

Decoder_matrix circuit board assembly instructions

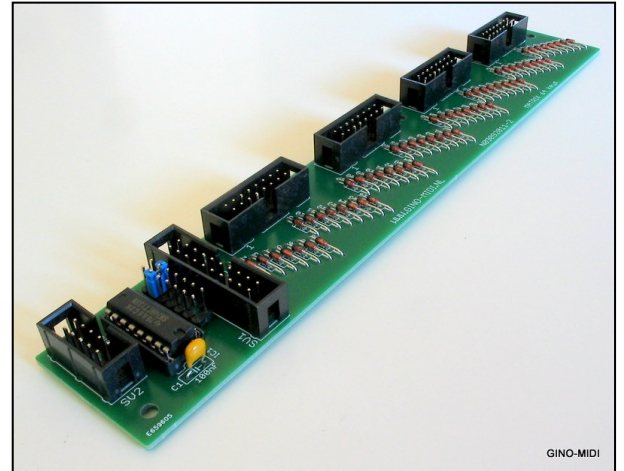
WWW.GINO-MIDI.NL

Disclaimer

Before you start building any of the projects on this website, keep in mind that I can't be held responsible for any damage that is caused by building and using the designs related to the GINO-MIDI Interface. All effort has been done to make the schematics and instructions as correct as possible and the whole project is successfully tested and used by not only me, but also by others then me.

Partlist decoder_matrix PCB

IC1	Integrated Circuit 74HCT138 (8-1 decoder IC)
C1	100 nF (ceramic or disc capacitor)
D1...D64	1n4148 signal diode
SV1	20 Pin IDC Male Header
SV2	10 Pin IDC Male Header
SV3..SV6	16 Pin IDC Male Header
1	IC socket 16 pin for 74HCT138
4	16 Pin IDC Female Header
1	10 Pin IDC Female Header
1	Dual Header 2 x 7 pin
1	Jumper
4	Parker 3 x 20 mm
4	Spacer/Afstandsbusje
1	PCB 09092011-2



Explanation of the operation of the decoder_matrix PCB.

On this print you can find a decoder circuit and a diode array. The decoder circuit connects the MIDI main board (which may be the main board of the Small Midi 2 or the main board of the BIGMIDI) and the diode array. This diode array can be used for a keyboard or a register panel. The microcontroller of the main board gives each time a signal to each decoder circuit in the whole system, with the message, "Now it's your turn to pass the keystrokes". The identification for the microcontroller of each decoder circuit is accomplished by making a shortcut connection at JP1. With this jumper we give an "address" to each decoder circuit. The decoder circuit, in turn, gives a clock signal to each group of 8 switches. At the moment a clock signal is given by the microcontroller the position of the switches is read by the microcontroller. Each matrix of 64 switches (and diodes) is done 8 times: 8 clock signals and 8 switches every clock signal >> gives 64 positions.

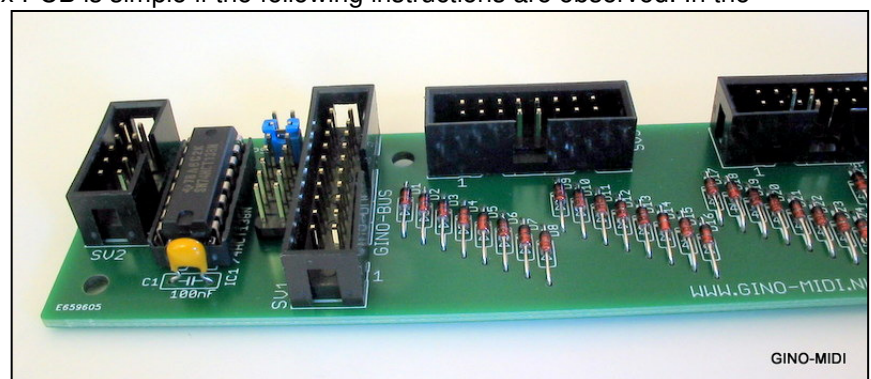
A total of 4 (Small Midi) or 7 (BIGMIDI) decoder circuits clock signals come from the MIDI main board and can therefore 4, or 7 decoder circuits be connected and addressed. For the 8th decoder circuit (in case of the BIGMIDI) a clock signal (TP9) is available but this signal does not come with the GINO-bus. In the extreme case a 8th decoder circuit is needed you have to make a separate connection wiring from the main board of the BIGMIDI to TP1 of the decoder circuit. A shortcut on the jumper of the decoder circuit is not necessary.

Assembly.

The assembly of a decoder_matrix PCB is simple if the following instructions are observed. In the assembly diagram everything is marked very clearly. First, assemble all the diodes. Note the direction of the diodes. The cathode side is clearly marked on the diagram. Notice that the IC and IDC connectors have a marked pin number 1. At the IDC connector pin number 1 is indicated by a small triangle.

A small jumper should be made to address the board in the correct range of the

microcontroller. This jumper can be found at JP1. See also the explanation of the operation of the decoder_matrix: already spoken earlier. See below a table showing the jumper.



Decoder_matrix circuit board assembly instructions

WWW.GINO-MIDI.NL

Wiring keycontacts/stop switches

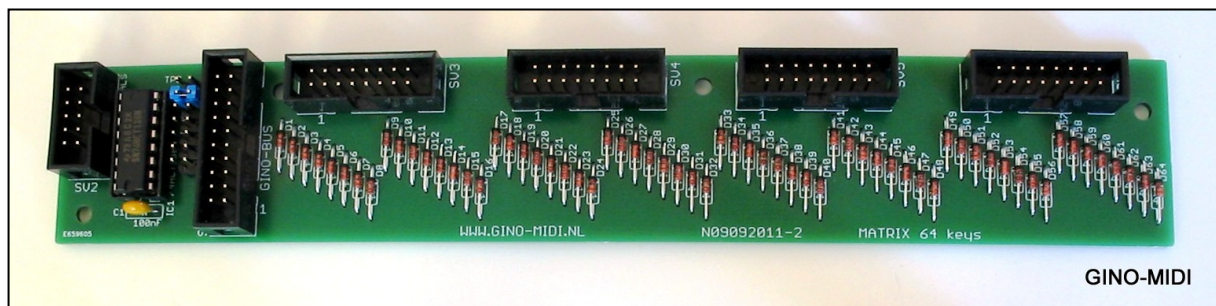
Below you can find an overview of the whole matrix showing the connectors and key names (for keyboards) and / or numbers (for stop switches). Through 16 pole ribbon cable, the contacts are connected.

Connectors switches	Matrix part	Keynames		Numbers
Connector SV3 1 t/m 8	1 ^e matrixpart	C groot	- G groot	1 to 8
Connector SV3 9 t/m 16	2 ^e matrixpart	Gis groot	- dis klein	9 to 16
Connector SV4 1 t/m 8	3 ^e matrixpart	e klein	- b klein	17 to 24
Connector SV4 9 t/m 16	4 ^e matrixpart	c 1	- g 1	25 to 32
Connector SV5 1 t/m 8	5 ^e matrixpart	gis 1	- dis 2	33 to 40
Connector SV5 9 t/m 16	6 ^e matrixpart	e 2	- b 2	41 to 48
Connector SV6 1 t/m 8	7 ^e matrixpart	c 3	- g 3	49 to 56
Connector SV6 9 t/m 16	8 ^e matrixpart	gis 3	- c 4	57 to 64

Wiring clocksignals

Below is an overview of the grouping of the clock signals for the matrix. By means of a 10-pin ribbon cable, these clock signals are to be connected to the bus bars of the matrix parts.

Connector clocksignals	Matrix part
Connector SV2 pen 1	1 ^e matrixpart
Connector SV2 pen 2	2 ^e matrixpart
Connector SV2 pen 3	3 ^e matrixpart
Connector SV2 pen 4	4 ^e matrixpart
Connector SV2 pen 5	5 ^e matrixpart
Connector SV2 pen 6	6 ^e matrixpart
Connector SV2 pen 7	7 ^e matrixpart
Connector SV2 pen 8	8 ^e matrixpart
Connector SV2 pen 9	Not connected
Connector SV2 pen 10	Not connected



Addressing the decoder_matrix circuit.

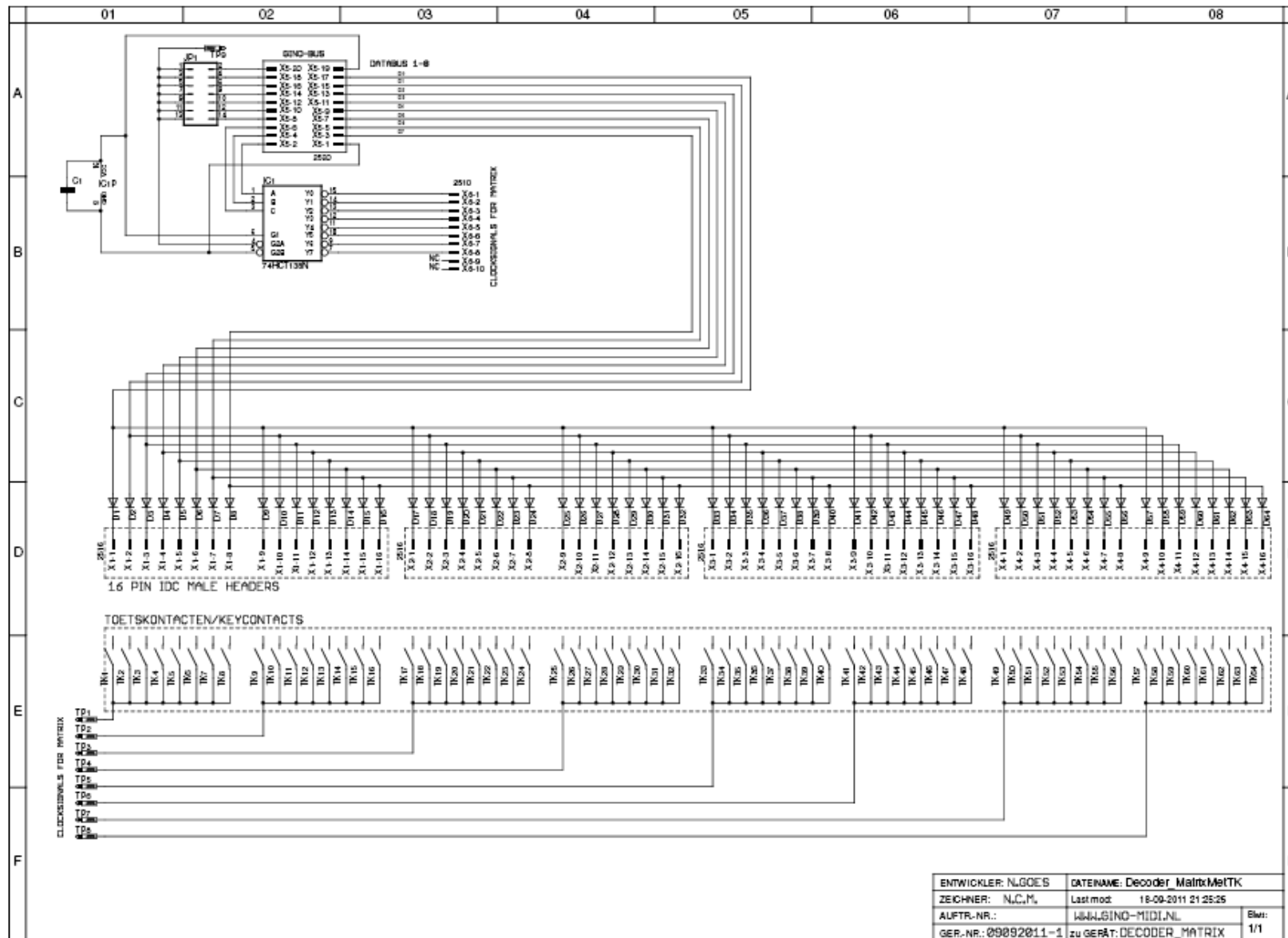
As previously noted, the address of a decoder circuit is determined by the jumper at JP1. On the PCB by these compounds indicated with 1, 2, 3, 4, 5, 6 and 7. In the diagram you can see also these numbered points.

Shortcuts at JP1

- Shortcut 1 at point 1 and 2 is the address for port 1
- Shortcut 2 at point 3 and 4 is the address for port 2
- Shortcut 3 at point 5 and 6 is the address for port 3
- Shortcut 4 at point 7 and 8 is the address for port 4
- Shortcut 5 at point 9 and 10 is the address for port 5
- Shortcut 6 at point 11 and 12 is the address for port 6
- Shortcut 7 at point 13 and 14 is the address for port 7

Notice: You may only make one shortcut at each decoder_matrix PCB.

Electronic scheme



ENTWICKLER: N.GOES	DATENNAME: Decoder_MatrixMeTK	
ZEICHNER: N.C.M.	Last mod: 18-09-2011 21:25:26	
AUFTR.-NR.:	WWW.GINO-MIDI.NL	Blatt:
GER.-NR.: 09092011-1	zu GERÄT: DECODER_MATRIX	1/1

Montageschema

