RTTY JOURNAL
November 1977
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VOLUME 25 No. 10
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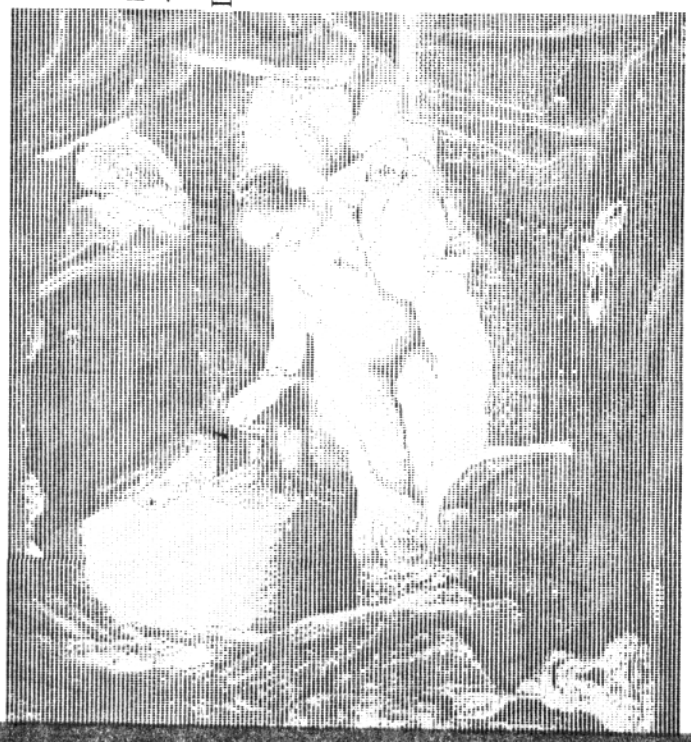
W A 6 P I R



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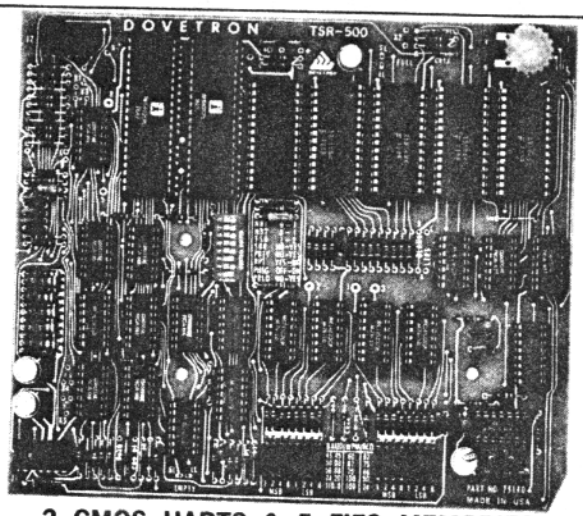

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BACK ISSUES

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
PO Box RY
Cardiff by the Sea, CA. 92007

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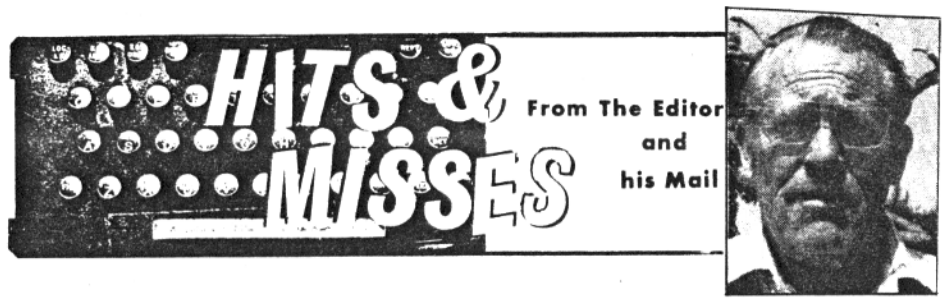
Part 1 of 2 parts

AUTOCOM MA4

COMING SOON ART CONTEST

Bibliography of RTTY Journal from 1-1959 to 12-75 may be obtained from Gary Buda, WAØ NDN, 8212 Douglas Drive North, Brooklyn Park, MN 55443 for $1.00 postpaid.



Well the Santa Maria ARRL Convention is now past history. We are glad to report that one of our local club members Frank Iversen WA6ZCQ was able to walk away with the third prize. Frank won the Highgain all band antenna, congratulations Frank.

Chuck W6MNO and myself attended the convetion together and had a great time even tho I was hobbling around on a broken foot that I had aquired the Sunday before playing football with my overgrown kids and their friends that were visiting from out of town.

We are slowly getting set up in the foriegn countries with people to handle the re-distribution of the Journal. This is going to make it possible for all countries to get airmail service at a reduced rate (about the same as former surface rates).

The band has been open to europe for the past week and we have printed many of the countries. At the present we are in the middle of remodeling some of the equipment in the shack and re-arrangeing things so we will be able to spend more time (on the air) but our first love is building so we spend many hours at that. We do try to keep active on the local repeater (RTTY)

We also want to keep thanking those kind persons that keep writing us and letting us know how they enjoy the Journal and also those few that would like to have us change things.

For a couple of fellows that wanted more "real technical articles" we hope that the article starting this month - pleases them. It is a very well written article and not for the beginner but don't you beginners worry there will be lots for you.

We also wish to thank Gary Buda for his fine bibliography starting from Jan '59 to Dec. '75.. we have a copy and it is well worth sending for. Red of course has the complete prints of the Journal from day one with this service you can have a reproduction of any article that has appeared in the Journal.

We also wish to apologize to all the fellows that have ever tried mobile RTTY after many letters I re-read the article that Chuck had written and sure enough he had omitted the fact that he was referring to our local repeater and area....So sorry about that fellows.

C U next time de W6KCW Don.....

* * *

Sign in the mayor's office of a small southern town: "Due to the large number of items on the agenda of the city council, we most respectfully request that anyone wishing to insult the council, please limit himself to 15 minutes or 15 insults, whichever is shorter."

* * *

Many ideas grow better when transplanted into another mind than the one where they sprang up.

VHF RTTY NEWS

CHUCK EDWARDS W6MNO

4726 Barbarossa Drive - San Diego, CA 92115

Greetings to all. Things are really starting to look up. We have received several inputs from our readers. One from Wade K4YSB, who is trustee of WR 4BAG and Smitty, K4ZXV of the same group. WR4BAG is situated in the Stone Mountain area near Atlanta, Georgia. Wade in his letter furnished a very apt discription of their repeater, which I will include as part of this column. I noticed that CW is not passed thru the repeater circuitry. Must be that they are filtering out all else other than the 2125/2295. Actually the UART system being used would clean up any signal getting into the OR thru the filter system and output the signal distortion free. The discription sounds like one used by S.C.A.T.S . IN Southern California, although they have added a pre-amp made by Janel, to the input circuit that really has picked up the sensitivity considerably. This Janel unit builds up the signal level 22 db, while adding only about 1 1/2 db. noise. Others may want to experiment with this Janel unit. It costs $19.95 Dollars in the QST mag IR ad.

A group of RTTYers in the San Diego area are discussing and designing a 220 repeater that will operate on 223. 10/224.70. A VHF engineering transmitter and receiver with COR has been donated by W6RUL, Ray. A set of brand new cavities has been donated by Don, WA6MJZ., AND WA6CYA plans to donate a ST-5 terminal unit and small but not forgotten, is a set of crystals from yours truly.W6KCW, Don is busy getting all of these goodies together and getting the packaging and circuitry all straightened out in his fertile mind and will soon come up with the systems concept combining them all into a workable repeater.This group will soonform a San Diego Club.

220 VHF has proved to be a very interesting frequency. W6KCW and I have experimented with it versus two meters and found, almost without exception, that 220 will out perform two meters. We have each installed a ten watt, two meter and 220 rigs with 5/8th Larson mobile antennas cut for each frequency in our cars. We then started traveling in opposite directions to see which signal would 'poop out' first. These tests have shown, under these conditions, that 220 will give readable copy at least one third the distance more than two meters will. If any of you have had any experience or run tests along these lines, it will be appreciated to learn of your results.In addition, any experience with 220 repeaters will be welcomed.

By the time you read this the G8 CDW VHF Contest in England will be history. We will anxiously await the results of the contest from Ted. We have mentioned it before BUT one of these days I hope to see us having such a contest also.It would be arranged and managed by the JOURNAL. If you fellows will write in and tell us that you would like to have one here in the States and give us your ideas on what criterias should be used, I personally, will be new at VHF contest operation and will really need information on what the contest should concern.By that I mean what do we measure? The distance run, number of contacts, number of states or counties or what?

The following is quoted from WR4BAG as furnished by the Stone Mountain group;'the WR4BAG regenerative radio teletype repeater was developed solely for the RTTY mode of operation and features the following:(1) 147.105 input frequency, 147.705 output frequency.(2) Access - transmission of a few valid teletype characters, (3) shift - 170 cyle shift using standard 2125 mark and 2295 space signals. (4) repeater I.D. - repeater identifies itself as a RTTY repeater via a tape announcement machine on voice. (5) speed - initial provision is for 60 wpm.

In operation the WR4BAG repeater looks for valid RTTY characters on its input frequency and finding these characters turns itself on. Regenerative operation is provided whereby the input signal is decoded and recreated into a perfect signal for transmission. Only a teletype signal will flow through the repeater.

Equipment is housed in a four foot slope front, rack on rollers and consists of the following components: (1) Lambda commercial voltage regulated current limiting 12 V.D.C supply for receiver, transmitter and amplifier. (2) solid state transmitter.(3) solid state receiver.(4) KLM 70 watt class C solid state amplifier.(5) terminal unit - st-6 type design tuned for 2125 mark-2295 space.(6) regenerator -UART G.I. AT-1013. (7) 60 wpm UART clock - crystal derived.(8) AFSK – CRYSTAL derived time base, generates sinusoidal, phase coherent, 2125 mark, 2295 space. (9) control circuitry - TTL digital logic. (10) identifier - solid state commercial tape announcement machine.(11) logic supply - ⁄12VDC, -12VDC, ⁄5VDC. (12) RY test generator - commercial solid state.

R.F. equipment is properly shielded and by-passed with feed-thru capacitors. Converter, AFSK, clock, regenerator, and control logic are individual circuit boards housed in a card rack. All equipment is conservatively rated and adequately cooled.

Operating notes: (1) if a station is copyable at the repeater, his regenerated signal will be perfect regardless of whether his actual signal is or is not.(2) the repeater will not pass your C.W. I.D. but to be legal, you must send it.(3) voice I.D. of the repeater will not garble print if your converter is adequate.'

A letter from N3AI, Neal also offers a description of his repeater. It follows: ' This repeater club S.A.R.A (Schuylkill amateur repeater association) has voted at a recent meeting to allow RTTY on our second machine (which is primarily used for auto-patch).we are running RTTY for one hour three nights per week as an experiment.This is the pre-auto start experiment period; for the benefit of non-rtty operators. We plan on auto-start soon. At the present time we use only standard 2125/2295 shift , 60wpm, from 8 pm to 9pm Tuesdays, Fridays and Sundays. All stations are welcome to join us either in a round table or just to print us if they do not have transmit capability. We hope this will grow to a 24 hour auto-start/auto-patch repeater but it will only do so if we can show to the rest of the club that we have enough Hams interested in using auto-start. This should be no trouble as the machine has an easy 60 mile radius and is on 147.956 input/147.345 output.'

CUL 73 W6MNO

"You're right about the music helping me think. I've been sitting here all day thinking of the words to all the songs they're playing."

RTTY-DX

SKIP PRINSEN WB6CYA
3611 Merrimac, San Diego, Calif. 92117

GREETINGS TO ALL.....

As I sit here at my desk putting this article together (with tears in my eyes), THE BAND IS WIDE OPEN FROM THE the band is wide open from the mid-west and east coast of the USA, into Europe with the guys working OZ1, DK8, DK9, G4, DM5,and DE3, I sure wish that I was back there now. Yesterday the east coast was working ZS6 EA8,DJ9,IØ,IT9 and F9 so the band is back in there. One European station made the comment that 'the band had been dead for 1Ø days'.

EA8IY, Fernando on the Canary Islands is very active around 14.Ø95 at various times. His address is: Fernando Molina Herrero, Observatorio de Iyana, Tenerife, Canary Islands.

Tony, K3BHL who was active from CP1AP, CP1JV and XW8HJ is now home from HI8XDF and should have RTTY gear on shortly. His QSL manager is K3SWZ Glenn Kuryenknabe, 403 Centerview Ave., New Cumberland, PA 17070. Glenn also reports receiving his QSL card from JX2FL which came via the bureau(thanks Glenn).

Fred, CX7BZ from Montevideo reports the possibility of a return of an FR7 station on RTTY from Reunion Island. The last time FR7 was on was in late 1971 when Roland FR7AB was active.

Due to low activity on the band until the last two days that is all of the DX activity that we could find. On other bands Ray WB8SGM/7 is very active on 40 meters 7.Ø95 each evening around Ø3ØØGMT or so. Ray is located in Bellevue, Washington state and says that he is on a one man crusade to scare up more activity on that band.

From John, W3KV as he says 'a few things to fill in some of the blank spaces' DX of the month. 7X4MD - Driss QRV on 5 September had a glitch on his space signal but is OK now. Has been very active around 18-2ØØØ UTC daily. Very strong when his beam is stateside.

A9XCC Jim in Bahrain has a FB signal and QSL via K4CG. Also active is A9XBD (see back issues for QSL info). We hear that A9XCE may soon be active also.

OD5JW the first station printed from there since the end of the shooting war. It so happens that it is Wassim, who was operating as JY4JW a few months ago.

JY5KR is a new one from Amman. His name is Khalid and uses an Atlas transciever!! From time to time Blackie, JY9BB shows up on the band.

A4XGB, Sid is again QRV. His job took him out into the desert for a few months. But he now has gathered some gear so you will hear him a lot from now on. Robert, A4XFW is still active and it will help greatly if you can speak German.

FR7ZS, Michel on Reunion Island is active QSL via F5DV on long path to the USA around 12ØØ UTC.

In general 3A2CR,Bob made an appearance again from Monaco. VK2BAB is a club station with many ops-mostly on the keys are Rita (YL) and Arthur. GM3SWK & GM3KHH are QRV from Scotland. IK5ØARI commermorative 50th Anniversary of ARI of Italy. FG7XT, Jean is quite active again. ISØNUP, ISØWWL, ISØESS and ISØRFS are all active now from Sardinia. IT9JKY and IT9WPN are new on from Sicily, CT1 WA and CT4CK are on 50 band.

CT1EQ, Bern is QRV again after a few months of being off the air. G3 PNH, G3XTZ, G3HKC and G4DFX are new calls from the UK. OF6YI is a new prefix but counts as Finland (OH). ZS6RAU via long path to the east coast at 12ØØUTC with 'JOOP' as the op

and Stu at Afrikaan University in Johannesburg.

FOR THE FUTURE We hear that EA 6BG has a machine and Willi, DL8KS is trying to get an ST5 to him this will be a first from Balearic Island.

HI8XDF will try to activate RTTY from Haiti in the near future, Thanks John.

Yesterday the first of October I printed WA3UMI working WA4NYC/5 with very strong signals, so while writing here I tuned down on 21Ø95 and lo and behold there was Robin G8LT calling a CQ so had a short chat with him and found out that they(the Europeans) are experiencing the 'woodpecker' interference that has been seen on the 2Ø meter band. Following this contact I printed DK8GT calling a CQ but wasn'y able to raise him. Presently, W8CAT Dick in Michigan is working DJ4MH which I can't print here.

Now on to the contest scene.By the time you have received this copy of the JOURNAL the C.A.R.T.G. will be past history, coming up the 22nd thru 24th of October. Then following several weeks later on November 12th & 13th the D.A.R.C. sponsors a European DX contest. Details of these events have been published in the September issue of the Journal. Elsewhere in this issue you will find the info on the 13th Alexander Volta RTTY DX Contest running December 3rd and 4th.

This next years B.A.R.T.G. Spring Contest is the 25th thru 27th of March which unfortunately happens to be the Easter week-end. This was forces on us as there are two ARRL contests and the Commonwealth CW Contest on each of the other weekends in March, and by custom and practice B.A.R.T.G. has always been on the 4th week-end. Please ignore any rules for previous contests as there will be several changes which recent events have made necessary.

DXCC #27 was issued on 21st September to OK1MP, Milos Prostecky.

A final reminder to everyone that the DX Honor Roll will be printed next month so those of you with new up dates or sending in for the first time and waiting until the last minute the mail from Europe takes about 7 days air mail, the same from Australia so plan on 10 days to be safe. My news deadline is the last day of the month for the following month. In other words news getting to me by the last day in October will make the December issue.

To assist me in keeping up with who is active from the various countries and on what band , if you would when sending in your QSL' cards for DXCC, have them in Alphabetical order and on a separate list also give the following for each contact: call, country, date, band and RST. This would help me greatly. Thanks.

13th ALEXANDER VOLTA RTTY DX CONTEST RULES:

TEST PERIOD: Saturday,December 3rd, 12ØØ GMT to Sunday, December 4th, 1977 12ØØGMT. I2LLO will transmit a special message for 10 minutes at 235Ø GMT Saturday, December 3rd on 21.100 MHZ (300 watts, omnidirectional antenna, 170 Hz, 45 bands). A special prize will be forwarded to each amateur who submits a copy of this message.

BANDS: All amateur bands 3.5 to 28MHZ.

EXCHANGE POINTS: All two-way RTTY contacts between stations of the same countryare not valid(count for zeroexchange points, zero multiplir and zero QSO). All two way contacts with station in own zone will count for two points. All two way RTTY contacts with stations outside your own zone will count for points in accordance with the exchange points table. The two way RTTY contacts made on 7MHZ are worth double the count and on 3.5 or 28MHZ are worth triple the count.

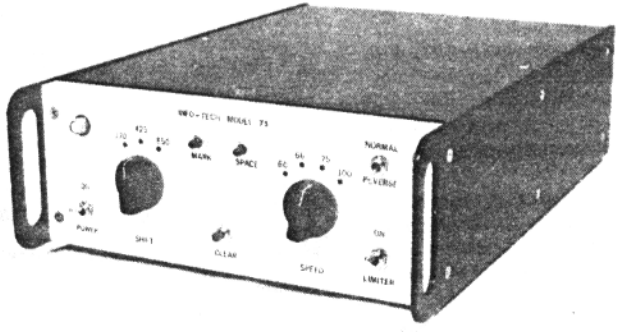
CONTACTS: Stations may not be worked more than once on any band. Additional contacts may be made with the same station if a different band is used.

MULTIPLIERS: A multiplier of one is given for each country contacted. The same country may be claimed for extra multipliers if a different band is used.

SCORING: Total exchange points times the total number of multipliers times the total number of QSO's.Italian bonus points added last of 1000 points for each I/IS/IT contact on each band.

VOLTA CONTEST CONT.

COUNTRY LIST: ARRL country list. Each USA, Canadian and Australian district will be considered a seperate country.
MESSAGE: Message number RST and zone.
LOGS AND SCORE SHEETS: Use one log sheet per band Log forms, score sheets and exchange points table available for IRC's. Logs must be received before 20th of January 1978 to qualify (It is advisable to use air mail). Send logs and score sheets to: AV RTTY DX Contest Committee, SSB & RTTY Club, P.O. Box 144, 22100 Como, Italy.
SWL ENTRIES: This contest is open to SWL RTTYers. The same rules apply as are used for transmitting stations and a separate result table will be made for these entries. Logs muat contain: Band, time GMT, CALL sign of station heard, number sent by that station and exchange points.
AWARDS: 1. US & Foreign Callbook & Silver Plaque.
2.Foreign callbook & silver plaque.
3. teleprinter handbook
4. 1 yr. subscription to RTTY JOURNAL
5. 1 yr. subscription to RTTY JOURNAL
6. 1 yr. subscription to RTTY JOURNAL
High Score SWL : The radio amateur handbook (ARRL)
World Chanpionship; Points and positions achieved in this contest will be valid for inclusion in the ' World RTTY Championship' for 1977.



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(314) 576-5489

AUTOCOM MA4

K9WRL
Neil Petlock
104 N.Emerson Street
Mount Prospect, IL 60056

INTRODUCTION

The Autocom presented here is the product of four different designs from the original idea. From the start we wanted a modular design that could be expanded, hence we are presenting it in a board by board description.

The Autocom MA4 consists of four basic boards and requires a +5, -12, +12v power supply. A fifth board (XB-6 clock) is available. This article will deal strictly with the four Autocom boards and the supply. The four boards are listed in order of need: UT2/parallel generator, memory board, decode board, and interface board.

The main goal of the Autocom is to provide selective calling, i.e., your call up to 8 characters or functions, (in our case↓K↑9↓WRL was used),↓NN NN shut down, and a method of selecting in different functions. The function in our case are the ability to turn on and turn off the punch, the ability for another station to call in and turn on a precut tape to be sent back to him, to select in CW ID, and to select an answer back. The selection of the functions will be explained later in the board descriptions.

UT2/Parallel generator/clock.

Basically this board is a rehash of Irv Hoff's UT2* with a few additional options. A UT4 board with the same options has been laid out at this time, but has to be tested. (one board UT4).

The UT2/UT4 systems are used so one may start with the UT series and add the Autocom when desired, giving increased flexibility and utility. One option added to this board is the NE555 clock which may be used to clock both input and output at the same speed. This is accomplished by breaking a direct foil lead from pin 40 of the UART to pin 3 of the NE555 (this lead is used for a receive only system) and connecting terminals A,C, and 17 on the edge connector**together, or by connecting just A and 17 together. The NE 555 may be used to supply one speed to the input clock(printer) and an XB6 clock*** may be used to supply the input speeds to pin C.

The second addition is the two 7417 chips which are used to supply and buffer the parellel buss as only one TTL load is specified for the UART outputs.

The third addition is the extended use of pin 24 of the UART. The 7407 acts as an inverter/buffer. Using the low going pulse from pin 24 we were able to devise a transitional auto start system with the use of one chip, the 74122. With this resetable one shot we use the first low going pulse of pin 24 to start the one shot timing. The 15K resistor and 1000MF capacitor give us a timing of about 30 to 35 seconds. As long as we get continous transitions from pin 24 of the UART, Q2 will remain on, and it will be used to drive a 12 volt relay for autostart purposes. If no transitions are sent for 30 seconds the 74122 is allowed to reset and turn off Q2. Pin 24 also supplies clock pulses for the counters and clock pulses for the 7475's.

IC6F is used to drive a signal lamp on the front panel and will follow the mark-space from the output. This will allow you to see if anyone is using the frequency.

Memory Electronic Board

This board is the heart of the Autocom system. The incoming signal is compared to the call stored in two H8256 proms. The exclusive nor gate (74L S266) looks for a match, high or low, to keep a low output on pin 8 of the 7430. This same point is tied to the reset pins of the 7493 counters. A 47UF capacitor is placed there to eliminate any sliver pulses. Without these capacitors the counters would be allowed to reset each time even if sequence was followed. IF sequence is followed the counter (0-7) steps the prom. Once full sequence is achieved, pin 6 of the prom goes high and allows pin 3 of IC 13A to low, thus forcing pin 11 of 13D to go high. This point will be used to start your printer.

At the same time the 74157 multiplexer IC17 is forced to look at the second 7493 counter (8-15) and disable the first counter. The prom is coded

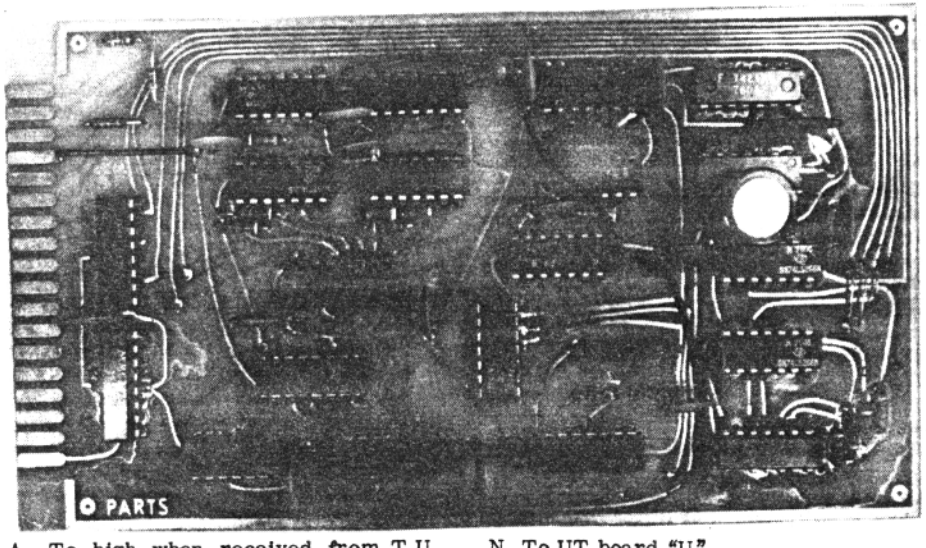
AUTOCOM MA4 cont.

here for letters NNNN combination to shut the system down. Once this sequence is met, pin 7 of the H8256 goes high and forces the flip flop to reset thus shutting off the printer and resetting the counters to start count position. Pin 2 of IC12A is tied to a 30 second timer for auto-shutdown under the following conditions: 1. loss of carrier. 2. the letters NNNN not transmitted. 3. tape jams during the transmittion.

The clear pulse is obtained from a 74122 located on the UT2 board (also used for autostart) or from a 741 located on the interface board. The interface board is used in a full Autocom system and the 74122 would not be required on the UT2/ parallel generator board. IC14 and IC11 form a 2 second clear on power up. Proms were used over rams to allow the system to remain off (AC off) until started by the autostart in your TU. This is a power saving feature if you already have autostart.

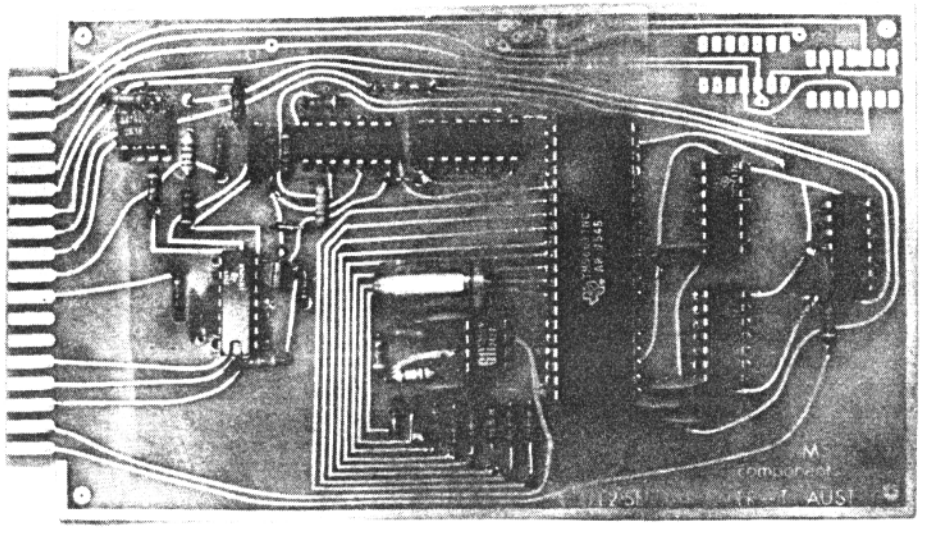
The second H8256 is used to detect the figs blank code for allowing other functions to be used. The only difference here from the call up prom is the addition of IC16 which is used to allow a throw away character in the prom before anything else is reset. Thus our prom count would read 0000 figs, 0001 blank, 0002 decode - any character and 0003 which is reset counter. The 0002 position allows the characters precoded on the decode board to be looked at by the prom, i.e. figs blank A or figs blank K. Only one will be allowed to select in on each figs blank sequence received. IC16D allows this to be selected in only after a valid call up has been selected in.

IC1 and IC2 are used as buffers to permit the use of a second memory board for selecting in something else on another call up. 7475 buffers are employed on the decode board.



A. To high when received from T.U.
B. To interface board "V"
C. T clear switch
D. Not used.
E. To interface board "E"
F. Not used.
H. To UT 2 board "R"
J. To UT 2 board "S"
K. To UT 2 board #2
L. Plus 5 VDC
M. To UT 2 board "T"
N. To UT board "U"
P. To UT 2 board "V"
R. Not used.
S. Not used.
T. Not used.
U. To UT 2 board #2
V. To decode board "K"

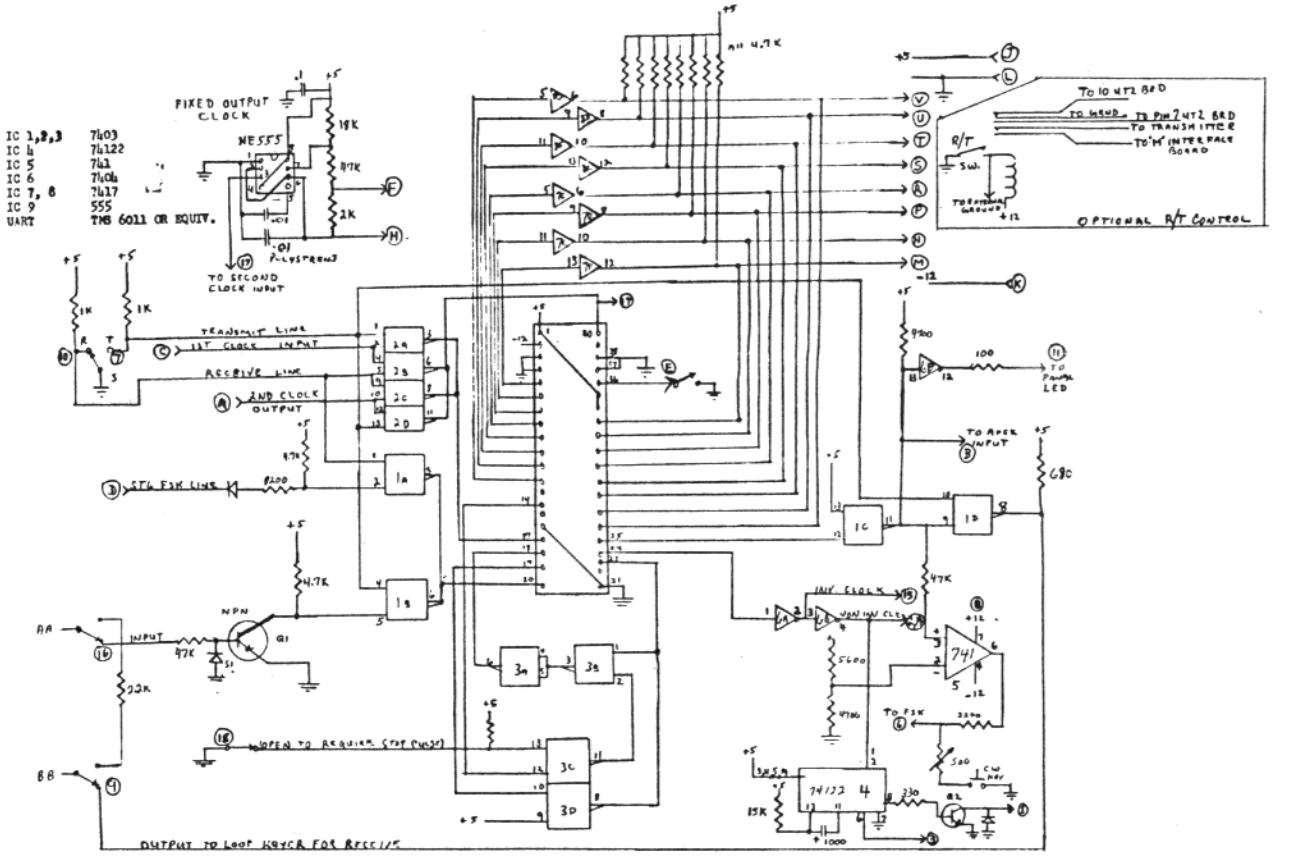
1 thru 17 not used
18. Ground.



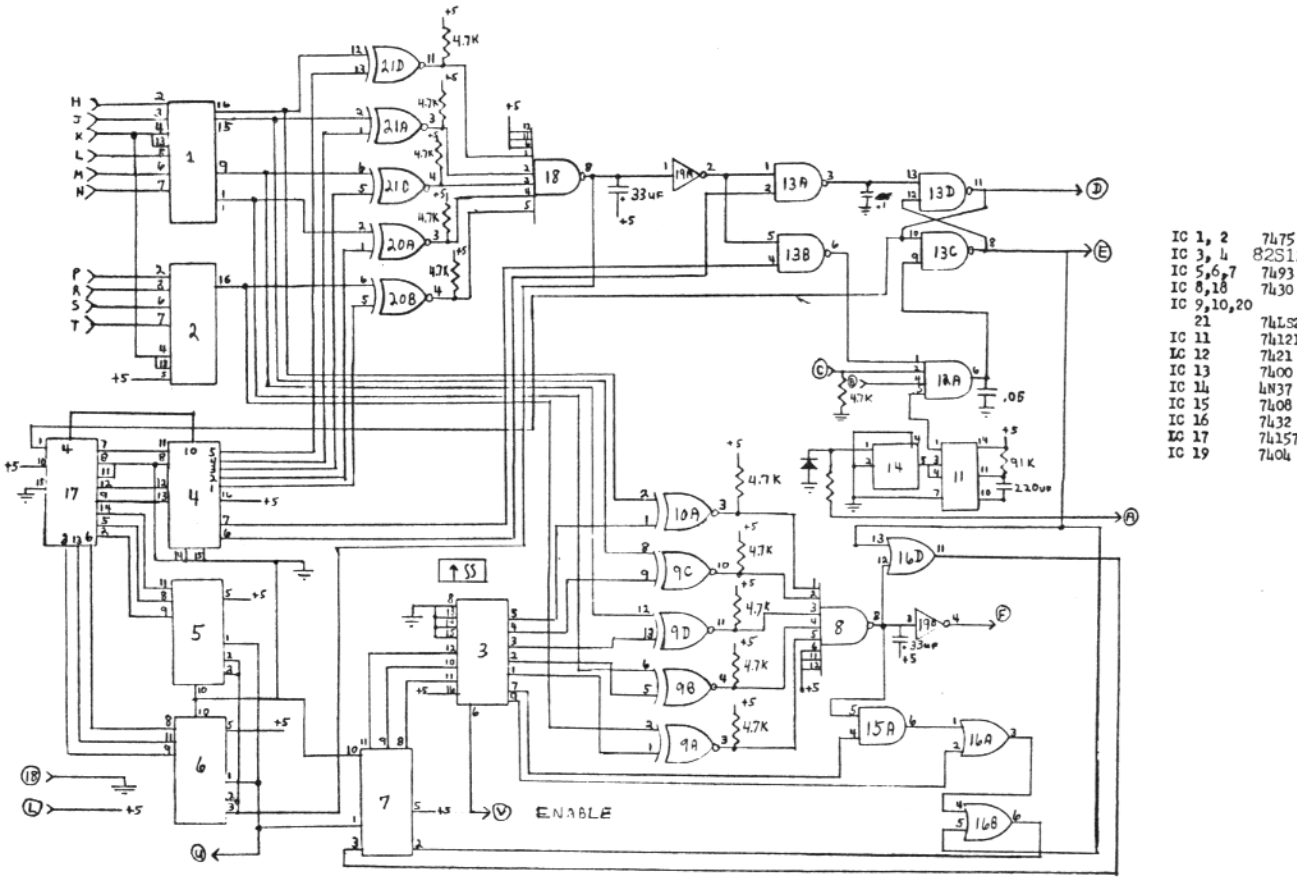
UT 2/parallel generator edge connector connections.

Foil side
A. Second clock (printer)
B. To AFSK input
C. First clock (line)
D. To ST 6 FSK line
E. To switch for one or two stop bits. (short to ground for two)
F. To one side external timing* resistor for printer clock
H. To other side of external timing resistor selection switch
J. Plus 5 VDC
K. Minus 12 VDC
L. Ground
M. Data line #8 (not used)
N. Data line #7 (not used)
P. Data line #6 (not used)
R. Data line #5
S. Data line #4
T. Data line #3
U. Data line #2
V. Data line #1
*The timing resistors may be changed via a switch to vary the output of the printer clock

Component side
1. To autostart relay
2. Not used
3. Not used
4. Not used
5. Not used
6. To FSK in transmitter
7. To transmit side of RT switch or RT relay
8. Plus 12 volts DC
9. To output loop keyer for rec.
10. To rec. side of RT switch or RT relay
11. To signal LED on front panel
12. Not used
13. Not used
14. System clock, to pins "k","U", memory board, to #2 decode board, to "A" of interface board
15. Inverted clock output (not used)
16. To UART input - rec.
17. To second clock input **
!*. To switch for required stop pulse option
** Use for rec only system. Foil should be broken away from pin 40 of UART and a strap added from pins 17 toA. A strap is also added under the UART to pins 6 and 11 of IC2. A provision for this has been added to the board just under pin 20 of the UART.



UT2 / PARALLEL GENERATOR BOARD MA 4



MEMORY ELECTRONICS

The following letter is from Gugielmo Marconi's daughter.

To The Town of Barnstable Radio Club of Cape Cod.
I was delighted to learn, from Mr. Robt. Doherty, that you planned to celebrate the 75th anniversary of the first two way radio transmission across the Atlantic, by my father Gugielmo Marconi in 1903, with a number of amateur radio transmitters operating from the original , Marconi Station in South Wellfleet, during the month of January 1978.

This is truly welcome news and needless to say I support your undertaking most enthusiastically and would be very pleased to contribute in any way I can to this celebration.
Radio Amateurs were always closest to my father's heart. He considered them part of his 'spiritual' family and he never tired of being in touch with them, and sharing their problems and their achievments. So by turning peoples minds back to the magic of radio in the early days, to the picture of my father and his assistant - earphones glued to their ears listening intently for those faint and distant signals from across that wide -- wide -- ocean ..(today when talking to the moon seems common place) you will be rendering a service to us all by restoring an Historical Perspective to this wonderful means of communication.
By focusing people's attention on the struggles, the incredible faith, the vision and perseverance of these pioneers, it will become poignantly evident that what is taken for granted by so many of us today was an incredible feat of human ingenuity 75 years ago.

I look forward to hearing from you on the progress of your project. Please accept my heartiest congratulations and all my best wishes for a very succesful celebration.

sicerely yours
Mrs. George A. Braga

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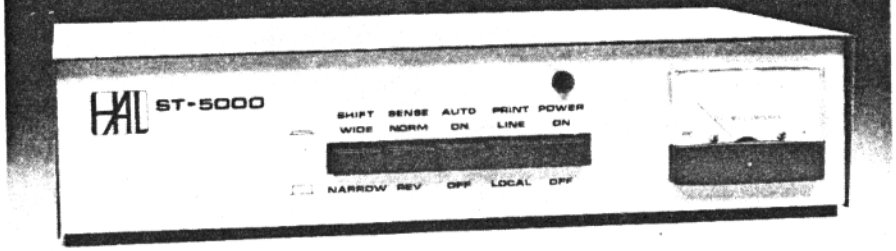

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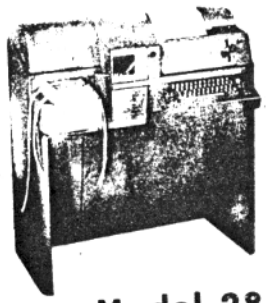

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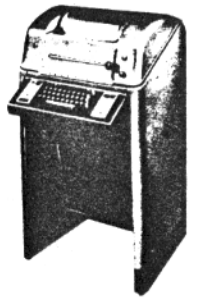

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YOU NEED INFORMATION ON COMMERCIAL RTTY STATIONS? News Agencies, Telex, Weather . . . on shortwave? I have up-to-date frequency, callsign, schedule, code lists. Write for details. Joerg Klingenfuss, Goethestrasse 14, D-7400 Tuebingen 1, West Germany.

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

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HAL DKB 2010 DUAL MODE keyboard with 128 character buffer memory. Excellent condition. $350.00. Wayne, W8 GXB,(616) 772-9236, 263 South Division, Zeeland, MI 49464.

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

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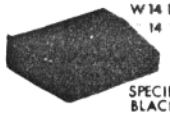

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Up-Down Speed Conversion
Amateur Net: $595.00

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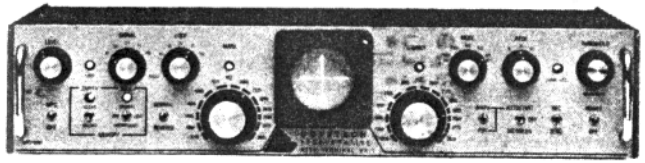

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Dual-Uart Regeneration,
200 Character Fifo
Memory & Word Correction.
Amateur Net: $820.00

The MPC-1000R combines the features of the MPC-1000CR with the TSR-500 SPEED CONVERTER-REGENERATOR and offers 200 characters of FIFO MEMORY, a DUAL-UART REGENERATOR that also provides local copy during all PRELOAD-RECIRCULATE functions, a WORD CORRECTION circuit that permits an incorrect word to be erased from memory by depressing the local keyboard's BLANK key, VARIABLE CHARACTER RATE and automatic BLANK/LTRS DIDDLE. Character OVERRUN during down-speed conversion is prevented by an automatic CHARACTER RATE OVER-RIDE and TEE DEE INHIBIT circuit. Three preset AFSK TONE/SHIFT combinations are selectable from the front panel.

The MPC-1000R (80 characters of memory), MPC-1000CA (Tri-tone AFSK), MPC-1000CRA (Tri-tone Regenerator) and MPC-1000CS (Crypto-Scrambler) are also available.

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

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