DIN & DOUT pin-numbers

The following table shows the relation between pin- and serial-register-numbers on the software side, and physical pins and their labeling on the hardware side. Shiftregisters are always counted from 1 (also on the software-side), and pins are always counted from 0.
Please note that the order of DOUT pins is reversed compared to DIN pins. For a deeper explanation of this issue, refer the information after the table.

Pin table

Shift Register	SR number	Pin Number (sw)	Pin Hex number (sw)	Pin Name (DIN PCB / SR IC)	Pin Name (DOUT PCB / SR IC)
first	1	0	0x00	D0 / QA	D7 / H
first	1	1	0x00	D1 / QB	D6 / G
first	1	2	0x00	D2 / QC	D5 / F
first	1	3	0x00	D3 / QD	D4 / E
first	1	4	0x00	D4 / QE	D3 / D
first	1	5	0x00	D5 / QF	D2 / C
first	1	6	0x00	D6 / QG	D1 / B
first	1	7	0x00	D7 / QH	D0 / A
second	2	8	0x0 8	D0 / QA	D7 / H
second	2	9	0x0 9	D1 / QB	D6 / G
second	2	10	0x0a	D2 / QC	D5 / F
second	2	11	0x0b	D3 / QD	D4 / E
second	2	12	0x0c	D4 / QE	D3 / D
second	2	13	0x0d	D5 / QF	D2 / C
second	2	14	0x0e	D6 / QG	D1 / B
second	2	15	0x0f	D7 / QH	D0 / A
third	3	16	0x10	D0 / QA	D7 / H
third	3	17	0x11	D1 / QB	D6 / G
third	3	18	0x12	D2 / QC	D5 / F
third	3	19	0x13	D3 / QD	D4 / E
third	3	20	0x14	D4 / QE	D3 / D
third	3	21	0x15	D5 / QF	D2 / C
third	3	22	0x16	D6 / QG	D1 / B
third	3	23	0x17	D7 / QH	D0 / A
fourth	4	24	0x18	D0 / QA	D7 / H
fourth	4	25	0x19	D1 / QB	D6 / G
fourth	4	26	0x1a	D2 / QC	D5 / F
fourth	4	27	0x1b	D3 / QD	D4 / E
fourth	4	28	0x1c	D4 / QE	D3 / D
fourth	4	29	0x1d	D5 / QF	D2 / C
fourth	4	30	0x1e	D6 / QG	D1 / B
fourth	4	31	0x1f	D7 / QH	D0 / A
fifth	5	32	0x20	D0 / QA	D7 / H

Shift Register	SR number	Pin Number (sw)	Pin Hex number (sw)	Pin Name (DIN PCB / SR IC)	Pin Name (DOUT PCB / SR IC)
fifth	5	33	0x21	D1 / QB	D6 / G
fifth	5	34	0x22	D2 / QC	D5 / F
fifth	5	35	0x23	D3 / QD	D4 / E
fifth	5	36	0x24	D4 / QE	D3 / D
fifth	5	37	0x25	D5 / QF	D2 / C
fifth	5	38	0x26	D6 / QG	D1 / B
fifth	5	39	0x27	D7 / QH	D0 / A
sixth	6	40	0x2 8	D0 / QA	D7 / H
sixth	6	41	0x2 9	D1 / QB	D6 / G
sixth	6	42	0x2a	D2 / QC	D5 / F
sixth	6	43	0x2b	D3 / QD	D4 / E
sixth	6	44	0x2c	D4 / QE	D3 / D
sixth	6	45	0x2d	D5 / QF	D2 / C
sixth	6	46	0x2e	D6 / QG	D1 / B
sixth	6	47	0x2f	D7 / QH	D0 / A
seventh	7	48	0x30	D0 / QA	D7 / H
seventh	7	49	0x31	D1 / QB	D6 / G
seventh	7	50	0x32	D2 / QC	D5 / F
seventh	7	51	0x33	D3 / QD	D4 / E
seventh	7	52	0x34	D4 / QE	D3 / D
seventh	7	53	0x35	D5 / QF	D2 / C
seventh	7	54	0x36	D6 / QG	D1 / B
seventh	7	55	0x37	D7 / QH	D0 / A
eighth	8	56	0x3 8	D0 / QA	D7 / H
eighth	8	57	0x3 9	D1 / QB	D6 / G
eighth	8	58	0x3a	D2 / QC	D5 / F
eighth	8	59	0x3b	D3 / QD	D4 / E
eighth	8	60	0x3c	D4 / QE	D3 / D
eighth	8	61	0x3d	D5 / QF	D2 / C
eighth	8	62	0x3e	D6 / QG	D1 / B
eighth	8	63	0x3f	D7 / QH	D0 / A
ninth	9	64	0x40	D0 / QA	D7 / H
ninth	9	65	0x41	D1 / QB	D6 / G
ninth	9	66	0x42	D2 / QC	D5 / F
ninth	9	67	0x43	D3 / QD	D4 / E
ninth	9	68	0x44	D4 / QE	D3 / D
ninth	9	69	0x45	D5 / QF	D2 / C
ninth	9	70	0x46	D6 / QG	D1 / B
ninth	9	71	0x47	D7 / QH	D0 / A
tenth	10	72	0x4 8	D0 / QA	D7 / H
tenth	10	73	0x4 9	D1 / QB	D6 / G
tenth	10	74	0x4a	D2 / QC	D5 / F

Shift Register	SR number	Pin Number (sw)	Pin Hex number (sw)	Pin Name (DIN PCB / SR IC)	Pin Name (DOUT PCB / SR IC)
tenth	10	75	0x4b	D3 / QD	D4 / E
tenth	10	76	0x4c	D4 / QE	D3 / D
tenth	10	77	0x4d	D5 / QF	D2 / C
tenth	10	78	0x4e	D6 / QG	D1 / B
tenth	10	79	0x4f	D7 / QH	D0 / A
eleventh	11	80	0x50	D0 / QA	D7 / H
eleventh	11	81	0x51	D1 / QB	D6 / G
eleventh	11	82	0x52	D2 / QC	D5 / F
eleventh	11	83	0x53	D3 / QD	D4 / E
eleventh	11	84	0x54	D4 / QE	D3 / D
eleventh	11	85	0x55	D5 / QF	D2 / C
eleventh	11	86	0x56	D6 / QG	D1 / B
eleventh	11	87	0x57	D7 / QH	D0 / A
twelfth	12	88	0x5 8	D0 / QA	D7 / H
twelfth	12	89	0x5 9	D1 / QB	D6 / G
twelfth	12	90	0x5a	D2 / QC	D5 / F
twelfth	12	91	0x5b	D3 / QD	D4 / E
twelfth	12	92	0x5c	D4 / QE	D3 / D
twelfth	12	93	0x5d	D5 / QF	D2 / C
twelfth	12	94	0x5e	D6 / QG	D1 / B
twelfth	12	95	0x5f	D7 / QH	D0 / A
thirteenth	13	96	0x60	D0 / QA	D7 / H
thirteenth	13	97	0x61	D1 / QB	D6 / G
thirteenth	13	98	0x62	D2 / QC	D5 / F
thirteenth	13	99	0x63	D3 / QD	D4 / E
thirteenth	13	100	0x64	D4 / QE	D3 / D
thirteenth	13	101	0x65	D5 / QF	D2 / C
thirteenth	13	102	0x66	D6 / QG	D1 / B
thirteenth	13	103	0x67	D7 / QH	D0 / A
fourteenth	14	104	0x6 8	D0 / QA	D7 / H
fourteenth	14	105	0x6 9	D1 / QB	D6 / G
fourteenth	14	106	0x6a	D2 / QC	D5 / F
fourteenth	14	107	0x6b	D3 / QD	D4 / E
fourteenth	14	108	0x6c	D4 / QE	D3 / D
fourteenth	14	109	0x6d	D5 / QF	D2 / C
fourteenth	14	110	0x6e	D6 / QG	D1 / B
fourteenth	14	111	0x6f	D7 / QH	D0 / A
fifteenth	15	112	0x70	D0 / QA	D7 / H
fifteenth	15	113	0x71	D1 / QB	D6 / G
fifteenth	15	114	0x72	D2 / QC	D5 / F
fifteenth	15	115	0x73	D3 / QD	D4 / E
fifteenth	15	116	0x74	D4 / QE	D3 / D
fifteenth	15	117	0x75	D5 / QF	D2 / C

Shift Register	SR number	Pin Number (sw)	Pin Hex number (sw)	Pin Name (DIN PCB / SR IC)	Pin Name (DOUT PCB / SR IC)
fifteenth	15	118	0x76	D6 / QG	D1 / B
fifteenth	15	119	0x77	D7 / QH	D0 / A
sixteenth	16	120	0x7 8	D0 / QA	D7 / H
sixteenth	16	121	0x7 9	D1 / QB	D6 / G
sixteenth	16	122	0x7a	D2 / QC	D5 / F
sixteenth	16	123	0x7b	D3 / QD	D4 / E
sixteenth	16	124	0x7c	D4 / QE	D3 / D
sixteenth	16	125	0x7d	D5 / QF	D2 / C
sixteenth	16	126	0x7e	D6 / QG	D1 / B
sixteenth	16	127	0x7f	D7 / QH	D0 / A

Numbers, labels and order of pins

```
For DOUT shift registers, software pin-numbers will be reflected in reverse
direction on hardware level:
pin-number 0 (software level) is D7 of the first shift register (hardware
level), not D0!
pin-number 15 (software level) is D0 of the second shift register(hardware
level), not D7!
```

```
The first shift register is for both DIN and DOUT the one that is closest to
the core on hardware level.
```

```
In the datasheets of the shift-register IC's, D0 is often labled A / QA, D7
is labled H / QH.
In TK's layouts the labels for IC-pins are I0 - I7, O0 - 07, which
corresponds to A/QA - H/QH.
```

```
DIN chain hardware-level: CORE <- R1::qH <- R1::H <- R1 <- R1::G .....
R2::qH <- R2::H etc.

The first bit read is DIN1::I7, this goes to the MSB on software level. MSB
represents the higher pin value,
so you have the same order in hard-  as in software.
```

```
DOUT chain hardware-level: CORE -> R1::SER -> R1::A -> R1::B -> R1::C .....
R2::SER -> R2::A etc.

first bit pushed out is LSB of the last SR(software level), this goes to
Rlast::H. Last bit pushed out is MSB of first SR (software level),
this goes to R1:A. On software level, MSB represents the higher pin value,
so A will represent alway the higher pin value on hw-level for DOUT chains.
```

```
MIOS_DOUT_SRSet / MIOS_DOUT_SRGet / MIOS_DIN_SRSet / MIOS_DIN_SRGet: LSB
always reflects the lowest pin number, MSB the highest pin number.
```

If you want to read more about this, refer this forum discussion:
http://www.midibox.org/forum/index.php/topic,12379.0.html

Pin mappings in software (assembler)

Sometimes the pin numbers of special DINs or DOUTs can be specified in the main.asm or setup_*.asm file of a MIOS application.

Fix Me! this should go in the application's user manual.

Examples

```
#define DEFAULT_MIDI_RX_LED 0x40        ; DOUT SR#9, pin D0
#define DEFAULT_MIDI_TX_LED 0x41        ; DOUT SR#9, pin D1</file>
```

```
#define DEFAULT_DIN_MENU_EXEC         7       ; menu exec button assigned to
DIN pin #7
#define DEFAULT_DIN_MENU_SNAPSHOT     6       ; menu snapshot button
assigned to DIN pin #4
#define DEFAULT_DIN_MENU_RIGHT        5       ; NOT USED - overlayed by
datawheel
#define DEFAULT_DIN_MENU_LEFT         4       ; NOT USED - overlayed by
datawheel</file>
```

```
     ;;         SR  Pin  Mode
      ENC_ENTRY  5,  0,  MIOS_ENC_MODE_NON_DETENTED   ; V-Pot 1
      ENC_ENTRY  5,  2,  MIOS_ENC_MODE_NON_DETENTED   ; V-Pot 2
      ENC_ENTRY  5,  4,  MIOS_ENC_MODE_NON_DETENTED   ; V-Pot 3
      ENC_ENTRY  5,  6,  MIOS_ENC_MODE_NON_DETENTED   ; V-Pot 4</file>
```

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Last update: **2008/11/25 13:11**