

RTTY

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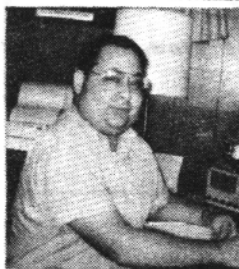
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VHF RTTY NEWS



Arny Gamson, K6PXA, 8034 Gentry

N. Hollywood, CA 91605

Sure was pleased to receive one of the most professional looking RTTY Club Magazines we've seen from the German Amateur Teleprinter Group. It's chock full of news, pictures, information, DX, contests, technical and schematics-pictorials galore, S.W.L. and even facsimile. Congratulations on a superior job to its Editor Wolfgang Punjer, DL8VX Hamburg. Unfortunately we cannot report anything at this time as it's written entirely in German. No 'Sprechen Zie Deutsche' but gather we have a model 28 'Fernschreib' (I did not know that). We understand many of their Group receives and can translate the RTTY JOURNAL THOUGH.

From our Canadian RTTY friends, Cary Miller-VE7CFC briefs us on the British Columbia Teletype Group in Vancouver, British Columbia; Cary is Secretary-Treasurer of the B.C.T.G. The Group has 25 members and most of them are on the local 10/70 MHz. Rptr. They plan to have a new solid-state Rptr. operational very soon.

Another RTTY Rptr. is working, though not fully operational in the Twin Cities Minneapolis-St. Paul, Minnesota area reports Gary Buda -WA0NDN Editor-Secretary of its sponsor the R.A.T.S. Club. This pioneer RTTY Club first met in the early 1950's.

Good to see the emergency preparedness of the San Francisco California Bay area RTTY Rptr. (147.93/33). They had three RTTY Stations set up with emergency power and with 80 Meters phone and C.W. facilities for traffic handling. This was during the ARRL Emergency preparedness exercise held in January.

Keep those reports on your RTTY activities coming in and keep us updated.

Wish everyone could enjoy the fun of talking with a computer and getting info on Club news, rosters, classified ads, test aids, time-date etc. There are three operational computers that we know of so far; S.C.A.T.S. - So. California, Dallas, Texas A.R.C. and AMRAD IN THW Washington D.C. area. The vast interest in computers being what it is, I am sure there will be many more. Keep us posted. Are you utilizing your Rptr. to the ultimate? Do you have traffic nets, picture nets, regular bulletins, club news, ham gear-help wanted, 24 hour message service with Auto-start (or Sel-Cal)???

Last months column we briefed you on the basics of getting a Rptr. going. Now we come to the 'heart' of the entire system, the Terminal Unit. Unlike the ordinary voice Rptr. RTTY requires the following: 1) Autostart.

2) requires the following: 1) Two-Tone audio decode of Mark (2125 Hz.) and Space (2295 Hz.) 170 Hz. narrow shift. 2) Autostart. 3) U.A.R.T. Clock regenerator operating at 727 Hz. for 60 W.P.M. 4) A.F.S.K. tone generator. 5) Rptr. call sign I Der- a low frequency tone (approx. 400 Hz.) continuous or every ten minutes. It must not print of course. The WR6ACA Rptr. has several embellishments which we highly recommend to avoid problems as we had; The U.A.R.T. Clock and the A.F.S.K. are Xtal. controlled and can be used as a standard reference; both are held constant within 1Hz. Originally we found they would both drift over 5% causing problems. In addition to completely regenerating the tones the Rptr. can be placed in a 'Transparent' Mode allowing your input tones to go through direct. This mode is triggered by a sub-audible tone (in our case: 141.3 Hz.). The main reason for regenerating tones is that we have found many of the input signals extremely off freq., poor quality, incorrect deviation etc., and they are cleaned up by the U.A.R.T. evidencing no problems. Voice and hopefully other garbage should not get through either due to the narrow bandpass (2 to 2.5 Khz.). Illustrated is a block diagram of the WR6ACA Rptr. System.

C U Enjoy!
ARMY - K6PXA

Diagram ON
Page 12

MODIFICATION OF THE KENWOOD TS-820

MODIFICATION OF THE KENWOOD TS-820 FOR AFSK RTTY OPERATION WITH 500 HZ CW FILTER
Hank Scharfe, W6SKC
672 Fremont Avenue
South Pasadena, CA 91030

With the 500 Hz. CW Filter (Kenwood Part Number YG-88C) installed per paragraph 6.2 (page 34 of the TS-820 Operating Manual) and with the movable connector IF2 installed in Location B per Figure 25 (also on page 34 of the Operating Manual), narrow-shift (170Hz.) standard tones (Mark 2125 and Space 2295) may be received thru the TS-820 with the Mode Switch set to the FSK position.

To operate the TS-820 in an AFSK configuration, it is necessary to transmit with the Mode Switch in LSB, because when in Transmit, the FSK position of the TS-820 generates its own carrier internally, which in turn is meant to be FSKed (not AFSKed).

The following modification permits AFSK operation in both LSB and FSK. The modification itself converts the FSK position of the Mode Switch to a second LSB mode, but with the 500 Hz. filter in the bandpass instead of the 2400 Hz. SSB filter.

After modification, AFSK RTTY may be transmitted in either the LSB or FSK position of the Mode Switch, and as before, may be received in either position also.

MODIFICATION MODIFICATION

With the top and bottom covers removed from the TS-820, locate the front panel Mode Switch, S-6. Although the switch consists of 5 wafers with 10 different switch sections, Kenwood only utilizes 8 of them. Of these 8, only 5 need be modified.

For the sake of this modification, the deck closest to the front panel will be referred to as Deck 1. The last deck on the switch will be Deck 5.

With the TS-820 right-side up, and starting with the front-most deck:

DECK 1 TOP: Locate diode D2 on switch and install jumper across diode.

DECK 2 TOP: No change

DECK 3 TOP: No change

DECK 3 TOP: Terminal 5 has no connection on it. Install a jumper across

DECK 4 TOP: Terminal 5 has no connection on it. Install a jumper from this terminal to terminals 3 and 4 which have a Blue wire connected to them.

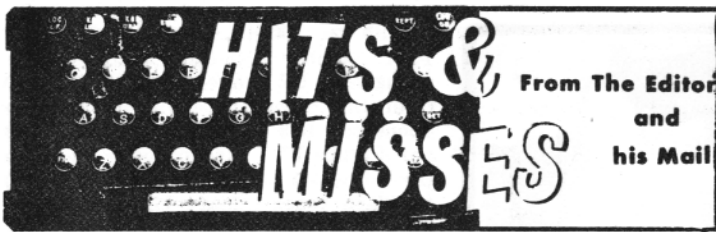
DECK 5 TOP: No change.

Turn the TS-820 upside-down and modify the bottom side of the Mode Switch in the following manner. Again, Deck 1 is closest to the front panel.

DECK 1 BOTTOM: Clip the two wires (one is Black and the other is White) with a Red tracer) from the switch terminal. Reconnect the two wires together, but not to the terminal.

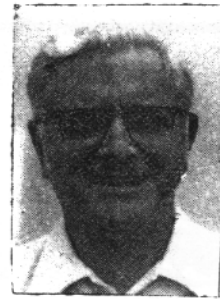
DECK 2 BOTTOM: Clip Black wire from its terminal and tie back so that it cannot short to anything else. Add a jumper from this terminal to the terminal just to the left of it (looking from the front of the TS-820).

DECK 3 BOTTOM: Clip Black wire



4726 Barbarossa Drive -

San Diego, CA 92115



CHUCK EDWARDS W6MNO

First off I want to thank all of the fellows and gals who have sent in such complimentary letters on the Journals new size. I have had long distance calls from interested readers telling me the same thing. It is amazing that everyone seems to like it.

I must admit, when I saw what it looked like, fresh from the printers all finished, I liked it too!

If you will remember, I was one of those who hesitated to do it, but willingly went along, because of the reduced cost and much earlier deliveries from our new printer. We, to date, have only one letter of disapproval from a fellow in the far southwest who said that the large size would not allow him to store the JOURNAL in his pocket for intemporeous reading in odd places like the 'library'. He did say, however, that he would accept it, even tho he didn't like it.

The FCC February 13, 978, via W1 AW, announced that it will now 'permit licensed radio amateur operators to operate their primary stations as repeater, auxiliary link, control, and remotely controlled stations without prior FCC approval. Primary stations operating in the repeater mode must identify by following their call sign with RPT/repeater, primary stations operating in the auxiliary link mode must identify by following their call sign with AUX/auxiliary, depending on the mode used. There are no special identification requirements for primary stations operating in the control, or remotely controlled modes. This waiver is effective immediately and will terminate when the FCC releases a further order in 21033 pertaining to this matter. The upcoming edition of the new repeater directory will include active repeaters operating under this new authorization, as well as those operating under 'WR' call signs, providing that information has been registered with ARRL Headquarters'. I included this information, as it seems to me, to be very pertinent to all hams, especially RTTY'ers who have to do with repeaters.

To date we have not had a lot of outside participation on the newly formed San Diego Teleprinter Society Net, This net meets weekly on Wednesdays at seven o'clock in the evening, Pacific Standard Time. The frequency is 3607.5 plus or minus to accomodate any QRM. So I know the fellows will really appreciate any checking ins that they can

get. The group is trying a novel idea to get all Local participants used to operating as net controls; so we change net control operators every two weeks. Don't worry tho', if you are not local, you most likely will not get the net control duty.

We are still looking for real good articles from our readres. We need new authors who have done something to their shacks or within their shacks, or to their equipment, that would be of interest to others. They can be long or short items. It is, of course, primary that it relates to RTTY. I shall be looking in the 'ail for some real good ones from you - so get busy. Write em up and send them to us.

We thought that we might try another scheme here regarding the changes to the JOURNAL. That is to change the cover color each month. That way one can tell at a glance whether he grabbed a current issue, or can tell the YL what color to bring him should he be tied up inside his machine and needed a bit of reference to relate to a friend. Any way thought that we might give it a whirl and see what happens! The first was red. Last months was back to green-- don't know what this month will be yet. zyaou will have to look at the cover and see HI HI!

I am adding a schematic on a novel AFSK generator using a single chip. I don't know who originated the idea but it sure does a good job. It came in an envelope with no name or credit at all. It looked so good tho' that I made one up and tried it and here it is. So who ever the designer is we give him all of the credit. The chip, a function generator type 8030 is available from most places that sell IC's but if you have none local James has 8030 listed in 73 Magazine, and am sure there are others. It will sell between three and four dollars each.

This is a very simple circuit and is quite drift free after about five minutes of operation. The chip will, in addition to a sine wave, also produce a triangle and a square wave. However, we will use only the sine wave.

Space tone is set by trimmer R5 and the mark is set by trimmer R3. The mark tone is obtained by grounding the base of the NPN transistor. Grounding the base causes the transistor to conduct and lower the voltage on pins 4 and 5 on the chip. Trimmer R8 is used to adjust the output level.

Please note that plus and a minus 12 voltages are required together with a common ground.

When adjusting the space and mark tones you may have to readjust as there may be a small amount of interact between the two adjustments.

This generator can be made on a very tiny perf board and put almost anywhere. The only equipment you will need is a frequency counter and even that isn't a neccesity, as you can get a buddy to help you over the air in making your tone adjustments.

73---- de W6MNO -- CHUCK --

SCHEMATIC ON PAGE 12

'DRAKE OWNERS UPDATE'

Al Mierau, VE5WZ
1821 Easthill
Saskatoon, Sask, Canada S7J 3C2

Drake no longer supplies built in FSK in any of their line. They will build it in if you return your rig but this would not be convenient for most people.

For those who do not have AFSK but use units like the ST-5 or any other unit that puts out plus-minus keying voltage, the vfo may be made to shift very easily.

Remove the three tubes immediately behind the vfo can. Unhook the spring and then slide back the vfo shield can and remove. Our unit had a lug mounted on the front of the vfo which has no connections and we assume this is the lug that Drake used to use. We simply soldered a 2.5pf. capacitor to this lug, pressed the body of the capacitor against the lug and led the other free end of the capacitor towards the tuning slug. We positioned the free end about a quarter of an inch along side the tuning slug. No physical connection was made to any part of the circuit. Following the above put the vfo shield back on and replace the tubes. Our diode shifter was mounted on a terminal lug and screwed in place on the right side of the vfo (looking from the front) We have not shown a schematic here as it is common knowledge. The lug only contains a 2.5 choke, a switching diode and a trimmer capacitor.

The above arrangement does not alter the frequency of the T4XC and is very easy to set up.



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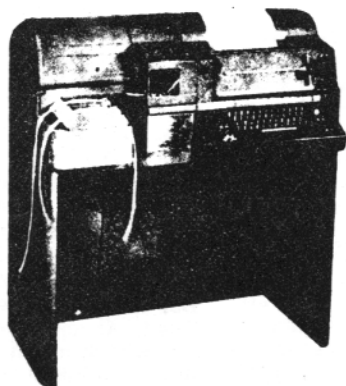
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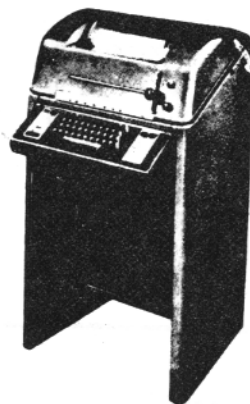
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DOUG

FROM PG.3

DECK 2 BOTTOM: Clip the White/Purple-Tracer wire from its terminal and tie back so that it cannot short to anything else. Add a jumper from this terminal to the terminal just to the left of it (looking from the front of the TS-820).

DECK 4 BOTTOM: No change.

DECK 5 BOTTOM: No change.

With the TS-820 still upside-down, locate the X43-1110-00 board. This is the 'voltage-divider' board in the center and towards the rear of the transceiver.

Locate the Orange wire that is wire-wrapped on Terminal FSB of this board.

Cut the wire loose from the FSB terminal and tie it back so that it will not short to other terminals or components.

This completes the modification of the TS-820 for narrow-filter AFSK RTTY operation with the Mode Switch in the FSK position.

Replace the TS-820 in its cabinet.
OPERATION

When the front panel Mode Switch is now placed in the FSK position, the TS-820 is actually in LSB (lower side-band) and the CW (500 Hz.) Filter is switched into the IF section in place of the SSB (2400 Hz.) Filter.

Connect the TS-820's PHONE PATCH OUTPUT to the audio input of the TU.

Connect the TS-820's PHONE PATCH INPUT to the AFSK output of the TU.

The tones of the AFSK Tone Keyer in the TU should be set for 2125 Hz. Mark and 2295 Hz. Space, which is 170 Hz. narrow-shift.

Tune up the TS-820 in the normal manner, switch to the LSB and set microphone gain for 50 watts output, as read on a good quality in-line wattmeter.

Switch to the FSK position. If power output drops slightly (because of additional attenuation thru the 500 Hz. CW filter), increase microphone gain slightly for 50 watts output.

When in Receive, the Passband Tuning (IF Shift) will normally be set at 10;00

(IF Shift will normally be set at 10 o'clock when using the LSB position and ZERO (straight up) when operating the FSK position.

Generally, AVC should be turned OFF for lowest error-rate copy on marginal signals.

The internal Audio Monitor may be used to 'keep track' of the Memory, CW-IDer, etc.

ASCII & HF OPERATION

ASCII and amateur HF RTTY operation
Hank Scharfe, W6SKC
Box 267
South Pasadena, California 91030

A few years ago, the FCC granted American amateurs permission to use Baudot coded RTTY up to 100 WPM. After an initial surge of 100 WPM activity, most hams went back to 60 WPM.

The failure of 100 WPM operation was often attributed to poor operation of mechanical teleprinters at the higher speed.

In reality, the excessive error rates encountered at 100 WPM were due to the nature of ionospheric propagation and Information Theory.

Multipath distortion will often stretch the 22 Ms pulse of a 60 WPM signal by 90%. This same phenomenon will stretch the 13.5 Ms pulse of a 100 WPM signal beyond 100%, which completely confuses most RTTY systems.

Since higher speed signals require wider bandwidths, a TU optimized for 60 WPM severely distorts a 100 WPM signal, often to the point where the local teleprinter will only print garble. If the bandwidth of the TU is opened-up for the faster baud rates, the signal to noise ratio is very degraded.

The amateur's preference for narrow shift also complicates the situation. As the baud rate goes up, the side bands of the Mark and Space pulses spread out and slop into the unwanted channel, confusing the decision making circuits in the terminal unit.

For this reason, a channel that will not support a narrow shift 100 WPM signal will often do quite well if the shift is widened or if the baud rate is reduced.

The commercial users of HF RTTY understand these problems very well. Since 60 and 66 WPM have essentially the same error rate, they usually use 66 WPM (50 Baud), because they can pass 10% more traffic in the same period of time (cost). They also use a shift width greater than 400 Hz. and take full advantage of the fact that the Mark and Space channels fade independently when separated by at least 400 Hz. (Ref: DIVERISTY, Ref. Data for Radio Engineers, ITT). This is known as In-Band Diveristy operation.

Since narrow shift 100 WPM is such a poor performer when compared with a narrow shift 60 WPM signal, it appears that a switch from Baudot to ASCII is a step backwards.

Slow ASCII (110 Baud) is still only 100 WPM so no traffic speed advantage has been gained but the 13.5 Ms. bit width has been cut down to 9 Ms, requiring a wider bandwidth in the TU which in return degrades the signal to noise ratio of the TU. Since the ASCII code is a 7 bit code (Baudot is a 5 bit code), the entire system must now handle 40% more character bits to print the same information and the error rate will increase much more than 40%.

If your goal is still 110 Baud ASCII operation on the HF bands, turn off the limiter, widen the low pass filters about 35% and switch to 850Hz shift.

If the results are poor, remember

that Mother Nature and Information Theory have been working against you.

Part #1

THE D.S.I FREQUENCY COUNTER

R.H. Weitbrecht, W6NRM

1966 Woodside Road

Redwood City, CA 94061

The diversified security industries frequency counter, Model # 3250, is a two-printed-circuit-board assembly, complete, tested and ready to work, given a D.C. power source of some 12 volts, as say from off a cigarette-lighter outlet in an automobile. Apparently this counter system was designed for measuring radio frequencies coming from mobile radio transmitters. At least, it has been tested and found to work well on r-f inputs up to 300 MHz. This counter reads well any transmitter frequency as picked up in the vicinity by means of a short piece of wire connected to one of its backpanel connectors. The system reads directly to the Hz, on a 8-digit LED display, on inputs up to 40 MHz., and, prescaled to 10 Hz. up through the VHF range. For example, the counter reads out the frequency of a keyed-on hand-held walkie talkie such as the Wilson, held within a foot or so of the counter. It works very well for measuring the 3627500 Hz. frequency which is a popular RTTY autostart channel up and down the Pacific coast. As a matter of fact, the counter's timebase has been found reliable to 1 part in 4 million- corresponding to 1Hz deviation on the above mentioned autostart frequency. This is even true, right from a cold start to several hours continuous run. However, certain things should be mentioned in order to exploit the fullest advantages that the counter system can offer, and this is the subject of this paper. Among such items is a description of an add-on circuit to enable reliable audio-frequency measurements down to at least 5 Hz.

POWER SUPPLY CONSIDERATIONS

It is desirable to be able to operate the DSI off a 115VAC power source. Hence, a power transformer is needed, and here it was found feasible to run the counter off an ordinary 6.3 volt 1.2 ampere filament transformer, such as the Triad F-14-X. The counter assembly came with four power rectifiers already installed in a bridge configuration, although the accompanying DSI diagram showed that such was deleted. At any rate, various tests were run with different power sources to check out the entire counter system. The circuit has a 5-volt regulator with a heat sink on its back printed-circuit board. It was designed nominally to operate off various DC power voltages from 8.2 to 13.5 volts, as indicated in the manual. Anyhow, the 6.3 volt transformer was connected to the AC points on the bridge rectifier. It worked!

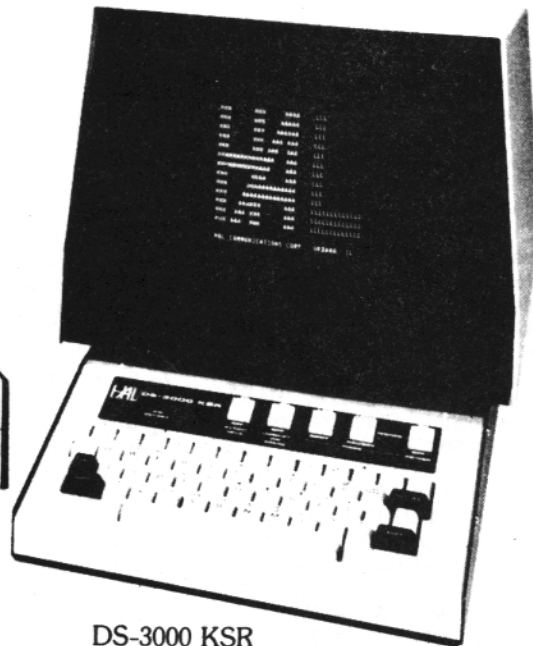
Cont. Page 13

YOU ASKED FOR IT-

BOTH MORSE AND RTTY



ST-6000

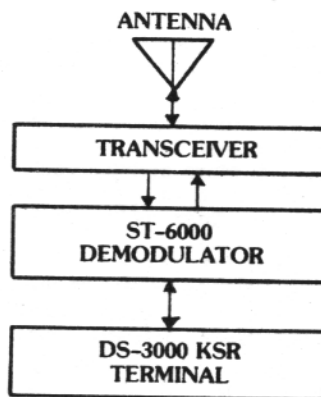


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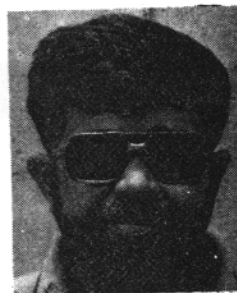
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GREETINGS TO ALL

Some up and coming events of which one I happily will be attending is the ARRL National Convention in SAN DIEGO September 22-24. Everything is still in the talking stages but hopes are for a hospitality room at the convention center. There is a forum or presentation planned for the RTTY enthusiast so hope to see some of you there. Make plans now as Sam says rooms are going fast.

The next contest coming up is about the time you read this. The BARTG commencing 0200 GMT Saturday 25 March until 0200 GMT Monday March 27, 1978.

I have just put the finishing touches on a new Heathkit SB104A (a birthday gift from my lovely XYL Bev) and have not had the chance to get it well smoke checked as yet. I have plans of changing out the CW section of the rig for RTTY only and will write it up for the JOURNAL as soon as I get it working to my satisfaction.

We plan to publish the next RTTY DX listing in the July issue. Please have your totals of worked/confirmed to me by the end of May. Please don't wait until the last minute as some people waited until it was too late.

W.A.C. All on 20 meters certificate number 54 dated 10 February 1978 to I2OLW, LUCIO ORIANI.

OY1A Arne, Qth Torshaun, Faroe Isles QSL via K6XP Robert Huntington, 5014 Mindora Drive, Torrance, CA 90505.

Printed on the west coast recently were HI8XDF, Tony with shift problems., and 4X4NL.

HBQ(AVK Paul and KØPJ/6 also named Paul have a 0600z schedule on 3590 so far Paul HB9 AVK has heard KØPJ/6 but haven't made it a 2-way as yet. VK6CT was worked on 10 meters at around 0900 Z in HB9 land.

Speaking of 10 meters, this last week end it sounded like 20 did several months ago, so keep a close eye on that band as it can produce some very good catches when least expected.

The last few days I have noticed several very strong African fone stations, on the air both early evenings and early mornings so band is open from the west coast into Africa. Give out a few CQ's and you might just be very surprised at what you turn up.
73 de Skip.

CONTEST SUMMARY

From reports received it appears that the propagation for the 17th Annual RTTY DX 'CARTG'Decade Sweepstakes 1977 were generally conceded to be 'Fair'. Some stations never heard a VE, and some could not hear Europe from North America, and again Africa was the hard continent to get, though several African stations were logged. The stations were there, but it seems to be a case of being in the right place at the right time. 123 logs were received 14 stations WAC, 55 countries logged, 12 Green RTTYers reported, and all Canadian Districts were represented from VE1 through 8 with a total of 35 Canadian station calls appearing on the logs. This is the most active group from Canada ever, and VE5RG was top Canadian Scorer-Ron Grant of Pilot Butte, Saskatchewan.

W3EKT Ed Bruns achieved first place with his best score of 2,332,372 points, and contacted 302 stations, 33 being VE's. Eleven stations reached a score of over a million points, with only 4 doing it last year. One YL operator reported Rose Hensen OZ4DZ of Bernholme Island with 107,912 points leading Denmark. Little confusion regarding 'TT' call which is classed as Italy, but 'IS' is a separate multiplier under the classification of Scndinia. Suggest sending to ARRL Headquarters requesting their newest Countries list for info on DX stations. Fifteen meters seemed to be a busy band this time, with twenty coming second. More activity was evident on ten, and most logs contained entries on the forty meter band.

Countries reported included;
Algeria, Austria, Australia, Barbados, Belgium, Bolivia, Bulgaria, Canada, Canel Zone, Canary Islands, Chile, Corsica, Cyprus, Czechoslovakia, Denmark, England, Finland, France, Fed. Rep. of Germany, German Democratic Republic, Guatemala, Hawaii, Honduras, Luxembourg, Malaysia, Malta, Martinique, Mexico, Monaco, Netherlands, New Zealand, Norway, Oman, Portugal, Reunion Island, Rhodesia, Sardinia, Scotland, South Africa, Soviet Union, Spain, Sweden, Switzerland, Uruguay, U.S.A., Venezuela, Wales, Yugoslavia.

More U.S.A., German and Italian stations heard and a big increase in activity from England. Seemed to be more of everything including QRM and received several reports of good manners with stations moving off frequency when a DX station was active.

Would like to have a greater proportion of Contest logs sent in, as only by checking and cross checking these logs can we provide a fair and equitable contest evaluation. Many thanks to all contestants especially those sending in helpful info regarding dondx, etc. and those supplying suggestions for the betterment of RTTY DX Contests world-wide, which makes for a continued success.

The 18th CARTG 'Big Smoke' will be held on the weekend of October 21-22nd, 1978, and we hope each one will give the event a great deal of publicity from now till then. Make it a point to mention it on each QSO as there are some who would like to participate but do not hear till too late.

Many thanks to all supporters and good luck in the contest!

CARTG RTTY NEWS

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.

RTTY ID generator as seen in March, 1978 Ham Radio. Accepts 5 or 12 volt supplies, 31 characters available, please include ltrs. figs. spaces, etc. Your pre-programmed answer-back must be supplied with order.
Example: DE K 9WRL Neil Mt. Prospect, . Board same size as ST-6 boards. \$34.99 kit, board alone \$8.50. 5V power supply for above \$11.95. NuData Electronics, 104 Emerson St. Mt. Prospect, IL 60056.

THE CANADIAN AMATEUR RADIO TELETYPE GROUP _ VE3RTT
 17th Annual W/W RTTY DX "CARTG DECADE" Sweepstakes
 OCTOBER 22-24, 1977

AWARDS

1. W3EKT	2,322,372	Plaque	"C.A.R.T.G."
2. IK5GZS	1,844,626	Plaque	"RTTY JOURNAL"
3. KH6AG	1,781,940	Plaque	"DUSTY" DUNN, W8CQ
4. K3KD	1,655,120	Plaque	RTTY JOURNAL"
5. I3FUE	1,532,038	Plaque	"CARTG Member"
6. W4CQI	1,457,946	Plaque	"RTTY JOURNAL"
7. CT1EQ	1,405,544	Plaque	"DUSTY" DUNN, W8CQ
8. IT9ZWS	1,396,212	Plaque	"RTTY JOURNAL"
9. I5WT	1,067,480	Plaque	"DUSTY" DUNN, W8CQ
10. ZL1WN	965,635	Plaque	"RTTY JOURNAL"
11. VE5RG	653,640	Gold Medallion & Ribbon	
High Score for Canada. Director C.R.R.L.			
12. WA0OEQ	499,100	Green RTTYer High Score	
Sidney Burnett Memorial Plaque			
13. W3EKT	33	Two-way contacts with Canadian station	
all bands Plaque, VE2JR			
14. HB9AVK	38	Two-way 40 meter contacts	
Plaque, Member of CARTG			
15. VE7DLX	High Score for Low Power Canadian station		
Plaque, "Vic Bright Memorial Award"			
16. OK25350	724,564	SWL Printer Plaque	"Canadian RTTYer
17. W1MX	1,699,094	Multi-operated Station Plaque	
C.A.R.T.G.			
18. CE3MA	739,305	Low power (under 100w Input)	
Plaque - Mills Electronics			

Certificates to be issued to top scores in each U.S.A and Canadian District, and each Country.

Single Operator first 10 same as above

11. VK5RY	921,780	33. DK1AQ	362,628
12. K5ARH	904,194	34. SM6ASD	353,380
13. K8NN	846,860	35. W0HAH	344,448
14. CE3MA	739,305	36. I0LVA	332,310
15. ON4BX	710,712	37. W3KV	316,800
16. W1GKJ	690,860	38. I5FZI	303,156
17. VE5RG	653,640	DL6BI	299,240
18. I5MYL	622,400	40. WB6CYA	298,780
19. DJ6JC	608,152	41. 9M2CR	277,385
20. VE2JR	605,132	42. WA9AKT	230,716
21. XE1AFU	590,584	43. I7FKO	202,880
22. W7RSJ	558,600	44. HB9HK	199,251
23. I2OLW	544,324	45. I8JRA	195,565
24. VK3KF	510,580	46. OK1MP	188,024
25. WA0OEQ	499,100	47. VE7YB	186,680
26. K6WZ	493,600	48. G4ALE	186,261
27. IC8FHC	477,190	49. IC8POF	185,212
28. YV5GU	467,700	50. DJ9IR	173,260
29. W6JOX	466,620	51. K4AGC	151,944
30. HB9AVK	441,975	52. VE2ARA	151,160
31. DJ8BT	428,015	53. W4YZ	134,328
32. WA0YDJ/4	408,948	54. JA4ONZ	131,550

55. 4X4MR	126,380
56. VE4BF	122,004
57. W8CAT	119,708
58. Oz4DZ	107,912
59. DF2KU	90,000
60. K4JAF	83,384
61. VK2NM	77,025
62. WB1CRG	71,452
63. I2WEG	66,922
64. VE7DLX	66,592
65. LA7AJ	66,524
66. W1ZXA	64,808
67. VK2EG	63,540
68. WB6PMV	60,250
69. VE1AOE	52,916
70. VE7DTA	52,035
71. DL8YR	44,644
72. WA0TAS	44,620
73. VE7BDQ	43,744
74. DK6DC	43,368
75. G3RED	42,291
76. DJ2YE	39,620
77. W9MKR	36,232
78. W7CBY	34,744
79. VE8CM	32,792
80. VE2QO	30,484
81. W2KHQ	26,456
82. VE3GNP	25,810
83. SM6AEN	24,864
84. VE1AIT	24,060
85. W6AEE	21,768
86. KZ5OD	20,734
87. G3RDG	19,876
88. OZ1AKD	19,500
89. 9M2MW	18,312
90. SM6CAL	12,852
91. K8UFW	9,582
92. CE3EX	8,416
93. W8TCO	3,326
94. VE6ALR	3,028
95. FB6IQ	1,888
96. LA3YU	1,020
97. DM5NN	880
98. DK4IO	800
99. DM2GFA	56

CHECK LOGS:

DM2EDL, DM5XNN, DL8WA,
 OZ80, SM6GDL, WB6VSD

Certificates to be issued to top scorers in each U.S.A and Canadian District and each Country.

KLIENSCHMIDT Model TT-107 re-perf machines. Only a few left @ \$49.95. Checked out and working. Copy of tape on request. Harmon, 5628 10th Ave., South Birmingham, AL 35222, W4CDT.

M-28, TYPING TAPE perforators with keyboard and stand, all complete (teletype) \$75.00 each. Quanta Disct. Goodman, 5454 South Shore Drive, Chicago, IL 60615 (312-752-1000).

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

FOR SALE: GEARSHIFT for 28 ASR New - never installed \$150. Phone 813-527-6954 or write Raymond Ravers WB 4MOM, 5384 46th Str. No., St. Petersburg, FL 33714

32 ASR - PROFESSIONALLY overhauled \$500.00 Robert Woodbury, 12 Meadowbrook Road, Dover, MA 02030.

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.

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

ELECTRONIC KEYBOARD cabinets. Two sizes available in W.D.H. 14x11.3x3, \$14.50, and 14x8.3x3, \$13.50 Choice of white or black top with blue base; shipping included. Ten minute timer kit, variable \$9.85. Board alone \$4.20. NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056

TU LOOP SUPPLY board. Contains all necessary for Plus 12 minus 12 low voltage supply with provisions for high voltage loop supply. Similar to that of ST-5. Ideal for most TU's including DT500 and DT600 units. \$5.95 per board plus 85¢ shipping. NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.

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.

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.

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.

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

FOR SALE: EBC 144 Jr. two meter 143.8 thru 148.999. Any split also scan with priority channel. Puts out a solid 33 watts-Excellent for RTTY \$300.00. W6MNO Chuck 4726 Barbarossa Dr., San Diego, CA (714) 582-2739.

WORRIED ABOUT unauthorized persons in your shack? How about the threat of fire? Invest a few bucks and protect your gear and family from both theft and fire. My double duty alert not only acts as burglar-intrusion alarm but as fire alarm also. Not only protects your gear but home and family also. Send \$12.95 (\$10.95 each for two or more) to L&E Enterprises, Dept WNF, 63 Taylor St., Deadwood, SD 57732. Try it and see for yourself. 10 day money back guarantee. Sold to Hams by Hams.

TELETYPE BARGAINS, Model 28 ASR's \$325.00, KSR's \$165.00, all contained in consoles and ready to go, Modems add \$50.00 per unit. Also TWX units, Model-33's and 35's. Also have a few hundred 15's and 19's (all subject to prior sale). Quantity discounts. SASE for list. Goodman 5454 South Shore Dr., Chicago, IL. 60615. (312-752-1000). Phone day or night.

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 9 x 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 connectors and transformer included, kit \$31.50. NuData Electronics, 104 N. Emerson St., Mt. Prospect. IL 60056.

FOR SALE: HRO 500 receiver. 5Khz. 30Mhz. \$900.00 Howard Mills, W3HM, 5200 B Phillips St., Ft. Bliss, TX 79916, (915) 562-1173.

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.

GOV'T SURPLUS signal generators AN/USM - 27B (microsec. pulse 120-4000 cycles), untested, excellent condition. Make offer. Sell or trade; spools for your teletype, Kleinschmidt equip. 50¢ each plus postage; QSL's regular & double printed, low cost; SASE details. any above D. Testa, Jr., mark RJ, 390 Lincoln Ave., Newark, NJ 07104.

TELETYPE EQUIPMENT and supplies. Fresh new roll paper just arrived. 4 1/2 in. dia. \$19.00 per case of 12. 5 in. dia. \$23.00 per case of 12. 11/16 tape \$14.00 per case of 40. Many machines and assemblies in the 28 line available and also some in the 14 line. Many parts for the 14, 15, 19, 28, and 35 lines and some of the specialty machines. Please inquire on specific parts needs stating machine type, part number and description where possible. SASE for equipment list. Please include sufficient for shipping (paper 33 and 39lbs. respectively; tape 50 lbs.) P. Andersen, 115 Boyken Rd., Rochester, MN 48063. (313-652-3060).

TELEPRINTER Parts, manuals, gears, ribbons, paper, tape, converters; tor-ribbons, paper, tape, converters; toroids. SASE for list. Wanted TT, KL, parts; 2BP1/etc., tubes. Typetronics, Box 8873, Ft. Lauderdale, FL 33310 WAN 7F - N4TT. MODEL 32 ASR in mint condx, asking \$475.00 or make offer Jim Swanberg WB6YXE, 3147 Federalist, Sacramento, CA 95827.

MODEL 28 equipment and parts: 28 ASR's as is, working condition \$650.00 each. 28 KSR's as is working condition \$400.00 each. RO's as is working condition \$200.00 each. Spare printers as is working condition \$80.00 each. LEXD transmitter distributor as is working condition complete \$50.00 each. Receive only typeing reperforator self contained cherry condition \$400.00 each. Cabinet extenders, new \$20.00 each. Multiple RO/KSR cabinets as is \$100.00 each. Parts and part numbers available, technical information etc., many 28 parts available.. 11/16 perforator tape \$1.00 per roll.

American Data Terminals, 15421 South Carmentita Rd., Santa Fe Springs, CA 90670 (213) 921-0529, Ask for Dave or Vince.

HAM RADIO Magazine

The no-nonsense state-of-the-art technical magazine. Dozens of exciting projects and an emphasis on quality un-matched by any other radio magazine. Subscribe now and see for yourself. 1 year ... \$12.00... 2 years.....\$22.00 and 3 years\$30.00.

HAM RADIO Magazine, Greenville, NH 03043

WANTED: Junk Kleinschmidt equipment. State price and condition. Jim Plummer, 4915 Clover Lane, Toledo, OH 43623.

DIODES/ZENERS				SOCKETS/BRIDGES				TRANSISTORS, LEDS, etc.			
1N914	100v	10mA	.05	8-pin pcb	.25	ww	.45	2N2222	NPN	(Plastic .10)	.15
1N4005	600v	1A	.08	14-pin pcb	.25	ww	.40	2N2907	PNP		.15
1N4007	1000v	1A	.15	16-pin pcb	.25	ww	.40	2N3906	PNP		.10
1N4148	75v	10mA	.05	18-pin pcb	.25	ww	.75	2N3054	NPN		.35
1N753A	6.2v	z	.25	22-pin pcb	.45	ww	1.25	2N3055	NPN 15A 60v		.50
1N758A	10v	z	.25	24-pin pcb	.35	ww	1.10	T1P125	PNP Darlington		.35
1N759A	12v	z	.25	28-pin pcb	.35	ww	1.45	LED Green, Red, Clear			.15
1N4733	5.1v	z	.25	40-pin pcb	.50	ww	1.25	D.L.747	7 seg 5/8" high com-anode		1.95
1N5243	13v	z	.25	Molex pins .01	To-3 Sockets		.45	XAN72	7 seg com-anode		1.50
1N5244B	14v	z	.25	2 Amp Bridge	100-prv		1.20	FND 359	Red 7 seg com-cathode		1.25
1N5245B	15v	z	.25	25 Amp Bridge	200-prv		1.95				

C MOS		- T T L -									
4000	.15	7400	.15	7473	.25	74176	1.25	74H72	.55	74S133	.45
4001	.20	7401	.15	7474	.35	74180	.85	74H101	.75	74S140	.75
4002	.20	7402	.20	7475	.35	74181	2.25	74H103	.75	74S151	.35
4004	3.95	7403	.20	7476	.30	74182	.95	74H106	.95	74S153	.35
4006	1.20	7404	.15	7480	.55	74190	1.75			74S157	.80
4007	.35	7405	.25	7481	.75	74191	1.35	74L00	.35	74S158	.35
4008	.95	7406	.35	7483	.95	74192	1.65	74L02	.35	74S194	1.05
4009	.30	7407	.55	7485	.95	74193	.85	74L03	.30	74S257 (8123)	.25
4010	.45	7408	.25	7486	.30	74194	1.25	74L04	.35		
4011	.20	7409	.15	7489	1.35	74195	.95	74L10	.35	74LS00	.35
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	1.10	7412	.30	7492	.95	74198	2.35	74L47	1.95	74LS04	.35
4015	.95	7413	.45	7493	.40	74221	1.00	74L51	.45	74LS05	.45
4016	.35	7414	1.10	7494	1.25	74367	.85	74L55	.65	74LS08	.35
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	.60	7420	.15	74100	1.85	75110	.35	74L74	.45	74LS11	.35
4020	.85	7426	.30	74107	.35	75491	.50	74L75	.55	74LS20	.35
4021	1.35	7427	.45	74121	.35	75492	.50	74L93	.55	74LS21	.25
4022	.95	7430	.15	74122	.55			74L123	.55	74LS22	.25
4023	.25	7432	.30	74123	.55	74H00	.25			74LS32	.40
4024	.75	7437	.35	74125	.45	74H01	.25	74S00	.55	74LS37	.35
4025	.35	7438	.35	74126	.35	74H04	.25	74S02	.55	74LS40	.45
4026	1.95	7440	.25	74132	1.35	74H05	.25	74S03	.30	74LS42	1.10
4027	.50	7441	1.15	74141	1.00	74H08	.35	74S04	.35	74LS51	.50
4028	.95	7442	.45	74150	.85	74H10	.35	74S05	.35	74LS74	.65
4030	.35	7443	.85	74151	.75	74H11	.25	74S08	.35	74LS86	.65
4033	1.50	7444	.45	74153	.95	74H15	.30	74S10	.35	74LS90	.95
4034	2.45	7445	.65	74154	1.05	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	.25	74LS123	1.00
4041	.69	7448	.70	74161	.85	74H30	.25	74S50	.25	74LS151	.95
4042	.95	7450	.25	74163	.95	74H40	.25	74S51	.45	74LS153	1.20
4043	.95	7451	.25	74164	.60	74H50	.25	74S64	.25	74LS157	.85
4044	.95	7453	.20	74165	1.50	74H51	.25	74S74	.40	74LS164	1.90
4046	1.75	7454	.25	74166	1.35	74H52	.15	74S112	.90	74LS367	.85
4049	.70	7460	.40	74175	.80	74H53J	.25	74S114	1.30	74LS368	.85
4050	.50	7470	.45			74H55	.25				
4066	.95	7472	.40								
4069	.40										
4071	.35										
4081	.70										
4082	.45										

LINEARS, REGULATORS, etc.							
8266	.35	LM320K5 (7905)	1.65	LM340T24	.95	LM723	.50
MCT2	.95	LM320K12	1.65	LM340K12	2.15	LM725	1.75
8038	3.95	LM320T5	1.65	LM340K15	1.25	LM739	1.50
LM201	.75	LM320T12	1.65	LM340K18	1.25	LM741 (8-14)	.25
LM301	.25	LM320T15	1.65	LM340K24	.95	LM747	1.10
LM308 (Mini)	.75	LM339	.95	LM373	2.95	LM1307	1.25
LM309H	.65	7805 (340T5)	.95	LM380	.95	LM1458	.95
LM309K (340K-5)	.85	LM340T12	1.00	LM709 (8,14 PIN)	.25	LM3900	.50
LM310	1.15	LM340T15	1.00	LM711	.45	LM75451	.65
LM311D (Mini)	.75	LM340T18	1.00			NE555	.50
LM318 (Mini)	.65					NE556	.95
						NE565	.95
						NE566	1.75
						NE567	1.35

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9601	.75
9602	.50

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MM5316	3.50
2102-1	1.75
2102L-1	1.95
TR 1602B/	
TMS 6011	6.95
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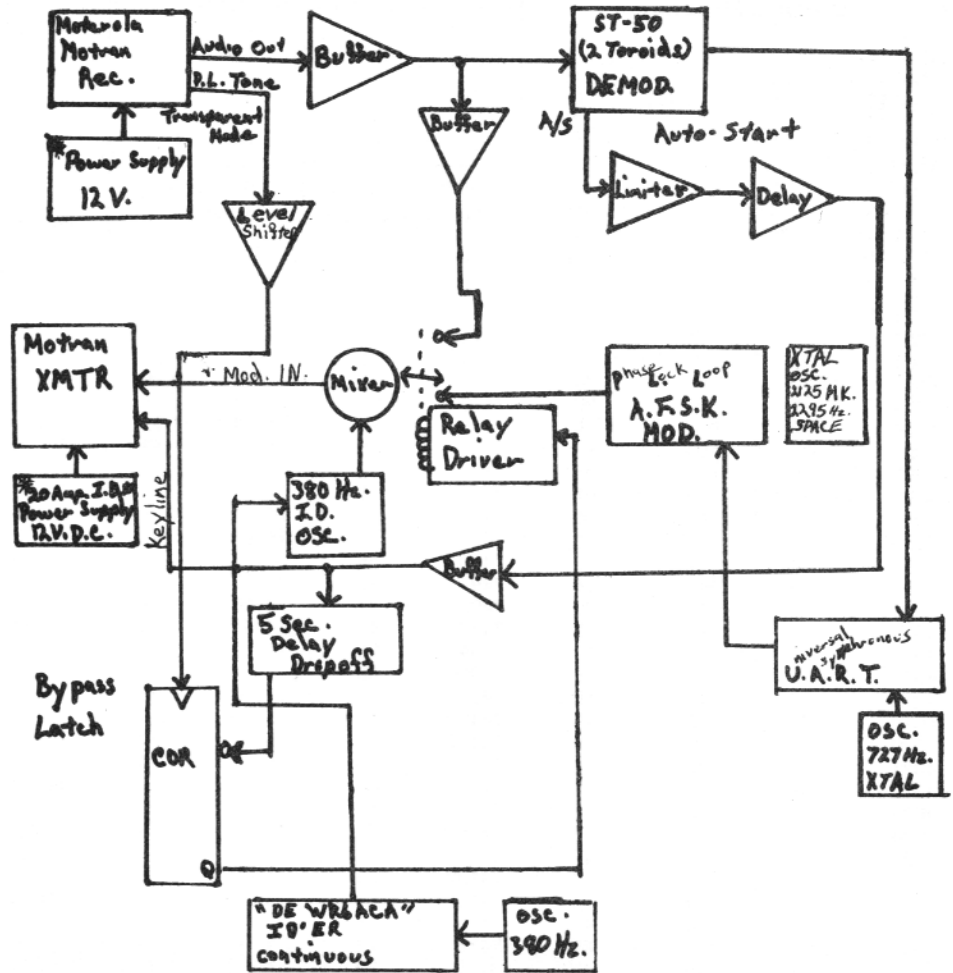
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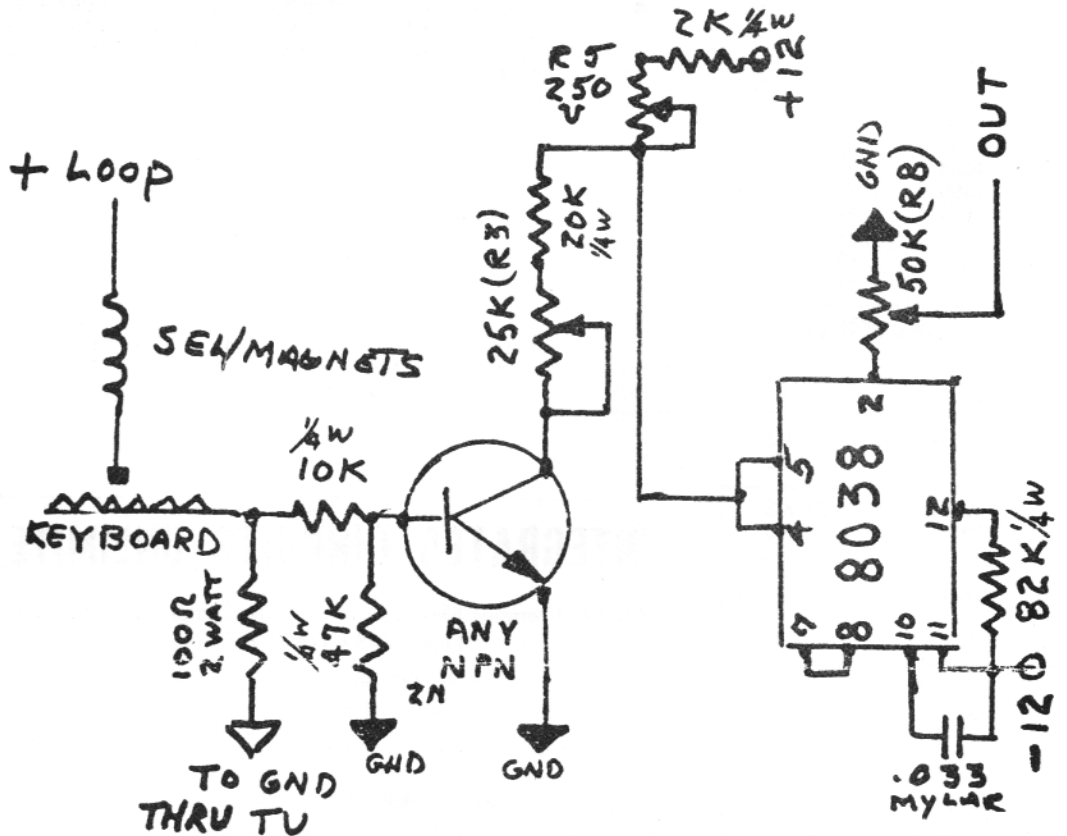
24 Hour Toll Free Phone 1-800-854-2211 MasterCharge / BankAmericard / AE

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\$35 - \$99	5%
\$100 - \$300	10%
\$301 - \$1000	15%
\$1000 - Up	20%

From Page 3



From Page 4



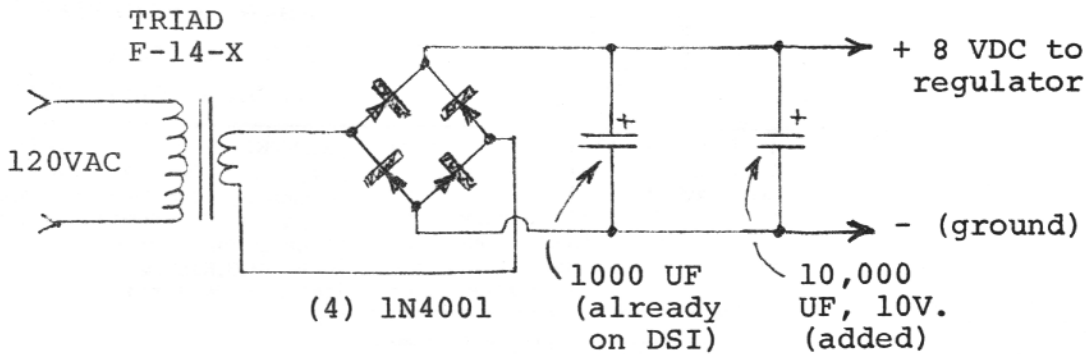
From page 6

However, the developed DC voltage was marginally close to the lower limit at which the voltage regulator failed to regulate, allowing ripple to enter the system. At this point, the 1000-microfarad filter capacitor was beefed up with a 10,000 microfarad, 10 volt capacitor, obtained from James Electronics. This brought the ripple down to a value, permitting AC operation as low as 102 VAC. On 120 VAC, the power supply voltage, before the regulator, is 8VDC. Fig.1 shows the circuit for the power supply; be sure to install the bridge rectifier on the DSI back-panel printed circuit board should such be missing. (some people have received DSI assemblies with just one half-wave diode mounted in place of the bridge; however, pads should be available to convert to the bridge configuration).

Bridge diodes and 1000 UF capacitor on DSI backboard. Mount the 10,000 UF capacitor in parallel, just beneath the heatsinked regulator area.

To be continued:

FIG. 1



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

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

COLLINS 500HZ Mechanical Filters. F455VO5 metal case very high quality plug in unit for 75S receivers. Cashiers check or money order \$100.00. Will ship and insure. Lon Cottingham, 514 N. Kalaheo Avenue, Kailua, HI 96734.

MODEL 28 CONSOLES, RO's - \$135.00, KSR's - \$165.00, ASR's - \$325.00 with modems add \$50.00. Loads of 15's and 19's. GOODMAN, 5454 South Shore Drive, Chicago, IL 60615 (312)-752-1000. Phone any time.

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, antispace, 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, K0HZV, 12297 West Conn, Lakewood, Colorado 80228.



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

TELETYPE BARGAINS, Model 28 ASR's \$325.00, KSR's \$165.00, all contained in consoles and ready to go, Modems add \$50.00 per unit. Also TWX units, Model- 33's and 35's. Also have a few hundred 15's and 19's (all subject to prior sale). Quantity discounts. SASE for list. Goodman 5454 South Shore Dr., Chicago, IL. 60615. (312-752-1000). Phone day or night.

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.

FOR SALE: NEW ST-5A RTTY demodulator. Professionally built on 3 1/2" rack panel. Commercial appearance. \$95. Add \$5 for C.O.D. One set expertly assembled latest K7WTQ plated thru YT-4 PC boards. All new components. Less UART, FIFO's and 4 IC's. 480, K9POU, 607 Pine St., Batavia, IL 60510.

MODEL 28 ASR's - KSR's, Repuris - 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

WANTED - ST-5 - trade Motorola T43CGV 30 watt 2 meter transceiver complete. Also have new Midland 23 cb, and Collins 618SI for sale or trade. Looking for a Heath SB-100-102. WB0/SUW. H.G. Bachmann, webster, SD (605 345-4616). Will trade plus cash for clean rig.

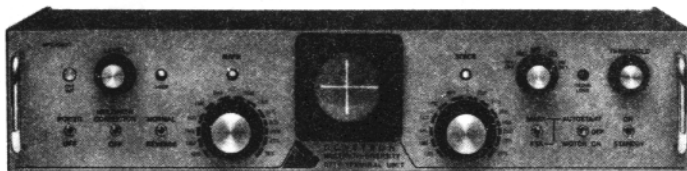
MODEL 28 LTK (keyboard, punches & types on tape), very good condition. 4175.00 plus shipping, or trade for good quality solid state trigger scope. John Herring, PO Box 426, Weaverville, CA 96093.

UT-4 COMPONENT UPDATE. Uart's choice of AY5-1013 or TMS601INC - \$6.00. FC3512DC Fifo's, MC3408L D/A. And others per March ad. Peter Bertelli W6KS, 5262 Yost Place, San Diego, CA 92109, (714)-274-7060.

RTTY ID GENERATOR as seen in March 1978 Ham Radio. Accepts 5 or 12 volt supplies, 31 characters available, please include ltrs., figs., spaces, etc. Your pre-programmed answer-back must be supplied with order. Example: DE K9 WRL Neil Mt. Prospect. Board same size as ST-6 boards. \$34.99 kit, board alone \$8.50. 5V power supply for above \$11.95. NuData Electronics, 104 N. Emerson St. Mt. Prospect, IL 60056.

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

DOVETRON



MPC-1000C

Multipath Correction
In-Band Diversity &
AFSK Tone Keyer

Amateur Net: \$545.00

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

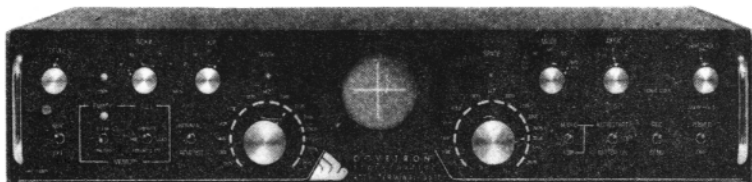


MPC-1000CR

Signal Regeneration &
Speed Conversion

Amateur Net: \$645.00

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



MPC-1000R/- TSR-500

Dual UART Regeneration,
Speed Conversion, 200
Char. Memory, Word Cor-
rection & DIGITAL
Autostart

Amateur Net: \$895.00*

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

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

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



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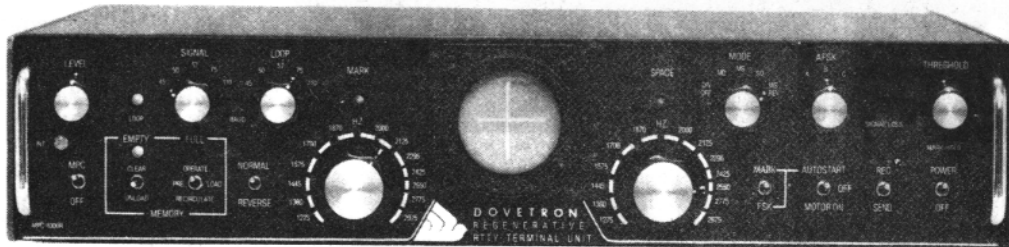
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KEYBOARD-CONTROLLED WORD CORRECTION & DIGITAL AUTOSTART



THE MPC-1000R REGENERATIVE RTTY TERMINAL UNIT

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

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

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

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



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