

MD-1 to Keyboard (Manual) Cables

This page describes the cables which connect the two keyboards (manuals) to MD-1 cards A and C; they are labelled C1 in the block diagram.

The two keyboards are the original 61-key Schober keyboards, but with different wiring and connections.

In the **original** Schober circuit, each of the 61 keys of the Solo keyboard (the top of the two keyboards) is a 5PST switch - i.e., five SPST switches which operate as one. In other words, the entire keyboard looked like 61 5PST switches, to provide 61 musical notes at 5 different pitches. (The Accompaniment keyboard only provided three pitches, and so was wired as 61 3PST switches, but is otherwise identical. I will describe only the Solo wiring here.) The organ used a number of tone generators and frequency dividers to send essentially 305 audio signals, each fed through a resistor on the keyboard's pc board for isolation and level adjustment, to the keyboard 305 switches (61 times 5), which were wired to output to five bus wires which ran the entire length of the keyboard. These five bus signals were then filtered and shaped to become the audio output.

In **my** organ, only a single SPST contact is required for each key, and each SPST switch carries a DC signal backward from the original. Only one bus wire is now needed (the others are still there, but not connected), and that bus wire (which is now grounded) becomes an input rather than an output. Instead, the other side of each of the 61 SPST switches (the side that used to be an input) is now the output to the MD-1 card.

On the MD-1 card, a pullup resistor keeps each input high. Grounding the input via the keyboard SPST switch then plays the note.

Two 34-conductor ribbon cables connect each keyboard to its MD-1 card - one cable for the bass end, one for the treble end of the keyboard. In each case, wires 1 through 32 are keying signals (wire 32 is the lowest note), wire 33 is the ground wire, and wire 34 is +5 volts (present at the card, but not used). There is a total of 64 keying inputs, but only 61 are used, so wires 1, 2, and 3 of the treble cable are not connected at the keyboard. At the MD-1 end, the cables connect with 34-pin IDC (insulation displacement) connectors.

The two 34-conductor ribbon cables are labeled T (for Treble) which goes to P4 on the MD-1 card, and B (for Bass) which goes to P5. Wire 1 has a red stripe on it. NC means No Connection -- there are several wires on each cable that are not connected. The text below shows the actual wiring.

| | | Bass end | | | middle | | | | treble end | | | | |
|------------|-------|-----------------|----|------------|--------|---|--|----|------------|------------|--|---|---|
| | NC 34 | K E Y B O A R D | | | | | | | | | | | |
| Common bus | 33- | C | C# | ... | F# | G | | G# | A | ... | | B | C |
| | | | | | | | | | | | | | |
| | | | | (3 thru 30 | | | | | | | | | |
| | | | | not shown) | | | | | | | | | |
| | 32 | --+ | | | | | | | | | | | |
| CABLE B | 31 | ----+ | | | | | | | | | | | |
| to P5 | : | | | | | | | | | (6 thru 30 | | | |
| | 2 | -----+ | | | | | | | | not shown) | | | |
| (stripe) | 1 | -----+ | | | | | | | | | | | |
| | | | | | | | | | | | | | |



Here is another view of the 68 wires:

| NOTE | Wire no. | |
|-------|----------|-----------------------------------|
| | 1-3 | no connection |
| C | 4 | Top C on keyboard (treble end) |
| B | 5 | |
| : | : | and so on... |
| A | 31 | All of these are on CABLE T to P4 |
| G# | 32 | ^ |
| | 33 | not connected |
| | 34 | not connected * |
| ----- | | |
| G | 1 | |
| F# | 2 | v |
| F | 3 | All of these are on CABLE B to P5 |
| : | : | |
| C | 8 | Middle C |
| : | : | |
| C# | 31 | |
| C | 32 | Bottom C on keyboard (bass end) |
| | 33 | Ground wire to common bus |
| | 34 | not connected * |

CAUTION: Pin 34 of both cables is connected to +5 volts. DO NOT accidentally short it to ground or any other lead. It is there strictly as a convenience for those users who implement positive keying instead of ground keying.