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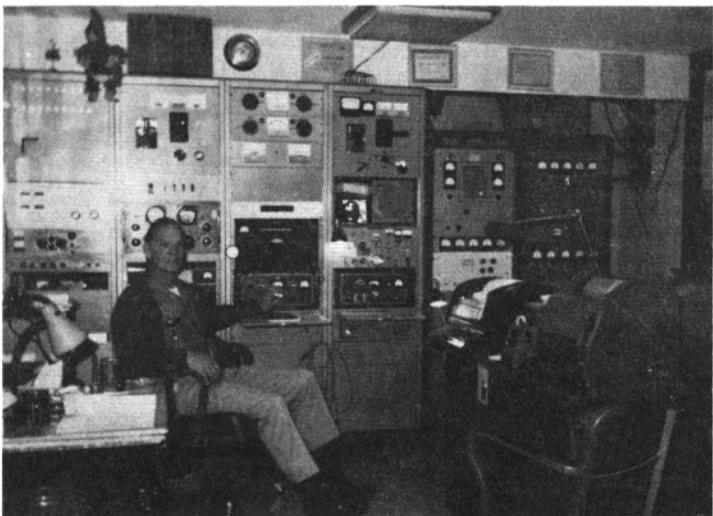
December 1977

RTTY JOURNAL

EXCLUSIVELY AMATEUR RADIO TELETYPE

VOLUME 25 No.10

35 Cents



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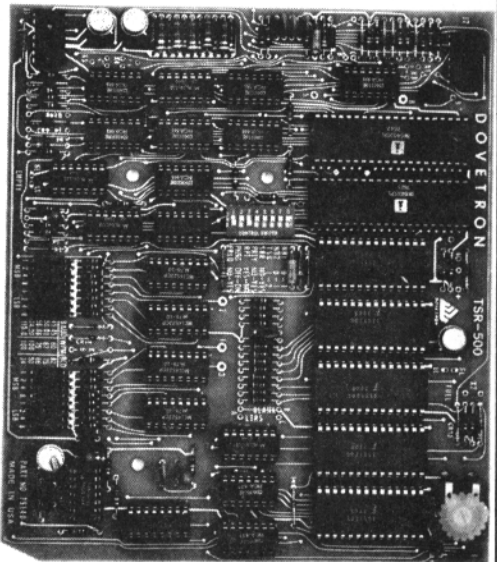
RTTY Art Contest

SPECIAL INFORMATION INSIDE

FLASH

Don Crumpton, RTTY Publisher
Passes away monday morning 0300
The Journal will continue.

TSR-500 BY DOVETRON



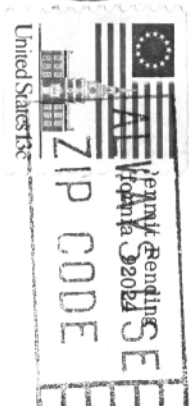
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Subscription Rates

RTTY JOURNAL

Don Crumpton, W6KCM, Editor & Publisher
P.O. Box RY
Cardiff by the Sea, CA. 92007

U.S. Canada, Mexico,	\$3.50
Canada, Mexico, Air Mail	6.00
Surface Mail	4.00
Other Countries - Air Mail	12.00

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

Subscription rates above.

Business Offices
1155 Arden Drive
Encinitas, California 92024

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

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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 2 of 3 Parts

AUTOCOM MA4

FORIEGN SUBSCRIPTION MANAGERS

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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.

World Wide RTTY ART Contest.

NOVEMBER 1 THROUGH DECEMBER 31

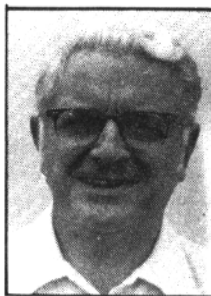
1. All worldwide licensed radio Amateurs and members of their immediate families (except as otherwise provided in these rules) are eligible to participate in this contest.
2. Entries must have been originated by means of manual inputs to a teleprinter using a standard communications keyboard, and may be submitted only by the originator of the art, or by the Amateur on behalf of a family member.
3. Submitted art may be of any subject suitable for transmission via Amateur Radio. Preference will be given to American Bicentennial subjects.
4. Entrants may submit as many entries as desired.
5. Each entry shall be given a short title.
6. Submitted art may contain overline shading.
7. Tapes of entries shall be formatted to permit a reasonably short running time, and to be compatible with machines which do and do not downshift on space. Compatibility with machines which interchange the bell and apostrophe is not required. At least three functions must be used between each line, normally: CR LF LTRS.
8. Each line of the art shall be limited to a maximum of 72 characters (including spaces). Prints must be in one single part - no splices. Tapes must be limited to a maximum running time of 40 minutes at 60 words per minute for the art itself, exclusive of any other information on the tape.
9. Each entry must have been transmitted for the first time via Amateur Radio after 1 November 1977 and must be accompanied by a confirmation of at least one receipt of its transmission, identifying the title of the art and the call letters of the receiving and transmitting stations. All confirmations must be in writing (not by RTTY transmission), and must have been obtained by the entrant from the receiving station. Entrants may obtain necessary transmission of their entry by any Amateur Radio station.
10. The tape and prints of each entry shall carry the full name of the author, call letters of the submitting station, and mailing address. This information shall be both written upon a beginning leader of the tape and also punched in the tape to appear on page copy when reproduced.
11. Entrants must submit one (1) five-level paper tape and five (5) prints of each entry and by such submission agree that the tapes and prints may be used, duplicated and published for any purpose.
12. Tape, prints and transmission confirmation information should be securely packaged and sent to: RTTY Art Contest, c/o Don Royer, WA6PIR, 18765 Santa Isadora St., Fountain Valley, California, USA 92708. Entries must be postmarked on or before 30 November 1976. Entries will not be acknowledged nor returned. Winners will be announced as soon as possible after the closing date. (Since mail damaged tape will be of little value, it is suggested that tapes be wound tightly upon a hard core.)
13. Entries will be judged on the originality of the author in selection of subject matter, on excellence of technique in producing the art and formatting the tape, on overall appearance of the art when viewed from a distance, on suitability for publication, and on the entrant's compliance with these rules.
14. A committee of judges, made up from those Amateurs who have exhibited an interest in RTTY art, will select first, second, third and honorable mention winners. Winning entrants will receive a plaque for first place and certificates for other places. Winning entries will be published in the RTTY Journal and other Amateur radio magazines. The decisions of the judges shall be final.
15. Officials and judges of this contest and members of their families shall not be eligible to participate herein.

JUDGES: John, K2AGI; Don, WA6PIR; Norm, K6ZDL
Joe, WA9UGE; and Ricky, WAØCKY

VHF RTTY NEWS

CHUCK EDWARDS W6MNO

4726 Barbarossa Drive - San Diego, CA 92115



How time does fly. Here it is time to wish all 'a merry Christmas and a very happy new year'. Sure hope that Santa puts some of those RTTY and VHF goodies in your stocking.

We have had quite a few letters since the last issue. G8CDW, Ted Double of ENfeld England sent me a very interesting letter telling me of information that I never knew before and thought that I would include herewith, for your information as well. Ted says that , 'there are two types of British amateur licenses. A class which is full license to operate on all recognized amateur frequencies with any mode and up to the legal limits of power output. The B license (all B license holders have a G plus three letters) is for operation on 144 MHZ and up are not allowed on the HF bands. The technical examination is the same for either class, except that the B class does not take a morse code test. These classes are similar to the American variety except that we have to take a code test for the technicians license.

Another interesting comment from Ted is that normal RTTY practice on 144 MHZ is to use 144.6 plus minus 50KHZ for FSK and 144.3 plus minus for AFSK. The British band is only 144 thru 146, which is quite a bit less than ours. Repeaters in England and Europe in general have not really caught on yet, but are just starting. Germany has one RTTY repeater and Ted says that ENGLAND IS CONTEMPLATING SUCH A MOVE.

Another letter from Irv Hoff, W6FFC, telling me about an unusual repeater located in the Bay area just north of San Francisco. This repeater is on 24 hours a day and requires a tone access of 2000 to 2240 HRZ to activate. This repeater has no TU, No regenerator and no AFSK! Herb, WB6IMP is the

designer of this repeater operating on 145.93/33, 147.93/33. I don't know any more than that about this machine, but gess that you can write to Herb and find out more about it.

Here is one from Walla Walla, Wash. from Bob WB7CNJ. I should have said Richland, Wash but it includes the Walla Walla region repeater. I spent many a day there at the Pasco Naval Airstation during WWII, so know the area well.

It is full of mountains, sand storms, and heat. Their repeater WR7AJW, operates on 147.18/78 and is a non regenerative repeater which can be used for voice if required. This group has their machine at one of the homes but plan to get it atop one of those peaks in the near future. From the list of names I received with Bob's letter, this is going to be one of the largest repeater groups. Congratulations Bob.

We have heard no more about the Ohio trouble with the RTTY VHF frequencies of 146.10/70. I hope that no news is good news. We are just going to have to hold on to those frequencies wherever we can, fellows, in hopes that one day, in the not too distant future, it will be used for the coast to coast, north to south links.

The Southern Counties of California, S.C.A.T.S. RTTY Group have come up with a unique idea that they call a 'status directory'. This is a complex computer controlled directory and is being designed and built by Joe, W6RLL. Joe is the fellow who made up the automatic time and date generator that is accessible by merely printing 'time trs blank'. Then you immediately turn off your transmitter and the time and date to the closest minute will be printed back, thru the repeater. This new status directory will, no doubt, work the same way. The purpose, for members, will be to have the operating

habits of each member of the group on file and be able to obtain such information should the need arise. Joe is now compiling data, consisting of: name, call sign, QTH, transmitting and receiving skeds, telephone numbers, and other pertinent information on their Ham activities such as Mars member, voice repeaters mostly used, officer of any club, their address etc. A sample of what the status report might look like for one of the members may look like this: 'W6KCW 3331 Don Encinitas (714)753-5647 Crompton, Nav/MARS, ARRL, President S.C.A.T.S., publisher editor RTTY JOURNAL, 1155 Arden Drive 92024. The number 3331 after Dons' name is the frequency that he is on the air and equipment. Example the first three is the number', from one to three, on how much time he spends monitoring. The second three is the same only for transmitting the third three is that he has WRU and the one means that he has autostart. If it were a three it would be SEL CAL (he does have SEL CAL). If the time were a 1 rather than a 3 that would mean that he was on only occasionally and so on. The 3 means 24 hour basis. As this interesting project continues and develops further, I will mention it in this column. Enterprising computer experts may wish to contact Joe WRLL, who is in the callbook, for more detailed information.

Don KCW and I attended the Ham Convention in Santa Maria, California. It was a gala event lasting three days. It was estimated that there were about two thousands Hams many staying for the barbeque dinner and wind-up show on Sunday afternoon.

There were sure a lot of manufacturers and reps there with wonderful goodies of all kinds. Makes one's mouth water to think of all the multitudes of Ham gear that is available today--all it takes is money!

There was a swap meet as part of the convention, where there were more 'junk boxes' emptied than any other place I have seen. Don and I both had a lot of VHF and related gear that we disposed of the very first morning. So we went home empty handed except for those few new things that we bought. In this respect don't forget the

big San Diego Convention in 1978. That will be one to behold. Besides it will be nice to have an eye ball with you RTTYers.

We had a nice talk with John Craig, editor of Kilobaud magazine about computers and how they might fit into the RTTY Ham shack. He has just about convinced me that I should go the route and try it. So I have been seriously looking at the KIM-1. I sure wish that some of you fellows would write and tell me what you think of computers and how they fit into the RTTYers Ham Shack. I suppose that a lot of you might say that having a microcomputer in the shack of a VHF fan is a bit 'overkill', to say the least. So write and let us know what ya think.

Well it is getting along toward that time of the year when those VHF DX ducts begin to open up between San Diego and the Hawaiian Islands. Last year I was lucky and picked up a contact for almost ten minutes. It sure gives one a funny feeling to work that kind of distance on two meters. During the summer months, especially when Los Angeles has their normal smog problems, we often reliably work two twenty and two meters FM as far north as Santa Barbara with full scale meter readings simplex. But during the winter months starting soon now, the long distance simplex operation will be quite limited to an occasional Los Angeles two meter QSO and maybe twice as much on two twenty. Seems like a shorter wave lengths hang in there before and after two meters falls out completely. We plan to go to four forty very soon and run a lot of tests with that frequency and then to 1260, the plumbers night mare.

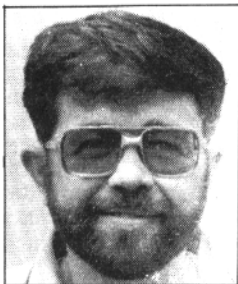
So again, a very MERRY CHRISTMAS to all and a Happy New Year! By the way, even tho I am a vhf'er, I do now and then get on twenty meters, RTTY at around 14088, about two to three in the afternoon, Pacific time. Would sure enjoy QSOing with ya.

CUL DE W6MNO - Chuck

RTTY-DX

SKIP PRINSEN WB6CYA

3611 Merrimac, San Diego, Calif. 92117



GREETINGS TO ALL.....

Well many things have happened since our last article. The tears have all dried up and been replaced with smiles. The bands are in great shape now and we have high expectations that they will remain that way for some time to come.

The CARTG contest is now over, being only my second contest I don't have much to compare it with. For the most part from here the operators all seemed to be very friendly and courteous in the true spirit of Amateur radio.

The first night here 20 was fair working KH6AG, ZLIWN and a very few US stations. Qsyng to 40 produced a few Canadians, Mexico and more US stations. Not having an antenna for 80 meters I retired early to rise early in the morning to be ready when the bands opened up.

The first station I worked was AA4CK new DX I thought but found out that it was one of the FCC's new extra class call signs. Wonder what is next? After an hour and a half we were having trouble with finding calls that we hadn't worked and 20 was getting so crowded that I decided to check 15 meters(WOW) I spent most of the rest of the contest on 15. Some of the prefixes that I worked during the test were XE1,YV5, many VE's, KH6,ZL1, TG9, JR3, ON4, HB9, CT1, L3, JA3. I heard and called several Italian stations from here but could only raise one?

Before this even gets back from the printers the European DX-Contest will be long gone. I hope that everyone enjoys themselves as much as I.

As for the rest of the month for the most part super. Working HR2AFK Fred in Honduras on twenty meters around 2300Z. on 15 meters I worked many stations during the second week-end some being: JA2EFV, YU3EM, SM6 ASD, F8XT, and HB9AVK. Also worked JA3EVC, JA1IPJ and DL2AU. Also worked OH2HN on 20 meters that same

week end.

TU2GA, Alain in the Ivory Coast has also been worked. His QSL manager is K9KXA, Mas Seo, 6430 N. Lakewood Avenue, Chicago, IL 60626.

9G1JZ, Bully, Kumasi Ghana Africa is on with an ST6000 and DS 3000. He is brand new to RTTY and his shift is a little wide at 195 cycles.

SM6ASD, Bo, says that ten has come to life again but hears very little activity. W6JOZ earned WAC on 10,15 and 20 meters all on 20 meters. Certificate #21 on 20 meters, #8 on 15 meters and #47 on 10 meters.

JA4ONZ, Toru Aoki received WAC all on 20 meters #22.

W5VJP Bob Wagner on 12 October 1977 won DXCC #28 Congrats Bob.

VE6OJ Bob reports I was keeping an eye on the band this month from this area and it was or still is a good one for DX. The best time was October 8th to October 16th. It fell off a bit after that. Bob was sick in bed for CARTG but had his son tuning around for him and says most of the DX was from Europe. He did work a few European stations and heard a lot more on 15 meters around the 12th. He reports hearing nothing on 10 meters.

WB6BDY reports working a few mid-western stateside stations on 10 meters during the test. I worked ZLIWN and WB1CRG but wasn't on 10 meters too much.

From Ed, W3KV comes the following, was not able to be in too much due to other things coming up on the same week-end. Had 80 contacts in 5 continents but did not run across anything new in the way of countries.

I missed Africa but have been told that 7X4MD was on for awhile, and there may have been more but not aware of them. A few of the multipliers we noticed were: IS0RUH, OE2LCL, HB9AVK, JH1TTF, SM6GVA, HA5KKC, OK1

MP, PA0WDR, YU3EM, FOCAX, ON4 BX, CT1EQ, LZ1SB, OZ6SM, VE8CM, VK5RY, ZLIWN, TG9GI, 8P6AY, XE1 AFU, CE3MA, KH6AG, 4X4MR, of course there were many more. Looks like it may be a race between W3 EKT and CT1EQ for the top honors. Altho Bern had a power failure for many hours so his score may suffer as a result. Outside of the USA it seemed that Italy has the largest block of entries, they seemed to be all over the bands.

Conds seemed quite good and 15 metres was open all day here on Sunday. ID was spotty as usual and you had to be there at the right time or the band seemed dead.

Some others activity noted during the month of October---On the 5th was suprised to run into 9G1JZ at 2230Z on 14MHZ. 'Bully' has a fb signal and gave his QTH as Box 8430, Kumasi, Ghana. This is the first activity from there since the brief operation by Emile, , 9G1WW and his wife 9G1YL back in 1972.

In mid-month Walter, HB9BMU was operating as HB0BMU in Liechtenstein at the site of the Boy Scout Jamboree for a few days.

In the Caribbean area some good catches were HI3XCP, HR2AFK, FM7WB and T69GI. Germans, IG9GI confirmed the passing of Robert Engel TG9AD, a few months ago of a heart attack. TG9AD was a pioneer on RTTY and many will remember that he was one of the first stations active in RTTY when the mode was just getting started. Germano also said that the son of TG9AD has been issued the call so you may hear it on the bands again. TG9AD received special recognition for his all mode activity during the recent earthquake disaster in Guatemala as for a time he was the principle source of communications.

A new one active from Iceland is TF3SB 'Doddi' Bjarnason, Skeggjagata 17, Reykjavik, Iceland. F6CRS/FC became in mid month QRV and while quite weak from here he is one to keep trying for as Corsica is quite rare on RTTY.

It is frustrating here in the east to copy VK2SG having landline QSO's with VS6EK and 9M2CR while all we hear is noise when listening for the later two.

stations. Some new stations from Europe F6AQJ, EA3PA, DM5NN, HB9JJ, HB9 AX, ON4OR, PA0FPK, OF6YI (FINLAND) GM3XMZM again on from Shetland Islands. Thanks again John 73 de Skip

DXCC AWARDS ISSUED AS OF 1 NOV. 1977

1. ON4BX	15. JA1ACB
2. W3KV	16. K8YEK
3. I5KG	17. I5WT
4. ON4CK	18. W1GKJ
5. W5QCH	19. W4CQI
6. W8CQ	20. DL8VX
7. WA3IKK	21. K6WZ
8. DK3CU	22. W3ERT
9. W5EUN	23. W3JIN
10. G6JF	24. W4EGY
11. W2LFL	25. I8AA
12. I5ROL	26. K3SWZ
13. W4YG	27. OK1MP
14. W3DJZ	28. W5VJP

DXCC HONOR ROLL

1. W3DJZ	144/138	14. W0MT	69/66
2. W2LFL	139/138	15. W6JOK	75/60
3. G6JF	137/136	16. W7MI	76/56
4. I5WT	135/132	17. W8CAT	59/54
5. W4CQI	124/116	18. WA0YDJ/4	67/53
6. W1GKJ	112/112	19. W8JMG	67/48
7. K6WF	114/109	20. W4YZ (K4GJW)	58/46
8. W3KT	150/107	21. WA9AKT	44/36
9. W3JIN	111/107	22. K6ZDL	37/35
10. W5VJP	117/105	23. K4JAP	55/33
11. K3SWZ	107/101	24. JA4ONZ	40/28
12. P5JA	109/97	25. N3AI (K3RVC)	37/20
13. K7BV	98/86	26. K4CFJ	17/11
		27. WB6CYA	31/8

THE AUTOCOM MA-4

Since the Autocom MA-4 is a rather detailed article with fine pictures and schematics we have decided to run it in three parts rather than the original two that were planned. In doing this you will be able to have larger sche-

matics with less chance of mistakes that are normal when a drawing is - hard to read. The next issue will - contain the balance of the photos, and the schematics plus a complete parts list. This will make a good project to work on during the coming winter months... Good luck to all of you that complete this fine project. It will be a fine addition to your shack.....

AUTOCOM MA4

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

PART 2

Decode Board

The decode board's main function is to convert the TTY character selected into a logic pulse. The 7475 IC1 and IC2 allow the selected character to be placed on the data bus for one full character time. The data bus is precoded for seven characters. Coding is accomplished by soldering a wire thru the board to the foil on both sides. A given character such as R will be decoded to give all highs on the five inputs of the 7430. By choosing between Q or Q̄ of IC1 and IC2, a high can be strapped in for a mark or a space. Only the character R upper or lower case, will give the necessary five highs on the inputs of the 7430. The final stage of the input selection is the enable line which is supplied from IC3 pin 6 of the memory board, and is only selected in after a figs blank has been matched to that stored in the prom IC3 via IC9 and IC 10. When this occurs the output of the particular 7430 selected via the precoded bus goes low. IC9 is used to trigger a one shot (74121), which is used to set the 'on air time' for the answerback. IC8 and IC 7 are used to reset flip flops IC12A B, and IC12C and D. IC 6 and IC 5 are used to set the flip flops IC 12A, B, C, and D. These flip flops are used to control the perf and the TD. IC3 and IC4 are used to give a low or high output for ID purposes.

When using a TD we depend on the normal one character send after the command has been read to remove the date stored on the bus. Example: a figs blank # is to be used to trip the ID CYCLE. If sent from the keyboard, the character would remain on the data bus and the output of IC3 of IC4 would remain active, which would keep a constant CW ID cycle going. Most TD's, however, will read the command character and,

as the command is performed by the machine, one more character. Therefore, figs blank # ltrs would actually be read. This would set IC3 or IC4 back to an inactive state and the ID would only cycle once. The reason our design is this way is the only time a CW ID would be necessary is when you are reading a tape. The answerback would handle the CW ID for the answerback selection.

Working with a model 32ASR we found the answerback and CW ID take about 10 seconds to run off. This added to the 5 second stabilizing time at the beginning of the selection would come to 15 seconds. Giving ourselves a little leeway, we chose to set the answerback timing capacitor on IC10 to run for 20 seconds.

Interface Board

The interface board is designed using relays to interface between the peripheral and the Autocom unit. Relays are used because of the many different voltages used to trip perfs, TD's, and answerback in the teletype unit.

IC1A is turned on via a force on switch S1, or from a low from IC13C pin 8 on the memory board. The switch may also be a DPDT to set the auto-start in the TU to an active position in order to stop the machine from running open. When selected in IC 1A turns on Q1 which activates RL1, turning on the equipment. A second set of contacts is used to turn on a CW ID unit. A GE MOV transient voltage suppressor is used across the relay contacts to cut down spikes caused by motor turn on.

The input of IC1A pin 2 also is used to set flip flop IC6 C and D, WHICH power a led indicator on the front panel indicating a message has been received by the system. S5 is used to clear this led, and is the only way it may be cleared.

Answerback operation is accomplished by a low on pin 1 or pin 2 of IC 2A. This forces IC13 pin 6 to go high and turn Q2 on, activating the transmitter. This will happen immediately after the character for the answer back has been selected in. Also at this time the output of IC3B pin 4 goes low starting the 555 timer and one shot IC4. The

<p>RTTY ID GENERATOR PLUG IN BOARD SAME SIZE AS ST-6 BOARDS. EASY INTERFACE TO ST, DT & UT GEAR. ACCEPTS PLUS 5 OR 12 VOLT SUPPLY. 31 CHARACTERS MUST INCLUDE LTRS, FIGS, SPACE, ETC. SUPPLY DESIRED CODING WITH ORDER. PROM COMES CODED ^{kit} \$34.99</p> <p>CW ID KITS AUTOMATIC RESETABLE 10 MINUTE TIMER. SINGLE PLUG IN BOARD SAME SIZE AS DT-600 ID INTERFACING TO ST & DT SERIES TU'S INCLUDED WITH H. V. INTERFACE FOR DIRECT TRANSMITTER KEYING VARIABLE SPEED OPTION. REQUIRES +5 OR 12 VDC ^{kit} \$37.90</p>	<p>KEYBOARD COVERS W14 D8JH3 \$13.50 " 14 " 11J3 " 3 \$14.50 SHIPPING INCLUDED SPECIFY WHITE OR BLACK TOP</p> <p>ELECTRONIC PARTS RESISTORS CAPACITORS DIODES TRANSISTORS IC'S SWITCHES CABINETS TRIMPOTS METERS FUSES TEST CLIPS AND MUCH MORE</p> <p>NuData Electronics 104 N. EMERSON ST. STAMP MT. PROSPECT, ILL. 60056 BRINGS PHONE 312-392-2356 CATALOG</p>	<p>10 MINUTE TIMER ADJUSTABLE FROM 1 TO 15 MINUTES. TIME MAY BE EXTENDED. Q OR Q̄ OUTPUTS REQ. +5V \$8.95^{kit}</p> <p>EXPANDABLE PROTOBOARD IDEAL FOR SMALL PROJECTS \$10.70^{ea.}</p> <p>TELETYPE REPAIR SERVICE ANY TELETYPE CORP. MACHINE \$15.00 PLUS PARTS. NON-COMMERICAL WORK ONLY CALL OR WRITE</p>
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AUTOCOM MA4 cont.

first pulse of the timer takes five seconds. On the high to low transition the flip flop IC1C and D is set forcing pin 12 of IC2D to go high. The output of IC2A pin 3 also forces the output of IC 7 pin 6 to go high which is applied to pin 13 of IC2D. Thus pin of IC11 goes high 5 seconds after the character is decoded and the answer back is allowed to go off.

Several options are available for the answer back operation. For those with AC magnet trip off A should be strapped to B and IC10 not used. This also applies to high voltage DC magnet trip off. If IC10 is used, the 330 ohm resistor between IC11 pin 6 and IC10 pin 5 will not be used and a strap will be put in its place. IC10 should be employed for digital type answer backs, where only a short high or low pulse is required to start the answer back cycle.

Q5 and associated parts are not necessary if a digital type answer back is used. If the voltage on the digital is higher or lower than the 5 in the Autocom system C or D should be used with a 330 ohm resistor to B. This provides a transistor interface between the Autocom and digital answer back. Normally C, which is an active high, should be used as the circuit is drawn. If D is used, Q5 will turn off in an active state.

TD operation is similar to the answer back operation. IC2B pin 5 is forced low when the turn on character for the TD is selected in, turning the transmitter on. Using the same route as the answer back, IC3B pin 4 goes low turning off the Q3 and triggering IC4. This forces pin 11 of 7B to go low preventing the TD from starting for about 15 seconds. In this time the answer back is allowed to trip off 5 seconds after the character is selected in. This delay is used to give the answer back and CW ID time to finish before starting the tape. About 15 seconds after selection IC4 resets and if there is tape in the TD, it is allowed to start. Putting the CW ID start coding in the tape will stop the TD. This is accomplished by forcing an input of IC8A low at

the same time an input of IC6A is forced low causing the output to go high which will trip off the CW ID unit. A hold from the CW ID unit is applied to pin 9 of IC7B forcing it low and keeping the TD off after the selected character has gone back to its normal state.

Note that when a TD reads something like a CW ID start code, one character after the code is also read. It is normal to put a letters after this code. This character acts as a reset for the decode board IC3 and 4. This system is designed for CW ID to follow a mechanical answer back, which would have the CW ID trip code (figs blank #) and ltrs as the last characters on the drum. If only a CW answer back is required IC3,4 and 13 on the decode board can be eliminated and IC10 on the interface board can be used to trip off the CW ID unit.

Perf-on and perf-off control is accomplished by applying a low or high to IC8B via the flip flop IC12A and 12B on the decode board.

IC9 is a 30 second resetable timer used to clear out the system in case a caller forgets to send the four N shut down, or if the tape is jammed. PINS 1 and 2 are tied to the pin 24 UART output via 7404 inverters. If no transition is sensed for 30 seconds on pin 24 of the UART, IC 9 is allowed to reset. If the Autostart chip IC4 on the UT2/parallel generator board is used, pin 8 may also be used in place of IC9.

Timing capacitors used on the interface board are tantalum except for the 1000 UF on IC9 which is electrolytic. The 2.2, 3.3, and 10UF capacitors are tantalum.

Power Supply Board

The power supply shown here has two options. By strapping A to B, a +5V lamp supply is obtained. By strapping A to C and D to B, a series pass supply may be employed to give a 3 amp capability. It is recommended that these transistors be mounted to the cabinet. Grounds are extremely important. Note that separate ground pins for C1, C2, and the 7805 common are used. These pins should be connected by separate wires to a common chassis screw. RL is used to drop the voltage rather

AUTOCOM MA4 cont

than have the regulator overheat. Provisions for on-board mounting are supplied. This resistor should be spaced off the board by a half inch.

This unit has been operating for about 8 months now with great success.

Many sincere thanks to Tom Steinke, K9WYG for his help in the design of the memory electronic board, to John Rice, W9MMB for general advice and his design of the transitional autostart system and to Bob Ehrhardt, the unham for his general advice and power supply layout.

Availability

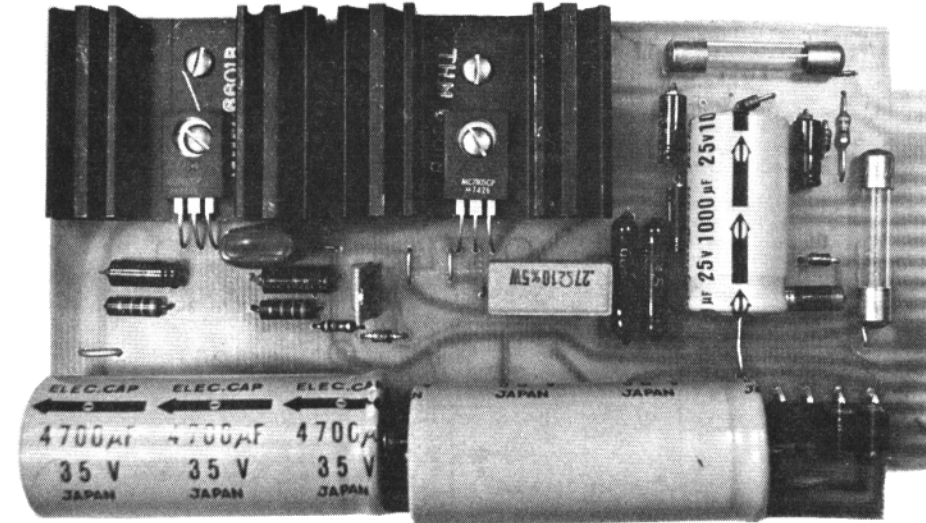
A complete set of boards and parts for the boards is available for \$188.75 shipping included. This does not include the cabinet, relays, switches or plugs.

Drilled PC boards (5) are available for \$41.00. PC layout copies for all boards are available for \$3.00 a set. All boards: interface, UT-2/parallel converter, decode, memory electronics and power supply are included in above prices. Separate prices and other information available with a SASE. Because of the PROM coding allow 3 weeks delivery for complete kits. Write NuData Electronics, 104 N. Emerson St., Mt. Prospect, IL 60056.

Note: Boards and kits are intended for experienced builders.

* April, 1975 RTTY JOURNAL

** All boards except power supply mount into a double 18 pin edge connector with numbers to the right side and letters to the left looking at the back of the edge connector #1 and A on top.
*** Irv Hoff, W6FFC, May-June 1974.

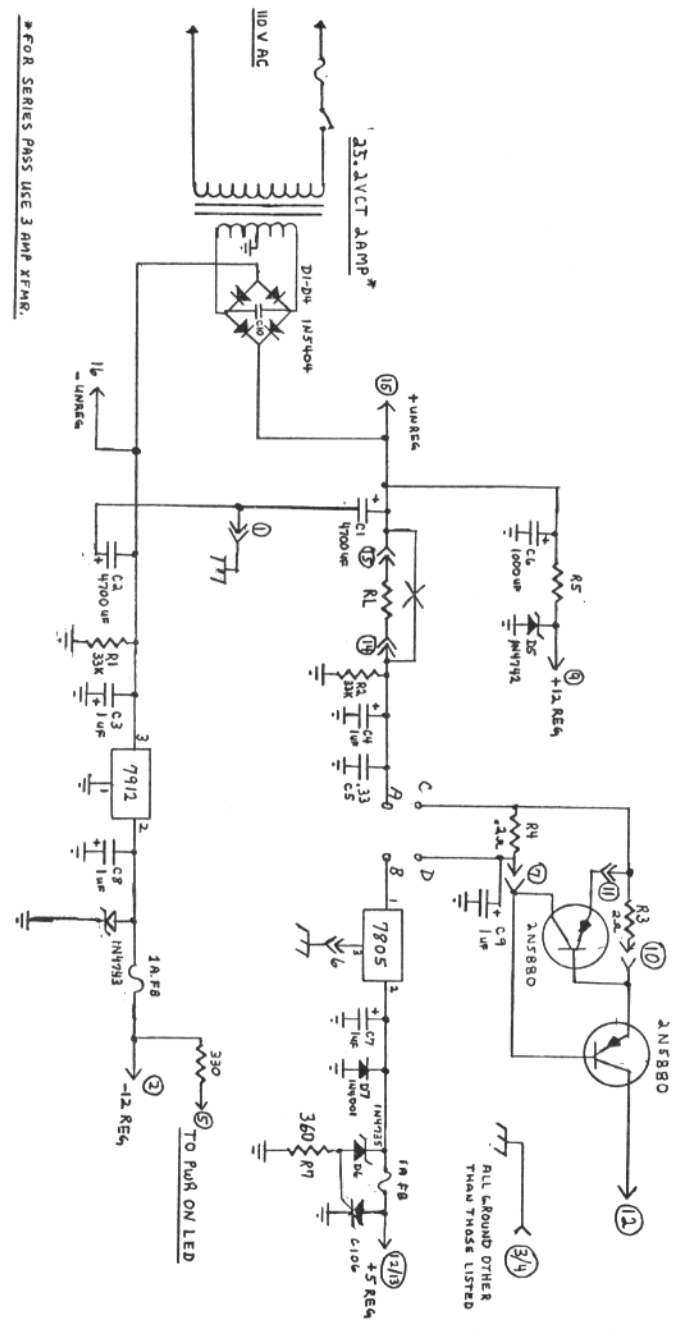


Edge connector connections for supply
Foil side

1. To chassis ground
2. -12 VDC
3. To chassis ground
4. Internally tied to #3
5. To LED on front panel to indicate power on
6. To chassis ground
7. series pass connector (see schematic)
8. No connection
9. Plus 12 volts DC

10. Series pass conn. (see schematic)
11. Series pass conn. (see schematic)
12. Plus 5 VDC
13. Tied internally to #12
14. To optional current limiting resistor for off board mounting
15. To optional current limiting resistor and unreg. plus V DC
16. To negative V DC
17. AC in
18. AC in

POWER SUPPLY



*FOR SERIES PASS USE 3 AMP XFMR.

M-4 POWER SUPPLY PARTS LIST

BASIC SUPPLY +5 & -12 @ 1 AMP. EA. +12 @ 350 MA.

RESISTORS		W	QUANTITY
RL	8	10	1
R1, R2	33K	1/2	2
R5	20	1	1
R6	330	1/2	1
R	360	1/2	1

CAPACITORS		VAL	V	QUANTITY
C1, C2	EL	4700uf	35	2
C3, 4, 7, 8	EL	1uf	25	4
C6	EL	1000uf	25	1
C5	MYLAR	.33	100	1
C	DISC.	.01	50	1

SERIES PASS OPTION FOR 3 AMP PLUS FIVE VOLT SUPPLY.

ADD TO PARTS ON LEFT.

QUANTITY	ITEM	VALUE	W
1	R3	2 ohm	2
1	R4	.2 Ohm	5
1	C9	1uf	25V
2	2N5680		
2	HEAT SINKS FOR TO-3		
1	TRANSFORMER*	25.2VCT	4A

*IF SERIES PASS IS USED DROP TRANSFORMER LISTED AT LEFT.

DIODES

D1, 2, 3, 4	1N5404	4
D5	1N4742A	1
D6	1N4735A	1
D7	1N4001G	1
D8	1N4743A	1

REGULATORS AND SCR'S

MC7805	1
MC7912	1
C106	1

MISC.

HEAT SINKS	2
FUSES 1A PIGTAIL	2
SCREWS 4-40 1/2	4
NUTS 4-40	4
BOARD (PC)	1
16 PIN EDGE CONNECTOR	1
WIRE	X
TRANSFORMER 25.2VCT 2A	1
PARAL MOUNT FUSE HOLDER	1

NOTE: R5 AND RL MAY VARY WITH SUPPLY LOAD AND TRANSFORMER.

DOTS BY CAPACITOR MOUNTING HOLES INDICATE POSITIVE LEAD POSITION.

SERIES PASS TRANSISTORS ARE INTENDED TO BE MOUNTED OF THE BOARD ON THE CHASSIE. RL MAY ALSO BE MOUNTED OF THE BOARD.

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

MORE RTTY! ONLY HAM RADIO MAGAZINE consistently brings your more RTTY articles and better RTTY articles than any other general amateur magazine. You need RTTY Journal, but you need HAM RADIO also.
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HAVE FULL SET OF RTTY JOURNALS. Will duplicate any issue \$1.00 PP. Also duplicate of all 4 UART articles with large drawings. \$2.00 PP. U.S., Canada, Mexico. Other countries 25 cents extra. R. Wilson, WBØESF, 4011 Clearview Dr., Cedar Falls, IA. 50613.

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

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

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

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.

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.

ATTENTION FACSIMILE 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 cooperation index of each station. Write to Joerg Klingenfuss, Goethestrasse 14, D-7400 Tuebingen 1, West Germany.

QSL's, CATALOG 30 CENTS. TELETYPE PAPER single sheet rolls 12, 4 1/2 inch rolls per case white, \$25.00 per case plus shipping (case wt. 36 lbs.) N & S Print, P.O. Box 11184, Phoenix, Ariz. 85061.

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

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

KIM OWNERS - Add 4K to your KIM - complete instructions to add a commercial low cost (under \$90) 4K memory board to your KIM-1. No hardware additions (except connectors) or board cutting required. Price - \$10.00. The Bit Stop, P.O. Box 973J, Mobile, AL 36601.

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

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

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

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

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FOR SALE: Complete set of reprints of the RTTY JOURNAL, Volume #1 to date. These are in book form same as originals. Brand new mint condition, ideal for the person who wants to know all about RTTY. Price complete including shipping, \$125.00. Ralph H. Wilson, 4011 Clearview Drive, Cedar Falls, IA, 50613. WBØESF.

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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 and 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 corrections, solid state motor switching and adjustable bias correction circuitry. The loop supply is variable from 20 thru 60 mV, and maintains constant current over a wide range of loop resistance and line voltage. The 2 inch CRT tuning indicator/monitor contains automatic intensity control and blanking. Direct factory introductory price range \$690.00. FOR complete details and specifications write or call Electrocom Industries, 1105 N. Ironwood Drive, South Bend, Indiana 46615 219-232-2743..

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FSC-250 two units for sale 170/850 shift AFSK TK-100 4 units for sale Switching panels and cables available Write Frank Iversen WA6ZCQ 1312 Micheltorena - Los Angeles, CA 90026 for details.

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THE ONLY COMPLETE bibliography of RTTY JOURNAL articles from 1959 through 1975. This bibliography is broken down into over 60 categories so you can find articles of interest and need with raving through your entire library. Great reference for determining which issues have articles you need so you can easily order copies of the issues from Red Wilson. Still only \$1.00 postpaid anywhere in the world. Gary Buda, WAØNDN, 8212 Douglas Drive North, Brooklyn Park, MN 55443

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TELETYPE BARGAINS, Model 28 ASR's \$325.00, KSR's \$165.00, RO's \$135.00, all contained in consoles and ready to go. modems add \$50.00 per unit. ALSO TWX units Model 33's & 35's. Also have a few hundred 15's & 19's (all subject to prior sale) Quantity discounts. SASE for list. Goodman, 5454 South Shore Drive, Chicago, IL 60615. (312) 752-1000. Phone day or night.

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SOON TO APPEAR in an article will be a Baudot to ASCII/ASCII to Baudot converter. Many extras include automatic figs insertion, anti glitch circuit, low power TTL used, prompts will be available from any distributor with coded prompts available, PC boards/plug in. At this time we are in the process of setting up the article and boards. Target date Jan or Feb of 1978, for availability of boards. Advanced information from NuData Electronics, 104 N. Emerson Street, Mt. Prospect, IL

UT-4 COMPONENT UP-DATE XB-6XK CRYSTALS NO LONGER AVAILABLE. source has dried up. Other components per prior ads except crystals. See article this issue for alternate source. Peter Bertelli, W6KS, 5262 Yost Pl., San Diego, CA 92109. (714) 274-7000.

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TELETYPE FOR SALE: Model 28ASR's, KSR's, typing reperfs, and TD's. New and used parts available including cabinets, tables, mod kits, gears and gear-shifts. Paper, ribbons and supplies. Some 8-level Model 33 and 35 equipment available. SEND SASE for complete list and prices. K9WJB Lawrence R. Pfleger, 2141 n. 52nd Street, Milwaukee, WI 53208.

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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 units. 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.

DOVETRON TBA-1000 BAUDOT-ASCII code translator permits an ASCII teleprinter (model 33,35,etc.) and the Heath H-9 video terminal to be used directly with any terminal unit on Baudot RTTY circuits. The TBA-1000 may also be used to interface a 5-level Baudot teleprinter directly to ASCII circuits, such as a microprocessor. When using an ASCII video terminal, hard-copy may be had simultaneously on a Baudot printer. In addition to signal regeneration, speed conversion and 192 characters of FIFO memory, direct keyboard control of the companion terminal unit and transmitter-receiver is also provided. Price: \$245.00 FOB. Delivery: November 1977. Complete specifications are available on request. DOVETRON, P.O. Box 267, 627 Fremont Avenue, South Pasadena, CA 91030. 213-682-3705.

DOVETRON STATION IDENTIFIER TID-100 may be programmed in Morse CW, Baudot or ASCII codes. Output speed is variable from 5 to 20 WPM (CW) and 60 to 100 WPM (Baudot/ASCII). Two LEDs indicate CLOCK RUNNING and CODED OUTPUT for easy visual verification of programmed code. Dual output: One drives FSK/AFSK line and the other may be used to drive front panel indicator. Mounts inside of Dovetron MPC Series terminal units. Requires 1 Ma at 12 volts. Price: \$39.95 postpaid. DOVETRON, P.O. Box 267, South Pasadena, CA 91030. 213-682-3705.

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.

TELETYPE EQUIPMENT and supplies. Large assortment of machines on hand. New roll paper \$19.00 per case 4 1/2" or \$22.00 per case 5 ". 11/16 " tape \$14.00 per case of 40. Excellent ribbons 50¢ each. Equipment list for S.A.S.E. many parts on hand write for specific needs and prices. P.A. Anderson, 115 Bayken Road, Rochester, MI 48063 (313)692-3060

HAL RVD -1005 Vidio Converter for sale. Mint condition. Use with vidio monitor or with most commercial TV's for quit RTTY. Price \$375.00 PPD in U.S.A. Send M.O. to: WDØFDD, Steve Crofoot, 912 Huntington, Emporia, KA 65801 (316)342-1481.

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ASCII/BAUDOT CONVERTOR. Semi-Kit available for two way code convertor. See article in 73 Magazine Sept, 77. Use a model 33 or 35 to receive and transmit at 60-66-75-100 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 UARTS and assembly instructions. \$62.50 plus postage. VE4-LOGIC, 76 St. Claire Blvd. Winnipeg, Manitoba, Canada RC2 OV2.

XB 6XK CRYSTALS

XB-6XK crystals for the XB-6 clock The optional XB-6XK crystal which I have been furnishing (see p.13, Apr 77 issue) has now disappeared from the scene. I no longer have a source for these crystals which have continued to provide a low-cost unit for the UT-4 builders. However, all is not lost.

A suitable crystal, still in the \$3.00 price range of the original XB-6 crystal, can be obtained from JAN Crystals 2400 Crystal Drive, Fort Myers, FL 33901 but you will have to wait at least 3 weeks for delivery so order early. Send check or Money order for \$3.20(postpaid price) and specify:AT-

cut, series mode, 7214.55 KHZ, .005% tolerance, HC33/U holder. This holder is the wire-lead equivalent of the plug-in HCU/6 holder. If you wish the HCU/6, so specify. The price stated should hold through 1978. With this crystal, just plug in a 7493 I.C. instead of the usual 7490 chip and you are in business. Good Luck, Peter Bertelli, W6KS.

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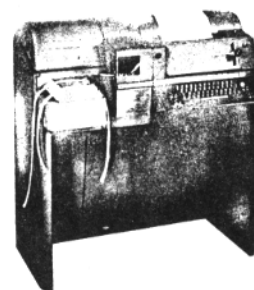


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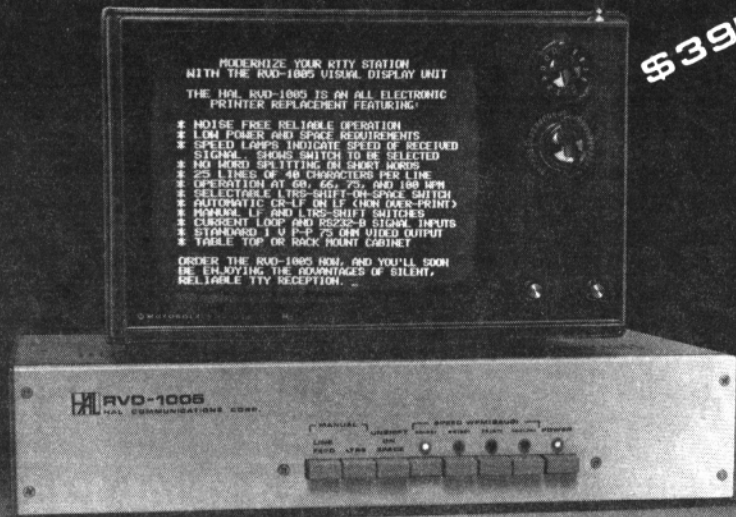
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