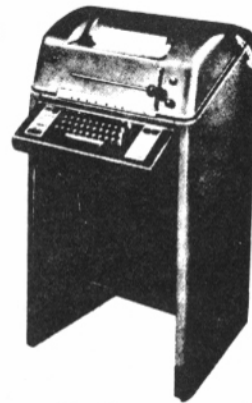
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Model 28ASR



Model 28KSR

WA6PMA

DOUG

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1N914	100v	10mA	.05	8-pin pcb	.25	ww	.45	2N2222A	NPN (2N2222 Plastic)	.10	.15
1N4005	600v	1A	.08	14-pin pcb	.25	ww	.40	2N2907A	PNP		.15
1N4007	1000v	1A	.15	16-pin pcb	.25	ww	.40	2N3906	PNP (Plastic)		.10
1N4148	75v	10mA	.05	18-pin pcb	.25	ww	.75	2N3904	NPN (Plastic)		.10
1N753A	6.2v	z	.25	22-pin pcb	.45	ww	1.25	2N3054	NPN		.35
1N758A	10v	z	.25	24-pin pcb	.35	ww	1.10	2N3055	NPN 15A 60v		.50
1N759A	12v	z	.25	28-pin pcb	.35	ww	1.45	T1P125	PNP Darlington		.35
1N4733	5.1v	z	.25	40-pin pcb	.50	ww	1.25	LED Green, Red, Clear, Yellow			.15
1N5243	13v	z	.25	Molex pins .01	To-3 Sockets		.45	D.L.747	7 seg 5/8" High com-anode		1.95
1N5244B	14v	z	.25	2 Amp Bridge	100-prv		1.20	XAN72	7 seg com-anode (Red)		1.25
1N5245B	15v	z	.25	25 Amp Bridge	200-prv		1.95	MAN71	7 seg com-anode (Red)		1.25
								MAN3610	7 seg com-anode (Orange)		1.25
								MAN82A	7 seg com-anode (Yellow)		1.25
								MAN74A	7 seg com-cathode (Red)		1.50
								FND359	7 seg com-cathode (Red)		1.25

C MOS		- T T L -									
4000	.15	7400	.15	7473	.25	74176	1.25	74H72	.45	74S133	.40
4001	.15	7401	.15	7474	.30	74180	.75	74H101	.75	74S140	.55
4002	.20	7402	.20	7475	.35	74181	2.25	74H103	.75	74S151	.30
4004	3.95	7403	.20	7476	.40	74182	.95	74H106	.95	74S153	.35
4006	.95	7404	.15	7480	.55	74190	1.75			74S157	.75
4007	.35	7405	.25	7481	.75	74191	1.05	74L00	.25	74S158	.30
4008	.95	7406	.35	7483	.95	74192	.75	74L02	.25	74S194	1.05
4009	.45	7407	.55	7485	.75	74193	.85	74L03	.30	74S257 (8123)	1.05
4010	.45	7408	.25	7486	.25	74194	1.25	74L04	.30		
4011	.20	7409	.15	7489	1.35	74195	.95	74L10	.30	74LS00	.25
4012	.20	7410	.10	7490	.55	74196	1.25	74L20	.35	74LS01	.35
4013	.40	7411	.25	7491	.95	74197	1.25	74L30	.45	74LS02	.35
4014	.95	7412	.30	7492	.95	74198	2.35	74L47	1.95	74LS04	.30
4015	.90	7413	.35	7493	.35	74221	1.00	74L51	.45	74LS05	.45
4016	.35	7414	1.10	7494	.75	74367	.85	74L55	.65	74LS08	.25
4017	1.10	7416	.25	7495	.60			74L72	.45	74LS09	.35
4018	1.10	7417	.40	7496	.80	75108A	.35	74L73	.40	74LS10	.35
4019	.50	7420	.15	74100	1.15	75110	.35	74L74	.45	74LS11	.35
4020	.85	7426	.30	74107	.35	75491	.50	74L75	.55	74LS20	.25
4021	1.00	7427	.45	74121	.35	75492	.50	74L93	.55	74LS21	.25
4022	.85	7430	.15	74122	.55			74L123	.85	74LS22	.25
4023	.25	7432	.30	74123	.55	74H00	.15			74LS32	.40
4024	.75	7437	.30	74125	.45	74H01	.25	74S00	.35	74LS37	.35
4025	.30	7438	.35	74126	.35	74H04	.20	74S02	.35	74LS40	.45
4026	1.95	7440	.25	74132	1.35	74H05	.20	74S03	.30	74LS42	1.10
4027	.50	7441	1.15	74141	.90	74H08	.35	74S04	.30	74LS51	.50
4028	.95	7442	.45	74150	.85	74H10	.35	74S05	.35	74LS74	.65
4030	.35	7443	.65	74151	.65	74H11	.35	74S08	.35	74LS86	.65
4033	1.50	7444	.45	74153	.75	74H15	.45	74S10	.35	74LS90	.95
4034	2.45	7445	.65	74154	.95	74H20	.30	74S11	.35	74LS93	.95
4035	1.25	7446	.95	74156	.95	74H21	.25	74S20	.35	74LS107	.85
4040	1.35	7447	.95	74157	.65	74H22	.40	74S40	.20	74LS123	1.00
4041	.69	7448	.65	74161	.85	74H30	.20	74S50	.20	74LS151	.95
4042	.95	7450	.25	74163	.85	74H40	.25	74S51	.25	74LS153	1.20
4043	.95	7451	.25	74164	.60	74H50	.25	74S64	.20	74LS157	.85
4044	.95	7453	.20	74165	1.50	74H51	.25	74S74	.35	74LS164	1.90
4046	1.75	7454	.25	74166	1.35	74H52	.15	74S112	.60	74LS367	.75
4049	.45	7460	.40	74175	.80	74H53J	.25	74S114	.65	74LS368	.75
4050	.45	7470	.45			74H55	.20			74C04	.25
4066	.95	7472	.40							74C151	2.25
4069	.40										
4071	.35										
4081	.70										
4082	.45										
MC 14409	14.50										
MC 14419	4.85										

9000 SERIES		MCT2		LINEARS, REGULATORS, etc.					
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9309	.35	LM201	.75	LM320T12	1.65	LM340K18	1.25	LM725N	2.50
9322	.75	LM301	.45	LM320T15	1.65	LM340K24	.95	LM739	1.50
		LM308 (Mini)	.95	LM324N	.95	78L05	.75	LM741 (8-14)	.25
		LM309H	.65	LM339	.95	78L12	.75	LM747	1.10
		LM309K (340K-5)	.85	7805 (340T5)	.95	78L15	.75	LM1307	1.25
		LM310	1.15	LM340T12	1.00	78M05	.75	LM1458	.95
		LM311D (Mini)	.75	LM340T15	1.00	LM373	2.95	LM3900	.50
		LM318 (Mini)	.95	LM340T18	1.00	LM380 (8-14 PIN)	.95	LM75451	.65
		LM320K5 (7905)	1.65	LM340T24	.95	LM709 (8, 14 PIN)	.25	NE555	.50
		LM320K12	1.65	LM340K12	1.65	LM711	.45	NE556	.95
								NE565	.95
								NE566	1.75
								NE567	1.35

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A random listing of some of the stations that have been active: UK3DBG, UK2GAX (Latvia), UK2BAB (Lithuania), UA(PP, DM3XSO, DM3GM., DT2EDL, DM4CE, DM5NN, DK3CU, DL8QQ, GM3DJT, GM3ZXL, GW3EHN, G4FLY, G4APA, G3PEJ, G3KLV, G3UUP, G3IIR, G3 IOI, G2PB, VK6CT, VK5QX, VK2SG, VK2BKW, VK2 nm, VK3BEN, ZS6BLV, ZS6 AMI, ZS6AKH, KZ5BH, KL7DYS, KL7JFJ, H18XDF, was XW8HJ in Loas, EAÇAU, EA6AU, EA6BW, EA1QW, EA3AXZ, EA8LF, EA8IY, EA8ONL, EA8MO, TF38B, DF2ER, DM3BBN/4X, 4X4GQ, VP2SV, SM6BUV, 5N3AMT, YU2HDE, ISØFFS, ISØIBP, OK1MP, OK1KSL, OE6 KOG, LZ1KDP, YBØABC, KHØLT, KH6 JF, KH6FIC, KH6AG, KH6DL(exKJ6 DL), OH9NE, OH6YI, OH2, hn, ce3LF, CE3EX, LX1JW, KA6MI, PA3AEI, PAØGIN, PAØLCE, HV35J.....

DAFG 10 meter contest 1978

General: the Deutsche AMATEUR - Fernschreib - Gruppe 'DAFG' sponsors the 'DAFG 10 meter contest 1978' to increase the RTTY activity on the 10 meter AMATEUR BAND. There will be two contests within the year. Each contest will be scored separately.

SCHEDULE: 1 test - 6th May 1978 - 1200-1500GMT

@ TEST - %TH August 1978 - 1200-1500GMT.

FREQUENCY: 28,075 - 28,175 MHZ.

CONTEST CALL: CQ DAFG CONTEST.

EXCHANGE: RST/QSO - NR/NAME/QTH. (German stations will send additional its DOK-Nr.)

SCORING: Each station may be worked once. Each complete 2xRTTY contact counts as one point.

MULTIPLIERS: the multiplier is determined by the number of countries worked on the band. The European Country list and the latest ARRL country list will be used. In addition each different DOK-Number, sent out by German stations only, will be considered as a multiplier too.

FINAL SCORE: the final score is the total QSO points multiplied by the sum of total multipliers.

CLASSIFICATIONS: class A: single op, class B: multi op, class C: SWL.

LOGS: logs must contain: a) Name, OP, Call, complete address of participant (block letters are recommended), Classification b) GMT, Call's worked, message sent and received, country. c) final score (Logs without final score will count as a check log.)

SWL: For points, multipliers and scoring confirm as above. The same station may be reported maximum 5 times. For messages received line the SWL should report call of partner station.

AWARDS: certificates will be given to the highest scorer of the SWL's also the 5 highest scorers in each classification mentioned above, in order to a reasonable score present.

DEADLINE: your log should be in the hands of the contest manager no later than 30 days after closing the contest.

Contest Manager: Klaus Zielsk, P.O. Box 1147, D-6455 ERLENSEE 1, West Germany.

LOG SHEETS: for log sheets write to the contest manager. Results, all non-DL participants will receive the results of the contest by regular mail as soon as possible. AR.

73's de Skip

NEW RECEIVING CONVERTER DESIGN GETS GREATER PERFORMANCE FROM EXISTING HIGH FREQUENCY RADIO-- TELETYPE NETWORKS...

LCDR G.W. Coffey

COMNAVIAIRPAC CODE 20

North Island, San Diego, CA 92135

commander Patrol Wings Pacific-(COMPATWINGSPAC), concerned about poor first-message reliability on long range ground-to-air-HF Covered Radioteletype (CRATT), initiated flight and ground tests of a modernized Radioteletype (RATT) Converter. The results have demonstrated that error rates on single channel HF circuits can be achieved which are comparable to performance of dual diversity systems. Recent tests, including 20 missions out of NAS Moffett on a P-3C from VP-50, consistently demonstrated reduced error rates without requiring a second airborne receiver or second antenna, and without requiring any changes at the Frequency Shift Keyed (FSK) or audio FSK (AFSK) transmitter sites.

The flight test results were verified at COMPATWINGSPAC Ground Station, at NAVCOMMSTA San Diego, and aboard USS Coral Sea (CVA-43). Comparison with AN/URA-17C Converters, in single channel mode, showed consistent error rate reductions by at least eight-to-one in both RATT and CRATT service. Subsequent laboratory tests have shown that further reductions can be achieved.

These demonstrations clearly show that the Navy can more fully utilize the potential of its existing HF RATT/CRATT networks by modernizing the receiving converters - just one element in each system. This will greatly increase first-message reliability on long range ground-to-air CRATT and can offer time and manpower savings in passing high volume ship and shore traffic. To show why these improvements are possible, a brief discussion of radioteletype history follows.

RATT and CRATT had its origin in Voice Frequency Carrier Telegraph(VFCT) where AFSK signals are sent over voice grade telephone lines or cables. Initial radio tests were made by connecting VFCT converters to radios instead of wire transmission systems. Tests showed reasonably low error rates where levels appeared to depend entirely upon propagation conditions and signal-to-noise ratio (SNR). Errors were accompanied by static crashes, interference, fading, and other changes in the signals that were introduced during propagation. For these reasons, it was

assumed that all such errors were inherent in the HF radio medium. Higher powered transmitters, increased antenna gain, and diversity techniques were employed to reduce error rates.

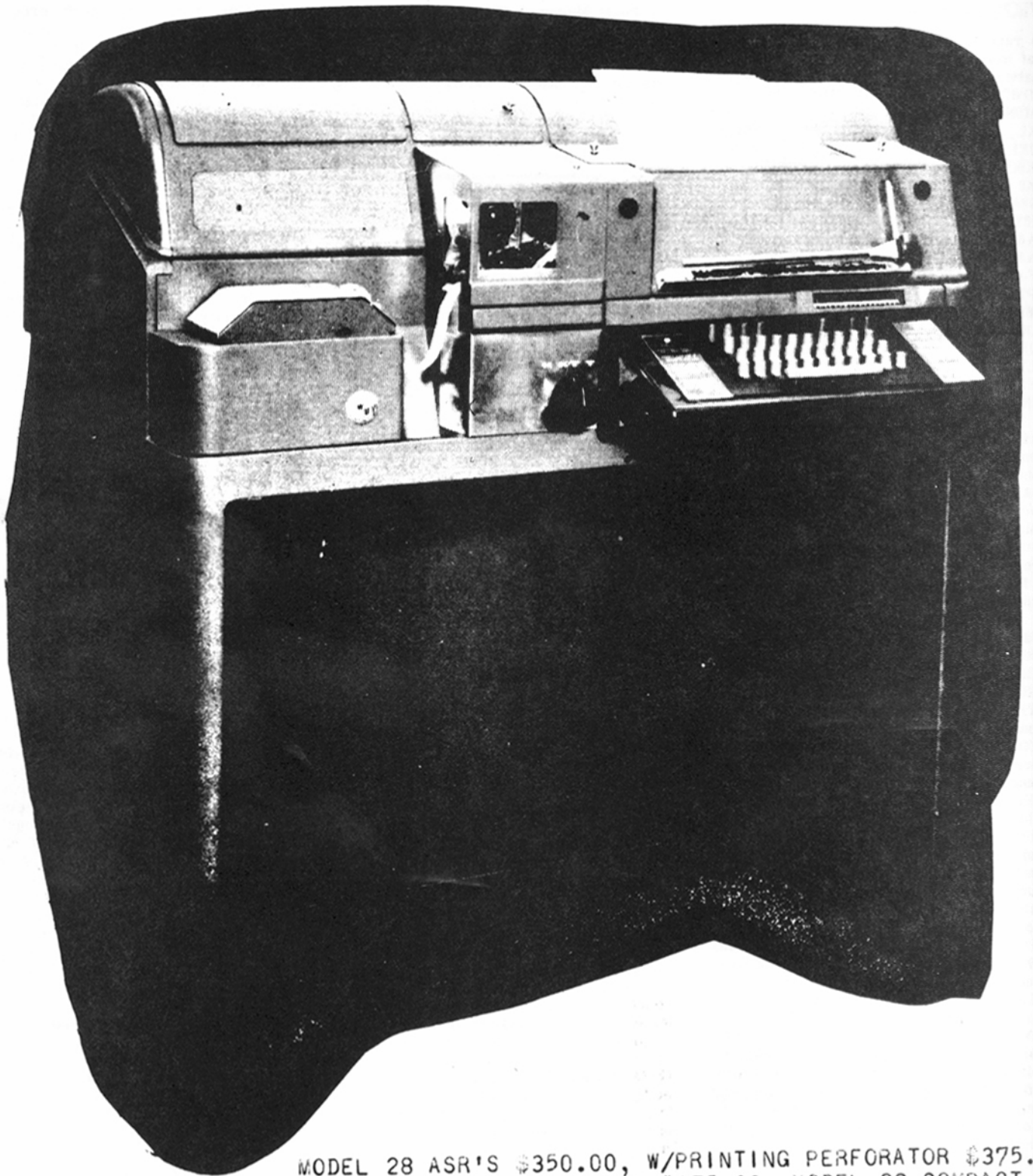
Diversity consists of establishing two or more transmission paths for the same message. This increases the probability that one path will survive fading, interference, or whatever else the HF radio medium can do that causes errors. Frequency diversity employs transmission paths separated by frequency (Traditional separation is 3-khz.) Space diversity employs paths separated by distance between receiving antennas (Traditionally separation is 2000 yards.) Polarity diversity employs paths separated by the polarity and the arrival angle of signals at the receiving antennas (Usually a vertical and a horizontal antenna). Each of these transmission techniques requires two receivers, two converters, and diversity combining. Time diversity employs transmission paths separated by time delay between duplicate transmissions of the same message. The transmissions are re-timed and combined at a single receiver.

Frequency, polarity, and space diversity were used to minimize the adverse effects of selective fading and flat fading. Time diversity was used to minimize the effects of static crashes. Because of the comparative success of increased power, improved antennas, and these diversity techniques, the converter designs were assumed to be adequate.

As the HF spectrum became crowded, and the volume of traffic increased, another technique was borrowed from VFCT: the multichannel system. The multichannel system consists of up to 16 narrow shift AFSK channels keyed separately but sent simultaneously within a 3-KHz passband. All 16 channels are available at the output of one receiver. VFCT converters were ganged and connected to radios. Tests showed reasonable error rates and improvements were achieved through previously applied methods, with one exception: in-band diversity. This was developed when investigators discovered that narrow shift channels frequently faded at different times, even when separation was less than 3-KHz.. The practice of putting the same message on two channels (twinning) or four channels (quadding) is called multichannel in-band diversity because the diverse paths are all contained within the frequency passband of one radio.

The comparative success of VFCT converters in multichannel applications again fostered the assumption that converter designs were adequate. Each new generation of single channel converters or ganged bank of multichannel converters, was patterned after its predecessor. The result is they all employ a basic design approach that has remained substantially unchanged since the late 1920's.

This set the stage for serious problems in long range HF RATT/CRATT.



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THE ELECTROCOM SERIES 400 frequency shift converters are now available to the amateur. Outstanding performance, high reliability and quality construction, for which Electrocom equipment has been known for more than 17 years, is maintained by conservative design and quality components throughout. The Model 400 contains continuously variable shift which is adjustable by a 10 turn front panel control. Shift is accurately displayed by an in-line 3 digit readout. A range switch selects high or low tone combinations allowing use on both SSB or AFSK systems. The Model 402 contains individual Mark and Space frequency controls. Matched filters, baud rate selection, and precision linear detectors provide optimum demodulation. Input frequencies over the range of 1000 to 3200 Hz. are accepted. Other features include autostart, mark-hold, antispacer, waveform symmetry correction, solid state motor switching, and adjustable bias correction circuitry. The loop supply is variable from 20 thru 60 ma. and maintains constant current over a wide range of loop resistance and line voltage. The 2" CRT tuning indicator/monitor contains automatic intensity control and blanking. Direct factory introductory price range \$690. For complete details and specifications write or call Electrocom - Industries, 1105N. Ironwood Drive, South Bend, IN 46615. (219)-232-2743.

INFORMATION NEEDED please, on FRI-DEN tape punch model SP-2. Speed, circuit, loop current, anything. Appears converted from eight to five level. Woodie, KØHZV, 12297 West Conn, Lakewood, Colorado 80228.

ELECTRONIC KEYBOARD Cabinets. Six sizes available. Depth 8.4 In., Height 3In., 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. NuData/Daytapro Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.



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UT-4 COMPONENT UPDATE. FC33512DC Fifo's \$14.00 each. Uarts, choice of GI-AY-5-1013 or TMS-6011NC \$6.00, MC3408L D/A (identical to MC1408L-6) \$3.25, 74LS221N \$1.25, ME-340 \$1.25. Programmed VE3CTP ASCII/BAUDOT conversion PROMS (Aug 77 Ham Radio) \$3.25 each. Now - reprints of 4 articles, 'Trouble-shooting the UT-4' from 1976/77 RTTY JOURNAL, \$1.00 postpaid (courtesy airmail overseas). Peter Bertelli, W6KS, 5262 Yost Place, San Diego, CA 92109. 714-274-7060.

REPAIR TTY, yours not working, need adj. I'll repair any TTY machine. You bring 'em in, or send them. Live near Chicago, location work possible!! Call Clark Sell 312-336-1225, 2726 Sunset Ave., Waukegan, IL 60085.

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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. NuData/Daytapro Electronics, 104 N. Emerson St. Mt. Prospect, IL 60056.

UT-4 BOARD. Full documentation. Extras include: parallel data buffered outputs, transitional autostart, memory hold, two 3 speed 555 clocks, TD control, MC1408L-6 D-A converter, signal output indicator and edge connection for easy servicing. Size 9x 5-5/8 inch. \$17.95 plus \$1.00 for shipping. Complete power supply kit for UT-4 using 78 & 79 series regulators with edge connector and transformer included, kit \$31.50. NuData/Daytapro Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.

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ASCII/BAUDOT Converter semi - kit available for the two-way code converter. See article in 73 Magazine, Sept 77. Use a model 33 or 35 to receive and transmit at 60, 66, 75 and 100 wpm in Baudot code. Automatically inserts Baudot shift characters when required. Semi-kit consists of PC board, 1702 EPROM programmed and tested, sockets for EPROM and UART's and assembly instructions. \$62.50 plus postage. VE4LOGIC, 76St., Claire Blvd. Winnipeg, Man. Canada R2C 0V2.

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 AF-SK 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 Rafael, CA 94901.

HELP - Can somebody help me on two trigger tubes 991 for my CV-89A-URA-8A RTTY converter//??? A.L.B. Jansen, Kievitdwaarsstraat 13 3514-VC-Utrecht Holland.

WANTED: KLEINSCHMIDT Teletype-writer parts, also Mite and Teletype Corp. Send listing for my quote. Phil Rickson, W4LNW, Rte. 6, Box 1103G2, Brooksville, FL 33512.

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

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. Zalewski, 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

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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 Pflieger, 2141 N. 52nd Street, Milwaukee, WI 53208.

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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.

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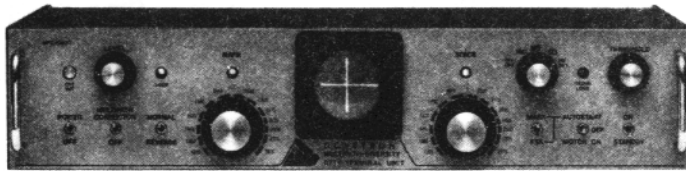
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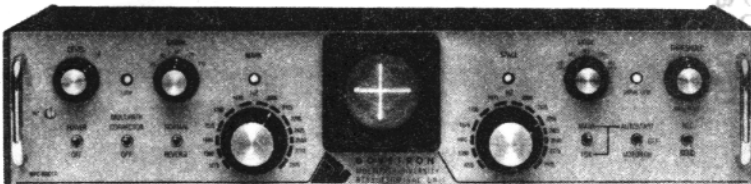


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Multipath Correction
In-Band Diversity &
AFSK Tone Keyer

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.

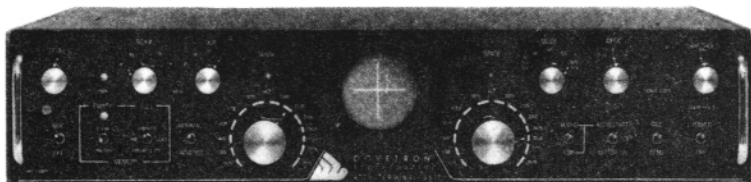


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*The MPC-1000R is also available without a TSR assembly and functions as a MPC-1000C with a Triple Tone-Pair AFSK Tone Keyer. This "Basic-R" permits future expansion with a TSR-100, TSR-200, TSR-200D or TSR-500 by simply lifting the lid and plugging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

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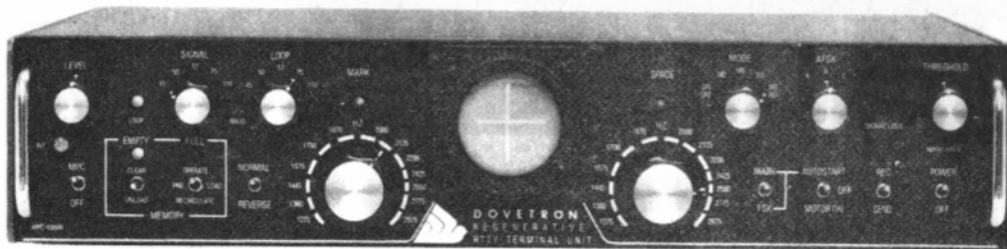
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