

- MSXIO - Joystick and Paddle interface

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3837 127E F1 POP AF
3838 127F 0E 10 LD C,10H ;Assume port 1
3839 1281 11 03AF LD DE,03AFH
3840 1284 30 05 JR NC,PDLPl ;Good assumption
3841 1286 0E 20 LD C,' '
3842 1288 11 4C9F LD DE,4C9FH
3843 128B PDLPl:
3844 128B 3E 0F LD A,PSG.PB
3845 128D F3 DI
3846 128E CD 110E CALL RDPSG ;Get current port B content
3847 1291 A3 AND E
3848 1292 B2 OR D
3849 1293 B1 OR C
3850 1294 D3 A1 OUT (PSG.DW),A ;Set trigger high
3851 1296 A9 XOR C
3852 1297 D3 A1 OUT (PSG.DW),A ;Set trigger low again
3853 1299 3E 0E LD A,0EH
3854 129B D3 A0 OUT (PSG.LW),A
3855 129D 0E 00 LD C,0 ;Initialize counter
3856 129F PDL2:
3857 129F DB A2 IN A,(PSG.DR)
3858 12A1 A0 AND B ;End of pulse?
3859 12A2 28 05 JR Z,PDL3 ;Yes
3860 12A4 0C INC C ;Bump counter
3861 12A5 C2 129F JP NZ,PDL2 ;No overflow yet
3862 12A8 0D DEC C ;Make it 255
3863 12A9 PDL3:
3864 12A9 FB EI
3865 12AA 79 LD A,C ;Return counted value
3866 12AB C9 RET
3867 12AC GTPAD:

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3868      ;
3869      ; Read touch pad (NEC PC-6051 compatible)
3870      ;
3871      ; Input parameter (passed via [Acc])
3872      ;
3873      ; 0 - sense touch pad status ---
3874      ; 1 - return X coordinate      |for touch pad connected
3875      ; 2 - return Y coordinate      |to joystick port 1
3876      ; 3 - return switch status ----
3877      ;
3878      ; 4 - sense touch pad status ---
3879      ; 5 - return X coordinate      |for touch pad connected
3880      ; 6 - return Y coordinate      |to joystick port 2
3881      ; 7 - return switch status ----
3882      ;
3883      ; Result is returned via [Acc]. As for status, 255 is returned
3884      ; if true, 0 if false.
3885      ;
3886      12AC    FE 04          CP      4          ;Read pad connected to port 1
3887      12AE    11 0CEC      LD      DE,0CECH    ;Assume so
3888      12B1    38 05          JR      C,GTPDP1    ;Good assumption
3889      12B3    11 03D3      LD      DE,03D3H     ;Connected to port 2
3890      12B6    D6 04          SUB     4
3891      12B8                                GTPDP1:
3892      12B8    3D            DEC     A            ;Argument=0?
3893      12B9    FA 12C5      JP      M,GTPAD0      ;If so, read pad and return status
3894      12BC    3D            DEC     A
3895      12BD    3A FC9D      LD      A,(PADX)       ;Assume PAD(1) - X coordinate
3896      12C0    F8            RET     M            ;Good assumption
3897      12C1    3A FC9C      LD      A,(PADY)       ;Return Y coordinate
3898      12C4    C8            RET     Z

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3899      12C5          GTPAD0:
3900      12C5      F5          PUSH      AF          ;Save status (minus if PAD(0) specified)
3901      12C6      EB          EX          DE,HL      ;[L]=bits that are not to be modified
3902      12C7      22 F866     LD          (RUNFLG),HL ;[H]=bits that are to be added
3903      12CA      9F          SBC          A,A
3904      12CB      2F          CPL
3905      12CC      E6 40       AND          01000000B
3906      12CE      4F          LD          C,A          ;0 if port 1 specified, 100 octal if port 2
3907      12CF      3E 0F       LD          A,PSG.PB
3908      12D1      F3          DI          ;disable interrupt till done
3909      12D2      CD 110E     CALL        RDPSG
3910      12D5      E6 BF       AND          0BFH
3911      12D7      B1          OR          C
3912      12D8      D3 A1       OUT          (PSG.DW),A    ;Select proper port
3913      12DA      F1          POP          AF
3914      12DB      FA 12E8     JP          M,TRYAGN      ;PAD(0) specified
3915      12DE      CD 110C     CALL        INGI
3916      12E1      FB          EI
3917      12E2      E6 08       AND          8
3918      12E4      D6 01       SUB          1
3919      12E6      9F          SBC          A,A
3920      12E7      C9          RET
3921      12E8          TRYAGN:          ; X and Y channels are read twice until difference between
3922          ;                      ; two consecutive readings is less than 5 for both channels
3923      12E8      0E 00       LD          C,0          ;select channel 0 (X)
3924      12EA      CD 1332     CALL        REDPAD      ;inz read dummy value, 1st reading
3925      12ED      CD 1332     CALL        REDPAD      ;sense Panel input and select X, 2nd reading (Ch 0 again)
3926      12F0      38 28       JR          C,PADX1    ;branch if no input (CY=1 if screen not touched)
3927      12F2      CD 1320     CALL        REDCOD      ;read first coordinate, 3rd and 4th reading
3928      12F5      38 23       JR          C,PADX1    ;branch if input released
3929      12F7      D5          PUSH        DE          ;save for comparison

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3930 12F8 CD 1320 CALL REDCOD ;read another input, 5th and 6th reading
3931 12FB C1 POP BC ;restore previos coord
3932 12FC 38 1C JR C,PADX1 ;branch if input released
3933 12FE 78 LD A,B
3934 12FF 92 SUB D ;[A]=ABS(X0-X1)
3935 1300 30 02 JR NC,NONEG1
3936 1302 2F CPL
3937 1303 3C INC A
3938 1304 NONEG1:
3939 1304 FE 05 CP 5 ;less than 5?
3940 1306 30 E0 JR NC,TRYAGN ;no, try again
3941 1308 79 LD A,C
3942 1309 93 SUB E ;[A]=ABS(Y0-Y1)
3943 130A 30 02 JR NC,NONEG2
3944 130C 2F CPL
3945 130D 3C INC A
3946 130E NONEG2:
3947 130E FE 05 CP 5 ;less than 5
3948 1310 30 D6 JR NC,TRYAGN ;no, try again
3949 1312 7A LD A,D
3950 1313 32 FC9D LD (PADX),A ;update coordinate [X]
3951 1316 7B LD A,E
3952 1317 32 FC9C LD (PADY),A ;update coordinate [Y]
3953 131A PADX1:
3954 131A FB EI ;finally enable interrupt
3955 131B 7C LD A,H ;get SENSE input value
3956 131C D6 01 SUB 1
3957 131E 9F SBC A,A
3958 131F C9 RET ;return value
3959 1320 REDCOD:
3960 ;

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3961                                ; Read X,Y coordinate into [D,E]
3962                                ;
3963      1320      0E 0A              LD      C,0AH              ;change to channel to [Y] when done
3964      1322      CD 1332            CALL    REDPAD            ;read [X]
3965      1325      D8                  RET      C                ;return if input released
3966      1326      55                  LD      D,L
3967      1327      D5                  PUSH    DE
3968      1328      0E 00              LD      C,0                ;change to [X] after read
3969      132A      CD 1332            CALL    REDPAD            ;read [Y]
3970      132D      D1                  POP      DE
3971      132E      5D                  LD      E,L              ;store Y read out
3972      132F      AF                  XOR      A                ;clear carry
3973      1330      67                  LD      H,A              ;force input is OK
3974      1331      C9                  RET
3975      1332                                REDPAD:
3976                                ;
3977                                ; Read touch panel input into [L]
3978                                ; Carry set if input released during read
3979                                ;
3980      1332      CD 135B            CALL    CHKEOC            ;make sure AD completed
3981      1335      06 08              LD      B,8                ;input 8 bits
3982      1337      51                  LD      D,C                ;input channel# after done
3983      1338                                REDLOP:
3984      1338      CB 82              RES      0,D                ;serial clock(SCK)=1 when entering REDLOOP
3985      133A      CB 92              RES      2,D
3986      133C      CD 136D            CALL    OUTGI          ; bring SCK A,B to 0
3987      133F      CD 110C            CALL    INGI          ;read PAD 23us from fall of SCK until PSG reading
3988      1342      67                  LD      H,A                ;save SENSE status (bit 0=SENSE)
3989      1343      1F                  RRA
3990      1344      1F                  RRA
3991      1345      1F                  RRA

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3992      1346      CB 15              RL      L              ;bit 2 to LSB of [L]
3993      1348      CB C2              SET     0,D           ;SCK=0 up to here
3994      134A      CB D2              SET     2,D
3995      134C      CD 136D            CALL    OUTGI        ; bring SCK A,B to 1
3996      134F      10 E7              DJNZ    REDLOP
3997      1351      CB E2              SET     4,D
3998      1353      CB EA              SET     5,D
3999      1355      CD 136D            CALL    OUTGI        ;initiate another AD
4000      1358      7C                  LD      A,H          ;LSB=SENSE status (bit 0)
4001      1359      1F                  RRA           ;SENSE status to carry
4002      135A      C9                  RET           ;OK if no carry
4003      135B
4004
4005      ;
4006      ; Check and wait for EOC
4007      ;
4007      135B      3E 35              LD      A,00110101B ;Pulse A,B=1, SCK A,B=1
4008      135D      B1                  OR      C           ;Set SI A,B. C=0AH for CH3, C=00H for CH0
4009      135E      57                  LD      D,A
4010      135F      CD 136D            CALL    OUTGI        ;reset CS
4011      1362
4012      1362      CD 110C            CALL    INGI
4013      1365      E6 02              AND     2
4014      1367      28 F9              JR      Z,EOCCHK    ;test EOC (repeat while EOC=0)
4015      1369      CB A2              RES     4,D         ;note: uPD7001 /EOC signal shall be inverted
4016      136B      CB AA              RES     5,D         ;set CS and return
4017      136D
4018      OUTGI:
4019      ;
4020      ; Output [D] to PAD
4021      ;
4021      136D      E5                  PUSH    HL
4022      136E      D5                  PUSH    DE

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4023	136F	2A F866	LD	HL,(RUNFLG)	;Also known as [PADWRK]
4024	1372	7D	LD	A,L	
4025	1373	2F	CPL		
4026	1374	A2	AND	D	
4027	1375	57	LD	D,A	
4028	1376	3E 0F	LD	A,PSG.PB	
4029	1378	D3 A0	OUT	(PSG.LW),A	
4030	137A	DB A2	IN	A,(PSG.DR)	
4031	137C	A5	AND	L	
4032	137D	B2	OR	D	
4033	137E	B4	OR	H	
4034	137F	D3 A1	OUT	(PSG.DW),A	
4035	1381	D1	POP	DE	
4036	1382	E1	POP	HL	
4037	1383	C9	RET		
4038					
4039					

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SUBTTL - MSXIO - Misc. routines for MSXIO