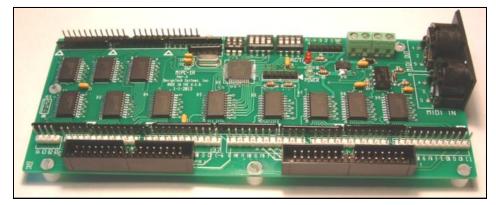# MIPC-1A 64 INPUT TO MIDI ENCODER
For Hauptwerk

Features

- 64 inputs, no matrix wiring.
- DIP switch selectable, Keyboard inputs with starting midi note 35, Stop Input with midi note starting at 0.
- In Stop Input Mode, switch selectable midi note range 0 to 63 or 64 to 128.
- In Keyboard or Stop input mode, an additional 24 Piston Inputs are available.
- DIP Switch selection of Midi Channels 1 to 16.
- 4 Analog Inputs for Swell Shoes and Crescendo.
- Crystal Controlled Microprocessor.
- Midi IN and Midi OUT Jacks. Optical coupled MIDI INPUT.
- Operating voltage, 8 to 15 Volts DC at less then 10ma current..
- Input connections either by two 34 pin ribbon cables or 5 twelve Molex KK-100 series connectors, plus 1 4 pin connector for inputs 61 to 64. Contact commons are wired to GROUND.

Installation

Switch Settings, refer to Fig. 1

- **DIP SW3 Keyboard/Stop Mode**, locate the THREE position DIP switch marked SW3-1, SW3-2 and SW3-3. If the card is being used for Manual (keyboard) or Pedal inputs, set SW3-1 to OFF. In the Manual mode, the starting midi note for input 1 (C1) is NOTE 36. The same applies to Pedal Board wiring.
- For the STOP Mode, set SW3-1 to ON, the first midi note for input 1(C1) is Note 0 and follows through to midi note 63 for In-put terminal 64. Setting SW3-2 to the ON position will change Input 1 (C1) to midi note 64 and follow through to midi note 127 on Input Terminal 64. This option will allow up to 128 Stops on one Midi Channel.
- SW3-3 will ENABLE the 24 AUX inputs when SW3-3 is set to ON or DISABLE with SW3-3 set to OFF. In the Disable (OFF) mode, the input are off in both the Keyboard and Stop mode.
- **DIP SW2 MIDI CHANNEL SELECTION**,   Locate the Midi Channel Selection, four position DIP switch and refer to Fig. 2, the MIDI Channel Switch Setting. The **X** indicates the that switch is set to ON position. Channels 1 through 16 can be selected for each card. The recommended channels assignments are the following. Pedals-Channel 1, Keyboard 1-Channel 2, Keyboard 2-Channel 3, Keyboard 3- Channel 4. Stops and Pistons-Channels 15 and 16. These are only recommendations and seem to be the normal channel assignments that have been followed in midi files that were created in Hauptwerk.
- **DIP SW1 SWELL SHOE**, The 4 position Swell Shoe DIP switch is <u>Factory set to ON</u> and should be left ON if not used. Tun-ing any of the four switch's to OFF with no swell shoe pot connected will result is a stream of midi data. Swell shoe connections will be covered later.

Wiring, See Page 4 for additional information for the MIPC-1A-HV version.

- **64 Inputs,** connections to the 64 inputs can be made one of two ways depending on connector configuration when the card was ordered. For the two ribbon connectors, standard flat 34 conductor ribbon cable would be used with connectors crimped on one or both ends. The 12 pin Molex KK-100 connectors and crimp terminals can accept wire sizes from 22 to 26 gage.
- **Contact Common** All contact common terminals for the manuals, pedals and stops should be connect to Ground or 0 volts. The inputs on the card are at Plus 5 volts and need to be pulled to Ground to operate.
- **Additional 24 Inputs.** These input terminals are separate form the 64 inputs and can be used for stops or pistons. When DIP SWITCH SW3-1 is set of OFF, the <u>KEYBOARD Mode</u>, midi notes 104 to 127 will be generated and on the same midi channel that MIDI CHANNEL Switch SW2 is set to.

  Setting DIP SW3-1 to the ON or STOP position will cause the 24 output to generated midi notes 0-23 and 64 to 87, depending

on the setting of DIP Switch SW3-2, midi note range. NOTE: the 24 inputs will be on the next MIDI Channel UP from what the MIDI Channel that the card is set to. If the card is set to MIDI Channel 10, the 24 notes will be on MIDI Channel 11.
SEE FIG. 4, for Switch Setting.

- **Swell Shoe Connections.** Located between the Swell Shoe DIP switch and the Power Connector is a Six terminal connector strip labeled **- 1, 2, 3, 4 and +.** Refer to Fig 3 for the wiring configuration. Each shoe will require a 5000 ohm Liner Taper potentiometer, the High Side terminal is wired to the PLUS terminal, the low side of the pot to the GROUND terminal of the six pin connector P-1. The wiper of each pot will connect to terminals labeled 1, 2, 3 and 4, depending on how many swell shoes are installed. The mating connector is a SIX Terminal Molex KK-100 series.
- **Swell Shoe DIP Switch** For each terminal that has a pot connected, the corresponding DIP switch will be put in the OFF position. For example, if a pot is connected to Terminal 1, switch 1 will be set to OFF and switch's 2, 3 and 4 will be set to ON. When testing the swell shoe operation, midi note 0 should be seen for closed and note 128 for full open. If the note range is reversed, reverse the wires on Pin 1 and 6 on the connector.
- **Power Connections.** The MIPC-1A card has power connection block with four terminals, two for the PLUS power line and two for the GROUND power line. The two terminals configuration is designed to provide a terminal for the incoming power wire and a second terminal for the out going wire to the next card in the series. Recommended wire size can be either 20 or 22 gage solid and preferably Red for Plus and Black for Ground. Power requirements are a regulated 8 to 15 Volt DC power supply. Each MIPC-1A or MIPC-1A-HV card requires 10ma to operate.
- **Midi IN and Midi OUT Jacks** These jacks are the standard five pin DIN jacks. After mounting the cards, connect a midi cable from the Midi OUT of the first card in the series would be connected to the MIDI IN on the second card. On the second card Midi OUT to the Midi IN on the next card and so on. Midi cables are available in standard lengths of 1, 3 and 5 feet and are available from most music stores or on line.
- **MIDI Interface Devices.** A Midi to USB interface will be required to connect the MIPC-1A cards to the Hauptwerk computer. It is recommended that a good, high quality interface be used to ensure long, trouble free operation. Two MIDI to USB interfaces that we have found that meet these requirements are the Cakewalk UM-1G and the M-Audio MIDISPORT 2X2.
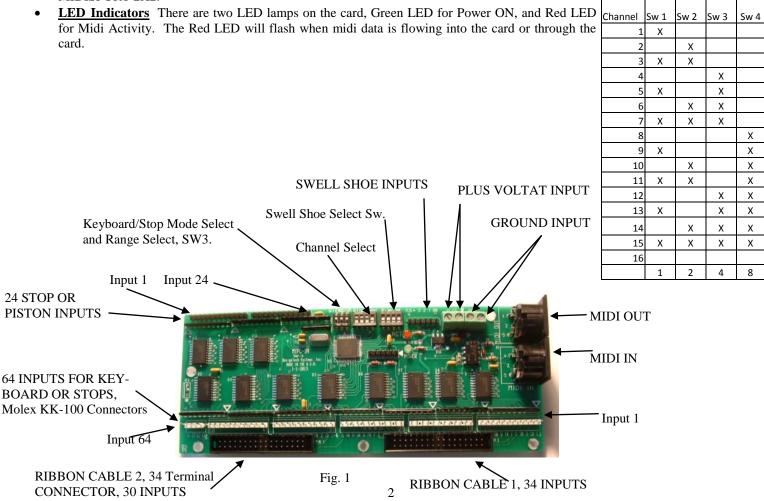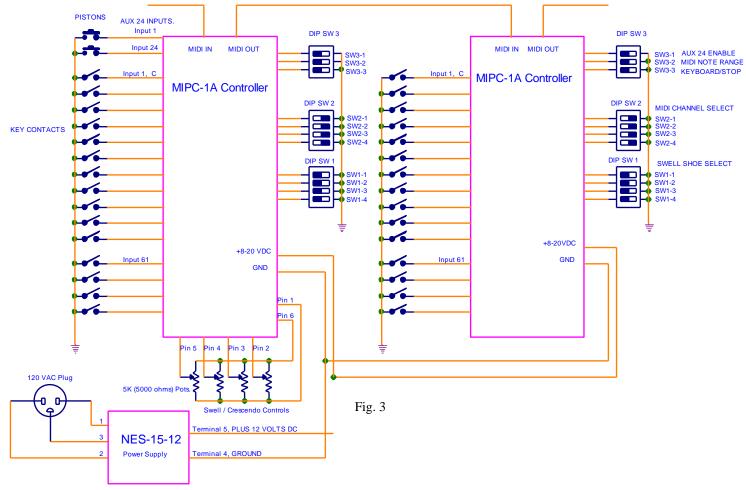- **LED Indicators** There are two LED lamps on the card, Green LED for Power ON, and Red LED for Midi Activity. The Red LED will flash when midi data is flowing into the card or through the card.

Fig. 2

Channel	Sw 1	Sw 2	Sw 3	Sw 4
1	X			
2		X		
3	X	X		
4			X	
5	X		X	
6		X	X	
7	X	X	X	
8				X
9	X			X
10		X		X
11	X	X		X
12			X	X
13	X		X	X
14		X	X	X
15	X	X	X	X
16				
	1	2	4	8

SWELL SHOE INPUTS

PLUS VOLTAT INPUT

Swell Shoe Select Sw.

GROUND INPUT

Keyboard/Stop Mode Select
and Range Select, SW3.

Channel Select

Input 1   Input 24

24 STOP OR
PISTON INPUTS

MIDI OUT

MIDI IN

64 INPUTS FOR KEY-
BOARD OR STOPS,
Molex KK-100 Connectors

Input 1

Input 64

RIBBON CABLE 2, 34 Terminal
CONNECTOR, 30 INPUTS

Fig. 1

RIBBON CABLE 1, 34 INPUTS

Fig. 4

DIP SWITCH SW3	MIDI Note Range	24 Input Midi Note	MIDI OUTPUT CHANNEL FOR THE 24 INPUTS
SW3-1 OFF, SW3-2 OFF	36 TO 99	104 TO 127	SAME AS THE CARD CHANNEL
SW3-1 ON, SW3-2 OFF	0 TO 63	0 TO 23	UP ONE CHANNEL FROM THE CARD CHANNEL
SW3-1 ON, SW3-2 ON	64 TO 128	64 TO 87	UP ONE CHANNEL FROM THE CARD CHANNEL

DIP SW-1, Swell Shoe Enable
DIP SW-2, MIDI CHANNEL SELECT
DIP SW-3, SW-1= Manual/Stop Select. Off=Manaul, ON= Stop Select
DIP SW3, SW-2= MIDI NOTE RANGE SELECT IN STOP MODE. OFF= 0-63, ON=64-128
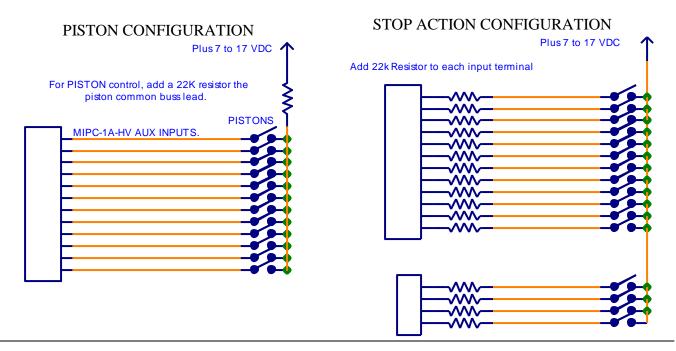DIP SW3, SW3-3 AUX 24 INPUTS ENABLE/DISABLE. OFF=DIABLE , ON=ENABLE

Fig. 3

3   MIPC-1A-HV switch commons are connected to PLUS 7 to 17 Volts D.C.
MIPC-1A Switch Commons to GROUND.

MIPC-1A-HV AUX 16 PIN INFORMAITON

Note, the AUX input piston pins have been reduced from 24 to 16 on the MIPC-1A-HV card due to limited circuit board space. As a result if any or all of the sixteen pins are used for STOP TAB or DRAW KNOBS CONTACTS, it is necessary to add a 22K (22,000 ohm) resister to the each input terminal. The resister can be added either at the card pin or stop action switch. Failure to add a 22k resistor to each used input pin can result in damage to the MIPC-1A-HV circuit.
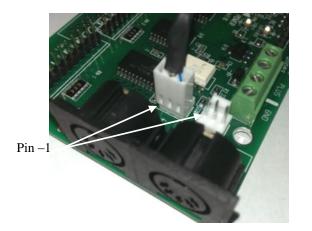
Should the Aux Inputs be used for PISTONS, it is necessary to add a single 22k resistor to the common buss terminal of the pistons for pistons associated with each card.
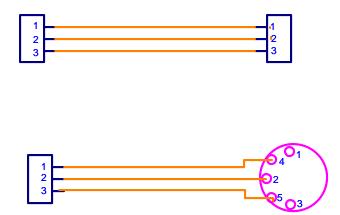
The Main 64 Input terminals have the 22k resister added on the printed circuit board, there is no need to add a resister to any of the 64 inputs.

PISTON CONFIGURATION

Plus 7 to 17 VDC

For PISTON control, add a 22K resistor the piston common buss lead.

PISTONS

MIPC-1A-HV AUX INPUTS.

STOP ACTION CONFIGURATION

Plus 7 to 17 VDC

Add 22k Resistor to each input terminal

MIDI Cable Assembly

Located next to each MIDI Jack are two three pin Molex connectors which are also Midi IN, Midi OUT connections. Cable assemblies can easily be made using the enclosed three terminal Molex connectors and a desired length of TWO CONDUCTOR SHILDED cable.

Pin –1

1
2
3

1
2
3

1
2
3

4
1
2
5
3