THE WEST RAND AMATEUR RADIO CLUB

January 2006
Volume 6, Issue 6

ANODE

Inside this issue:

Editor's Comments

January 2006

Volume 6, Issue 6

It's a new year. Don't let that worry you. The Ham-Comp meeting is going to take place on the 14th at 13:00 as usual. I missed the bring and fix meeting on the 2nd due to overseas visitors. However I shall make the main meeting on Monday.

[from the newsgroups]

Morse Too Fast for You?

As some of you know, I supported my bad habits for many years as a Navy Radioman, and quite frankly considered myself something of a hot-shot operator.

To set that stage... I spent my early Navy years aboard destroyers in the Second and Sixth fleets. The amount of traffic you handled was related to the seniority of your skipper, because senior skippers not only commanded their own ships, but also often had additional duties as task group commanders, etc. Our skipper at the time was CDR Grant "Flash" Gordon, and he was one of these 'senior' skippers. We made a couple of cruises to the Mediterranean and Capt. Gordon was also CTU-60.2.5 which required our ship to guard the Sixth Fleet Task

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Ham-Comp Part 3 of 3 Testing the hardware

Special points of interest:

- Contact details on back page (updated)
- New email address for Anode and ZS6WR. See back page

Connecting the PC to the outside world. [Testing ports and interfacing]

This article—presented at the last Ham-Comp meeting-has been constructed like this:-

A. What's it for? (What is its function?)
B. Why is it like this? (What made the design like this?)
C. How can we (Radio Amateurs) use it?
D. I think it's broken, how can I test it?

In the PC, there are several interfaces and a few that connect to the outside world. The few that connect to a socket/plug for you to connect something to, are:-

1. Joystick port
2. RS232 port
3. Printer port
4. Test programs

1) The Joystick Port

A
This port is used to provide positional and contact closure information to a program (usually a game) running on the PC. The Joystick section is a pair of 100k potentiometers aligned at ninety degrees, so that a steering arm or 'stick' can move forward and backward or side-to-side. These potentiometers are electrically connected from the five-volt supply to a timer circuit input. This allows you to fly a simulated aeroplane or steer some other object

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Editors Comments & News

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Group Commanders Net (nicknamed "Sixes Alfa"). Sixes Alfa was a high speed net, typical traffic speeds were 40WPM, and routine procedural speed in excess of 50WPM. At the time, I was one of only 23 radiomen in the Sixth Fleet who were fully qualified Net Control operators for that net. I go into all of this not to brag, but only to give you an idea of how big my 21-year-old ego was. If you were qualified to NCS "Sixes Alfa" (you got a fancy diploma style wallet certificate signed by the Fleet Commander) then you were pretty hot stuff.

Unlike today, in those days the Red Sea and Persian Gulf area was a quiet backwater without much military attention. The US Navy presence was something called "Middle East Force" and COMMIDEASFOR was a Rear Admiral whose flagship was a distinctly unwar-like AVP (seaplane tender) anchored at the Brit base on Bahrain. (K0DQ, Admiral Scott Redd (retired), now an active contester and a high honcho in Dept of Homeland Security, once held that post) The rest of his fleet consisted of a couple of destroyers loaned to him from the Sixth Fleet in the Mediterranean for tours of a couple months at a time to strut around and show the flag. Often we used that opportunity to also conduct joint training exercises with ships from allied navies in the SEATO and CENTO treaty organizations.

Our ship, USS Henley, DD762 drew that temporary assignment while I was aboard. To get from the Med over to the Persian Gulf requires transiting the Suez Canal, which was under Egyptian (they called themselves the UAR in those days) control.

Ships transiting the canal were arranged in convoys, on a given day consisting perhaps of 10 or 15 ships, one convoy northbound and one southbound. These convoys met and passed each other about midway in the canal at a 'wide spot in the road' called "Great Bitter Lake". Each convoy carried an Egyptian civilian pilot who knew the waters and acted as our 'guide' in navigating the canal. If there was a warship in the convoy, they would carry the pilot and lead the group. These pilots were required to provide the canal "Traffic Control" with periodic position reports so that canal authorities could track our progress and coordinate the 'passing' of the two convoys at the wide spot. The circuit which handled this traffic was a CW circuit, and the ashore operator was an Egyptian civilian. This was not a busy circuit, so typically it was on 'speaker watch' while you attended to other more busy circuits, and only actually 'manned' the circuit when you had to send or receive a report.

Now picture me, hotshot NCS from "Sixes Alfa", keeping an ear on this pilots coordination circuit while handling traffic on another circuit. Across comes the call:

"NHXW DE SUQ K"

I put my regular military circuit on hold with a 'ZUJ' and impatiently called the 'lowly Egyptian civilian' at about 40WPM with a speed key:

"SUQ DE NHXW QRQ K"... (QRQ my friends, is the inverse of QRS)

Bad move... really bad and embarrassing move!

'Lowly civilian' at SUQ came back to me at a blistering speed I'm sure was 60WPM (or faster) of beautiful musical code (there were no electronic keyers in those days) of which I could copy no better than 50%.

I humbly sent a break signal, then a crisp and polite "QRS PSE", and the "Kind Sir" at SUQ slowed down to a stately 30WPM. To this day I have never sent another QRQ to ANYONE! (That guy may be still out there waiting for the impertinent sailor to challenge him again!)

73, de Hans, K0HB

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Homepage:

http://www.home.earthlink.net/~k0hb

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Editors Comments & News

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Member:

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FISTS http://www.fists.org
LVDXA http://www.upstel.net/borken/lvdxa.htm
NCI http://www.nocode.org

"KØHB"<groupk0hb@earthlink.net> wrote in news:

US5of.4270 $Tg2.4000@newsread1.news.pas.earthlink.net:

> I humbly sent a break signal, then a crisp and polite "QRS PSE", and

> the "Kind Sir" at SUQ slowed down to a stately 30WPM. To this day I

> have never sent another QRQ to ANYONE! (That guy may be still out

> there waiting for the impertinent sailor to challenge him again!)

Heh heh. During 18 years on the circuits at VCS, Halifax, I can relate to this. During part of that we were often required to copy long fishing reports from Russian trawlers operating under license within our 200 mile zone. These messages could run to 5000 words and more. You did not want to copy them slowly and the Russian ops (probably KGB-trained) were good. But when they were sending weather OBS (you know the standard 5-figure group synoptic reports), they would just let fly. The messages we'd do at about 50wpm, but I think they were trying to see just how fast I could copy an OBS. Never did find one I couldn't get the first time.

A year and a half up north on very fast point-to-point circuits sending upper air reports gave me that skill. But it's a lost art. Everything is satellite and RTTY nowadays.

But on the other end of the scale, I came across a vessel on 500khz one day with a call sign from a certain Caribbean country (not Cuba) that shall remain unnamed. His code was bad but I managed to get him off onto 480 and listening to me on 484. I was using an AEA Morsematic that would not slow below 5wpm and this joker kept sending QRS until I bottomed out.

Now I simply cannot send morse with a hand key at less than about 10 and I keep winding up to 20 all the time even trying to do that. But I could keep the Morsematic going at 5. But not satisfied, he still insisted QRS. At that point I gave up. I mean 20 is minimum commercial speed and this joker was telling me he couldn't read me at 5 with perfect code!

So I said, "OM, if I QRS any more I am stopped." At that point the QSO was transferred to 2Mhz SSB. His English was better than his CW and his French actually understandable!

Dave Oldridge

ICQ 1800667

VA7CZ

Defragging in 2006

Link:
http://www.sysinternals.com/utilities/**pagedefrag**.html

One of the limitations of the Windows NT/2000 defragmentation interface is that it is not possible to defragment files that are open for exclusive access. Thus, standard defragmentation programs can neither show you how fragmented your paging files or Registry hives are, nor defragment them. Paging and Registry file fragmentation can be one of the leading causes of performance degradation related to file fragmentation in a system.

PageDefrag uses advanced techniques to provide you what commercial defragmenters cannot: the ability for you to see how fragmented your paging files and Registry hives are, and to defragment them. In addition, it defragments event log

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Ham-Comp Part 3 of 3 - Testing the hardware

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inside the software. It really is a pair of crude/simple analogue to digital converters. The processor simply times the timer's output with the clock pulses and counts the result. When the potentiometer is low resistance the time is short, giving fewer clock pulses to count. When the resistance is larger, the timer takes longer to timeout and more clock pulses are counted.

The other four inputs on this port are simply button sensors. When the contact of the button closes, the input goes low and this can be read from the port as a status.

B

Originally it was a very simple circuit. Consisting of 555 or 558 timers and some TTL chips. As the sophisticated sound cards arrived the ports function was added to the sound card. It also provides MIDI interfacing to a host of electronic musical instruments. It can supply a 5 Volts supply for low current usage. The early circuits could be modified for other purposes but the sound card interfaces will not allow this.

C

Uses for Amateurs include slow-scan television, sensing or powering small circuits for other interfacing.

D

Connecting a 15-pin connector and push buttons will let you check the logic. The joystick analogue section is not so easy to check without a real joystick or four 100k potentiometers.

If you wish to connect musical instruments to the joystick interface, here is a circuit: -

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Defragging in 2006 (contd.)

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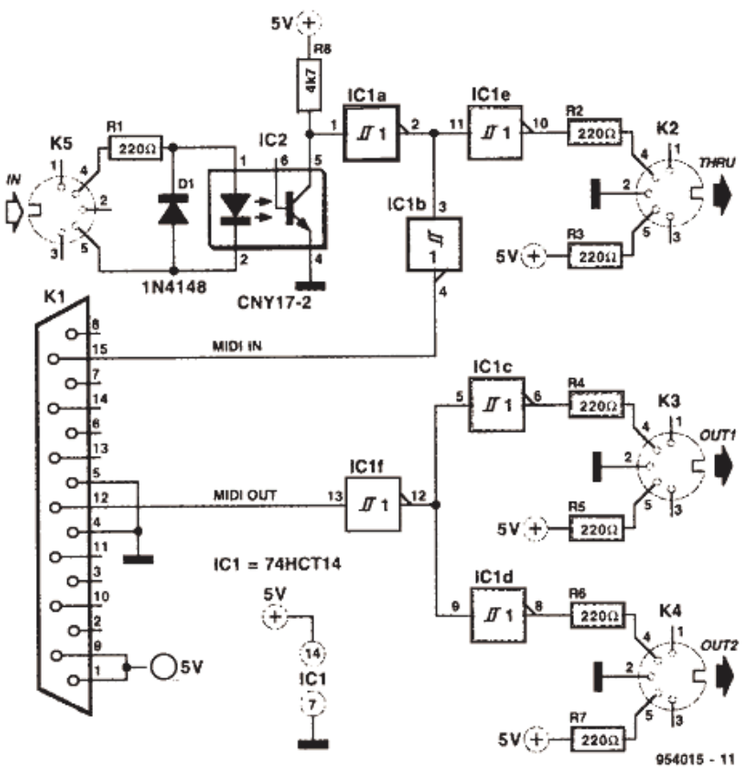
files and Windows 2000/XP hibernation files (where system memory is saved when you hibernate a laptop).

PageDefrag works on Windows NT 4.0, Windows 2000, Windows XP, and Server 2003.

JB 2006



Ham-Comp Part 3 of 3 - Testing the hardware

2 The RS232 serial port

A

The serial port which complies with the 'Recommended Standard number 232' is used to communicate one bit at a time with another device. The device could be another computer, an electronic device or another interface to communicate with the outside world.

B

The original serial adapter card was slow and not very sophisticated. The later cards for the 80486-type processor were capable of much higher speeds. The outside world interface was quite tolerant of the voltage levels supplied to it by external equipment. However later models 'tightened' up on the RS232 specification-giving rise to unreliable interfacing with amateur equipment.

C

The serial port can be used for a multitude of functions. It has several control logic pin connections, which can be used to turn on or off external devices. Also the serial data input/output can be transmitted asynchronously at very slow rates to a maximum of 115,000 bits per second.

D

To check the serial port fully requires a 'loop-back' connector plug. This can be a 9 pin or 25 pin female plug wired as shown below. Also some simple software is needed to 'exercise' the port fully. This can be written in Quick Basic, C, assembler or any other language you prefer.

To correctly check the operation of the UART chip, an interrupt should be used to transmit and receive a test stream of data. This can be done in most DOS based languages without too much interference from the operating system.

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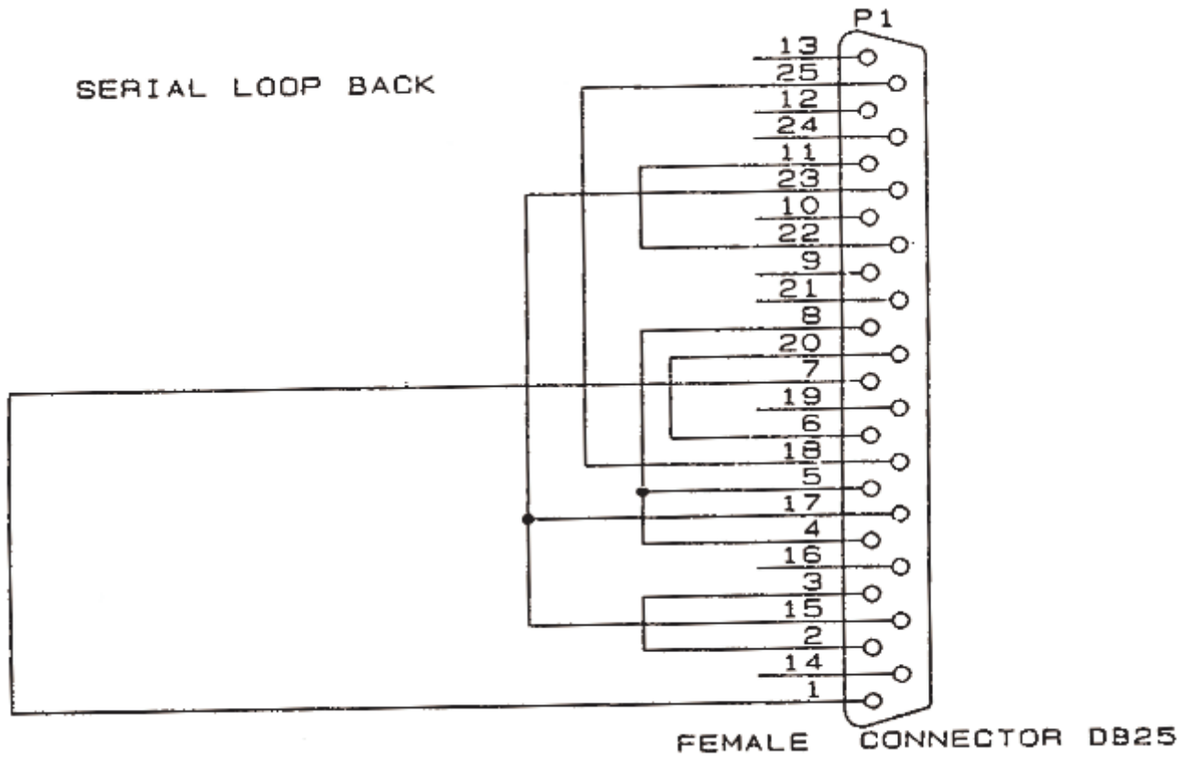

Ham-Comp Part 3 of 3 - Testing the hardware

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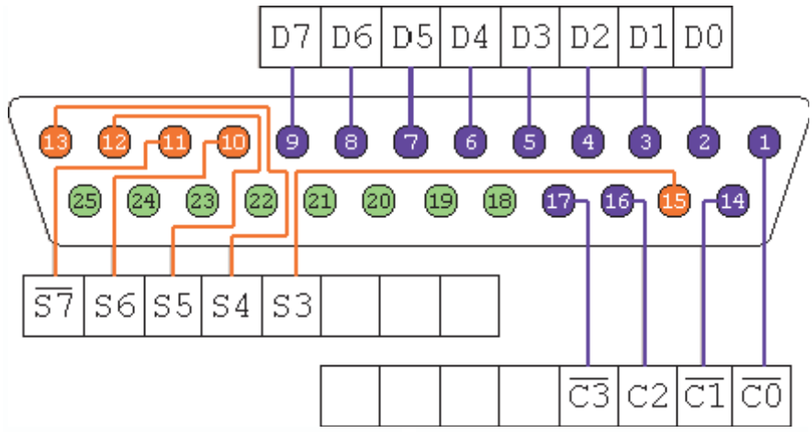
3 The Centronics Printer Port adapter

A
This port was originally only for connection to the printer. It only 'talked' in one direction and sensed the printer's status on a few pins. It wasn't even interrupt driven, as the port's hardware was considered unreliable. Later models feature bi-directional usage and DMA transfers of high-speed data.

B
Simple TTL integrated circuits were used as the connection was to a similar device also with TTL circuitry. Moderately high speeds of data transfer were achieved over cables of less than 10 metres.

C
This port has been used by Radio Amateurs for a multitude of functions. It has been used to orientate aerial arrays, tune up valve finals and even print!



Printer Port Pin-out

D
Checking the port and its hardware again requires both a 'loop-back' connector show below as well as some simple software. I wrote the QuickBASIC program recently to provide a skeletal test program for you to adapt as you see fit.

Connecting two PC's together

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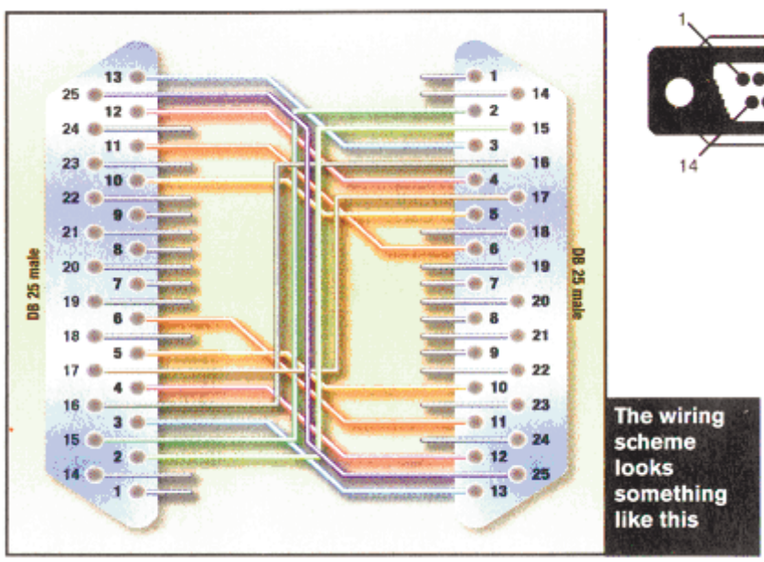
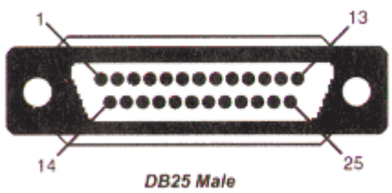


The wiring scheme looks something like this



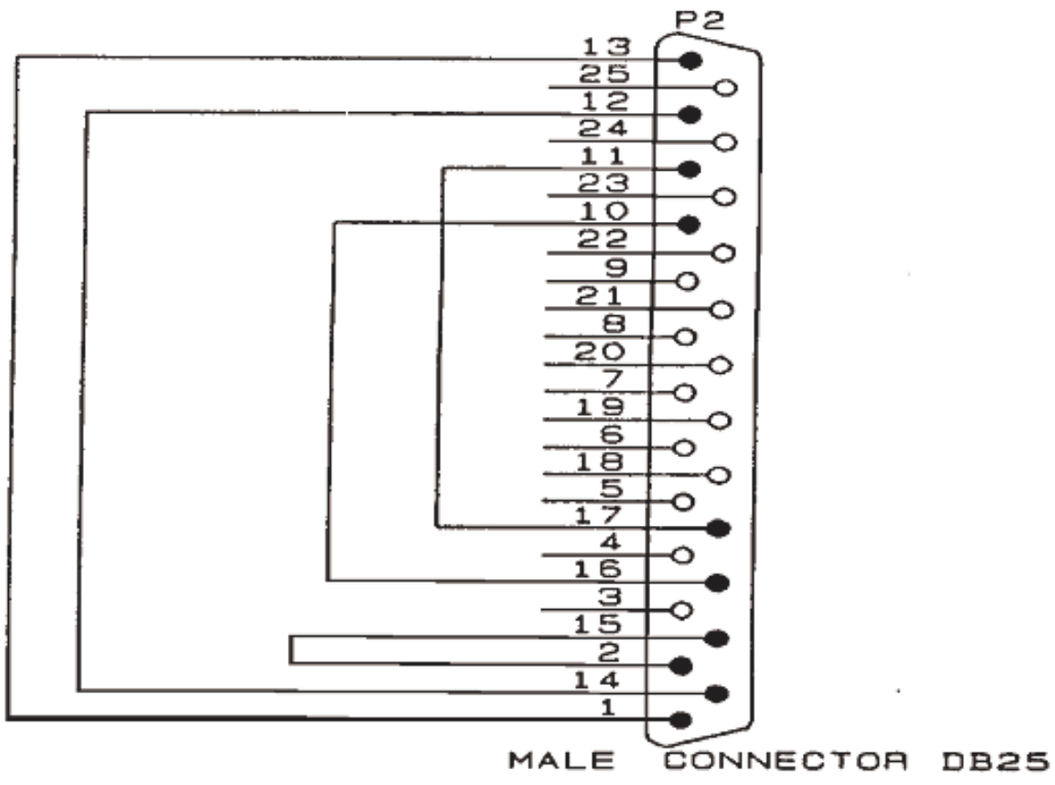
Looking directly at the end of your parallel cable, the pins are numbered as shown

Ham-Comp Part 3 of 3 - Testing the hardware

(Continued from page 6)

The wiring diagram for the Printer Port Loop-back tester. [shown below]

You can use the listed Quick-BASIC program with this connector to thoroughly test the standard printer port. The bi-directional ports will be demonstrated at the next Ham-Comp meeting.



Ham-Comp Part 3 of 3 - Testing the hardware

Program to test printer ports

```
'
' Lpt-Test.bas - a program to use the loop-back connector to
'                to check the working of the printer port's
'                hardware.
'
'option explicit
'
' Method:
'       1)      Check for the BIOS found/tested ports in memory.
'       2)      For each port, check the outputting and inputting of data.
'       3)      Tell user at all times what is going on.
'       4)      Report all 'broken' hardware.
'
DECLARE FUNCTION Bin$ (x AS INTEGER)
DECLARE SUB WaitForAKey ()


'-- clear the screen
COLOR 7, 1
CLS
'-- Tell user what is happening....
PRINT "[Lpt-Test (C) JB for Ham-Comp 2005-11-26]"
PRINT "This is a printer port tester program."
PRINT "It will find the printer ports in your PC. If you have connected a simple"
PRINT "loopback connector to the printer port, it will test the individual ports "
PRINT "and bits in sequence. You may press a key when ready."
'--
WaitForAKey
'-- set the segment to the BIOS data area
DEF SEG = &H40
'--
DIM LpPorts(4) AS STRING * 5
'--
p = 1
'--
PRINT "Printer ports found."
'--
FOR n = 8 TO 14 STEP 2
    '--
    PRINT "Lpt" + LTRIM$(STR$(p)),
    '--
    PRINT RIGHT$("0000" + HEX$(PEEK(n + 1)) + HEX$(PEEK(n)), 4) + "h"
    '--
    LpPorts(p) = RIGHT$("0000" + HEX$(PEEK(n + 1)) + HEX$(PEEK(n)), 4) + "h"
    '--
    p = p + 1
    '--
NEXT n
'-- put a line between
PRINT
'-- Now check the ports
```

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Ham-Comp Part 3 of 3 - Testing the hardware

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```
FOR port = 1 TO 4
    '-- check the port
    IF LpPorts(port) <> "" THEN
        '-- valid port address
        p = VAL("&H" + LpPorts(port))
        '-- what's AA ?, its a bit pattern of 10101010
        OUT p, &HAA
        '-- now read it back and compare it
        IF INP(p) = &HAA THEN
            '-- what's 55 ?, the opposite of AA, 01010101
            OUT p, &H55
            '-- now read it back and compare it
            IF INP(p) = &H55 THEN
                '--
                PRINT "Printer port Lpt" + LTRIM$(STR$(port));
                PRINT " is functional."
                '--
                PRINT "Now checking loopback connection and port."
                '-- output to the control port
                OUT p + 2, 0
                '-- reset
                OUT p, 0
                PRINT INP(p + 1) AND 8, Bin$(INP(p + 1) AND 8)
                OUT p, 1
                PRINT INP(p + 1) AND 8, Bin$(INP(p + 1) AND 8)
                '-- set bit 0
                OUT p + 2, 1
                PRINT INP(p + 1) AND 16, Bin$(INP(p + 1) AND 16)
                OUT p + 2, 0
                PRINT INP(p + 1) AND 16, Bin$(INP(p + 1) AND 16)
                '-- set bit 1
                OUT p + 2, 2
                PRINT INP(p + 1) AND 32, Bin$(INP(p + 1) AND 32)
                OUT p + 2, 0
                PRINT INP(p + 1) AND 32, Bin$(INP(p + 1) AND 32)
                '-- set bit 2
                OUT p + 2, 0
                PRINT INP(p + 1) AND 64, Bin$(INP(p + 1) AND 64)
                OUT p + 2, 4
                PRINT INP(p + 1) AND 64, Bin$(INP(p + 1) AND 64)
                '-- set bit 3
                OUT p + 2, 0
                PRINT INP(p + 1) AND 128, Bin$(INP(p + 1) AND 128)
                OUT p + 2, 8
                PRINT INP(p + 1) AND 128, Bin$(INP(p + 1) AND 128)
                '
                PRINT "Pattern should be 0, 8, 0, 16, 0, 32, 0, 64, 0, 128. ";
                PRINT "Press a key when ready...";
                '--
                WaitForAKey
            END IF
        END IF
```

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Ham-Comp Part 3 of 3 - Testing the hardware

(Continued from page 9)

```
    ELSE
        '--
        PRINT "Printer port Lpt" + LTRIM$(STR$(port));
        PRINT " is NOT functional."
    END IF
    '--
NEXT port
'--

FUNCTION Bin$ (x AS INTEGER)
'
' Convert an integer to a binary string of 1's and 0's
'
DIM strRet  AS STRING * 16
DIM p       AS INTEGER
DIM bit     AS INTEGER


'--
FOR p = 15 TO 0 STEP -1
    '--
    bit = x AND 2 ^ p
    '--
    SELECT CASE bit
        CASE 0
            MID$(strRet, 16 - p) = "0"

        CASE 1, 2, 4, 8, 16, 32, 64, 128
            MID$(strRet, 16 - p) = "1"

        CASE 256, 512, 1024, 2048, 4096, 8192, 16384
            MID$(strRet, 16 - p) = "1"
    END SELECT
    '--
NEXT p
'--
Bin$ = strRet
'--
END FUNCTION

SUB WaitForAKey
'
' wait for a key pressed
'
DIM I$

I$ = ""
WHILE I$ = ""
    I$ = INKEY$
WEND
'
END SUB
```

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[NEW EMAIL ADDRESS]

Bulletins (Sundays at …)
11h15 Start call in of stations
11h30 Main bulletin start

Frequencies
439.000MHz 7.6MHz split
(West Rand Repeater)
145,625 MHz (West Rand Repeater)
10,135 MHz (HF Relay)

Radio Amateurs do it with more frequency!

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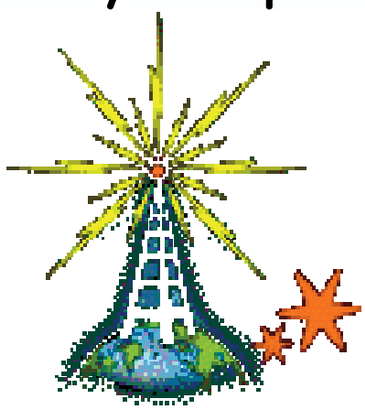
West Rand members - we need your input!

To make this the best ham radio magazine in South Africa we need your input. Please submit articles, comments, suggestions etc.

Please send plain text with no formatting to the email address below.

In July 2003, we re-published an Anode Compendium on CD. It has the issues from July 2000 until June 2005. This included the new Adobe reader. It has been updated, check with the chairman for details.



We need your input! Email us articles, comments and suggestions please.
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