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!
! Test program for TAMS 1701A switch controller
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!
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!
! This program creates random frequencies with the TAMS 1701A frequency synthesizer
!
DIM Cmd$[80],A$[1024],Devname$[255]
INTEGER Verbose
LONG Cyc
!
Verbose=0
!
CONTROL KBD,203;1
CONTROL KBD,204;1
!
RANDOMIZE
!
CONTROL CRT,100;1
!
G$=CHR$(19) ! character code for inverse printing
X$=CHR$(16) ! character code for normal printing
Hl$=CHR$(26) ! character code for "highlighted" printing
Hx$=CHR$(24) ! character code for "normal" printing
Ul$=CHR$(22) ! character code for underlined printing
CrLf$=CHR$(10)&CHR$(13)
!
IF FNHtbvers>=9.4 THEN ! only possible with HTBasic 9.4 and higher
    Devname$="UsbDevice1"
    ON ERROR GOTO Drv_load_err
    !
    IF SYSTEM$("VERSION:USBS")="0" THEN LOAD BIN "USBS;DEV "&Devname$&" TIME 10"
    CLEAR SCREEN
    !
    PRINT G$&" TAMS 1701A test program "&X$
    PRINT
    !
    Dummy=FNSend_command(7,"*IDN?") ! returns identifier
    PRINT " "&Ul$&"Device ID"&X$&": ";FNRead_device$(7)
    !
    Dummy=FNSend_command(7,"*RST") ! reset device
    !
    Dummy=FNSend_command(7,"*TST?")
    PRINT " "&Ul$&"Test result"&X$&": ";FNRead_device$(7)
    !
    STATUS 7,1;Reg1 ! does device implement the USBTMC protocol?
    STATUS 7,2;Reg2 ! is TRIGGER supported?
    STATUS 7,3;Reg3 ! is REMOTE supported?
    STATUS 7,4;Reg4 ! are SCPI commands supported?
    PRINT " "&Ul$&"Register 1..4"&X$&": ";Reg1;" ";Reg2;" ";
    PRINT Reg3;" ";Reg4;" (USBTMC, Trigger, Remote, SCPI)"
    PRINT
    !
    REAL Waittime=5 ! wait this time before sending new frequency
    Maxfreq=50000 ! maximum generated frequency (in Hz)
    !
    Cyc=0
    R$=VAL$(PROUND(Waittime,-3))&" seconds "
    IF R$[1;1]="." THEN R$="0"&R$
    PRINT " "&Ul$&"Frequency switch range"&X$&": 0.05 .. ";VAL$(Maxfreq)&" Hz"
    PRINT " "&Ul$&"Frequency switch delay"&X$&": ";R$
    PRINT
    Sl=10
    !
    User_break=0
    ON KBD ALL GOSUB Kbd_break
    DISP Hl$&"Press any key to stop the program"&Hx$

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!
Faktor=10
WHILE NOT User_break
    !
    IF User_break THEN I=Numloops
    Cyc=Cyc+1
    !
    Freq=Maxfreq*RND+.05
    !
    IF NOT User_break THEN D=FNSend_command(7,"FREQ "&VAL$(Freq)&"HZ;*OPC?")
    ! read returned status info
    IF NOT User_break THEN A$=FNRead_device$(7)
    !
    ! initiate read command
    IF NOT User_break THEN D=FNSend_command(7,"FREQ ?")
    ! read back the settled frequency
    IF NOT User_break THEN A$=FNRead_device$(7)
    !
    BEEP 2000,.01
    PRINT TABXY(2,10);U1$;"Loop number"&X$&":           "&VAL$(Cyc)&"           "
    B$=VAL$(PROUND(Freq,-2))           ! some rounding
    PRINT TABXY(2,11);U1$;"Frequency wanted"&X$&":       "&B$&" Hz           "
    PRINT TABXY(2,12);U1$&"Frequency generated"&X$&":    "&A$&" Hz           "
    !
    IF NOT User_break THEN GOSUB My_wait
    !
END WHILE
ELSE
    BEEP
    PRINT
    ALPHA PEN 2
    PRINT " ** ERROR: Wrong HTBasic version **"
    ALPHA PEN 1
    PRINT " Sorry, you are using HTBasic version "&VAL$(FNHTbvers);
    PRINT " which is not compatible with this demo program."
    PRINT " This example only works with HTBasic 9.4 and above."
    PRINT
    PRINT " Program stopped."
    STOP
END IF
!
DISP "Program finished."
!
STOP
!
My_wait: ! special wait routine
Granul=20
IF Waittime<1 THEN
    WAIT Waittime
ELSE
    FOR I_=1 TO Waittime STEP Waittime/Granul
        IF User_break THEN I_=Waittime ! leave wait routine if user break occurred
        WAIT Waittime/Granul
    NEXT I_
END IF
RETURN
!
Kbd_break: !
BEEP
User_break=1
DISP "User break. ";
RETURN
!
Drv_load_err: ! error during driver loading
SELECT ERRN
CASE 167 ! Interface Status Error
    BEEP
    ALPHA PEN 2
    PRINT " ** ERROR 167 while loading USB driver"
    ALPHA PEN 1

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        PRINT "    - Is the device connected and blinking?"
        PRINT "    - Is the devicename configured correctly ('&Devname$&')?"
CASE 731
    BEEP
    ALPHA PEN 2
    PRINT "*** ERROR 731 while talking to the SICL driver"
    ALPHA PEN 1
    PRINT "    - Is the device still connected and blinking?"
END SELECT
PRINT
PRINT "Program stopped."
STOP
!
END
!
DEF FNHtbvers
!
    REAL Htbvers
    DIM Htbvers$(80)
    !
    Htbvers$=SYSTEM$("VERSION:HTB")
    !
    ! version number is located 16 characters after the occurrence of "Release"
    Htbvers=VAL(Htbvers$[(POS(Htbvers$,"Release"))+8;3])
    !
    RETURN Htbvers
!
FNEND
!
DEF FNSend_command(INTEGER Isc,Cmd$,OPTIONAL INTEGER Verbose)
!
    Verb_=0
    IF NPAR>=3 THEN
        Verb_=Verbose
    END IF
    !
    ON TIMEOUT Isc,5 GOTO Sc_timeout
    !
    ! make sure END is specified, otherwise the system may hang
    OUTPUT Isc;Cmd$ END
    IF Verb_ THEN PRINT Cmd$&"  ",
    !
    RETURN 1
    !
Sc_timeout:    !
    BEEP
    PRINT "*** Timeout ERROR in FNSend_command ***"
    RETURN 0
FNEND
!
DEF FNRead_device$(INTEGER Isc)
    DIM A$(1024)
    !
    ON TIMEOUT Isc,5 GOTO Rd_timeout
    !
    ENTER Isc;A$
    !
    RETURN A$
    !
Rd_timeout:    !
    BEEP
    PRINT "*** Timeout ERROR in FNRead_device ***"
    RETURN ""
FNEND

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