

USERS MANUAL - MIDI

DEFINITION

Musical Instrument Digital Interface - MIDI - is an established hardware and software specification by which information can be exchanged between instruments for performance and sequencing or recording. This hardware is based on digital microprocessors connected with a serial data link. Since this organ controller is microprocessor based and uses a fiber optic serial data link, it seems natural to embed this MIDI specification to increase it's versatility and application.

FEATURES

MIDI IN, MIDI OUT, and MIDI THRU are provided which are the basis for the MIDI specification. What separates this implementation of MIDI is the use of midi stops. These stops, which are organist programmable, allow the choice of which division that they are played on, as well as the choices of which channel they transmit on, the program change to be selected, and the key velocity or attack. This gives the organist the option to view MIDI as the addition of sound modules as independent sounds or voices, which can be selected for their need musically.

IMPLEMENTATION OF MENU

The Menu for Midi is accessed by using the player piston. It is a reversible piston, meaning that exit from this mode to return the console to normal operation is accomplished by hitting the player piston again.

Selecting the Player Piston will change the LCD to read:

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Line 1:     PLAYER
Line 2:  Scroll: Gt Key3
Line 3:  Enter: Gt Key 8
Line 4:  Exit: Player
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Great Key 3 is used to scroll up thru the loop of options which are displayed on line 4 of the LCD.

Great Key 8 is used to enter or start the selected option.

Player Piston is used to return the console to normal mode if no option is desired, or to cancel any option in progress.

CHANNEL ASSIGNMENTS

The data to be transferred to other MIDI equipment has to be assigned a channel. The method of programming is as follows:

1. Select the player piston.
2. Scroll with Gt key 3 for **MIDI** on the 4th line of the LCD.
3. Hit Gt key 8 to enter. The 4th line of the LCD will now read: **MIDI: Prog Stops**
4. Scroll with Gt key 3 for **MIDI: Ch. Assign** on the 4th line of the LCD.
5. Select Gt key 8 to enter. The LCD will now read:
Line 1: **MIDI: Channel**
Line 2: **Assignments**
Line 3:
Line 4: **CH 1: Assignment**
6. Select the desired choice: midi stops, stops1-5(non midi stop stop data), divisions 1-9 both coupling and non coupling. This is done by scrolling through the choices with Gt keys 2 & 3.
7. Hit Gt key 8 to enter. This will enter your choice and increment the CH(channel) to the next channel number.
8. Either continue with number 5 above to assign more channels or select the 'player' piston to exit this menu and return the console to normal operating mode.

NOTE: It is not advised to use channel 10 for anything, as it is sometimes not compatible with other equipment.

MIDI STOPS

These stops when selected will send data via the Midi Out line based on their programmable choices. The method of programming is as follows:

1. Select the player piston.
2. Scroll with Gt key 3 for **MIDI** on the 4th line of the LCD.
3. Hit Gt key 8 to enter. The 4th line of the LCD will now read
MIDI: Prog Stops
4. Hit Gt key 8 to enter. The LCD will now read:
Line 1: **Midi Stop: 0- 0**
Line 2: **D: C:**
Line 3: **P: V:**
Line 4: **ML1**
5. Select the desired Midi Stop. Only one can be selected at a time. The number of the stop will appear on the LCD on line 1.
6. Hit Gt key 8 to enter.
7. Scroll with Gt keys 2 & 3 for the desired division. This is the keyboard that the stop will be played on. For the manual divisions, the stops can be either coupling or non coupling. The non coupling stops are indicated by a **-nc** suffix.
8. Hit Gt key 8 to enter
9. Scroll with Gt keys 2 & 3 to select the desired channel that this stop will send data on. Only channels that have been assigned to midi stops will be available. Enter with Gt key 8.
10. Scroll with Gt keys 2 & 3 to select the desired program change from 0 to 127. Enter with Gt key 8.
11. Scroll with Gt keys 2 & 3 to select the desired velocity from 0 to 127. Enter with Gt key 8. The displayed data will be stored in memory at this time. The LCD display will return to number four(4) above. Either continue with number 5 above to program more stops or select the 'player' piston to exit this menu and return the console to normal operating mode.

NOTE: The **MLX** readout is just a reminder of the current memory level because the midi stops are programmable on all levels of memory.

MIDI VOLUME

Main volume control is used on all of the MIDI channels. The low and high limits of this volume can be programmed. The method of programming is as follows:

1. Select the player piston.
2. Scroll with Gt key 3 for **MIDI** on the 4th line of the LCD.
3. Hit Gt key 8 to enter. The 4th line of the LCD will now read: **Midi: Prog Stops**
4. Scroll with Gt key 3 for **Midi: Volume** on the 4th line of the LCD.
5. Hit Gt key 8 to enter. The LCD will now read:
Line 1: **Midi Volume LOW**
Line 2: **Low: xx**
Line 3: **High: xx**
Line 4:
6. Scroll with Gt keys 2 & 3 for the desired low limit.
7. Hit Gt key 8 to enter. The LCD will now read:
Line 1: **Midi Volume HIGH**
Line 2: **Low: xx**
Line 3: **High: xx**
Line 4:
8. Scroll with Gt keys 2 & 3 for the desired high limit.
9. Hit Gt key 8 to enter. This will store these new limits in memory and return the organ to normal operating mode.

MIDI ON, IN, or OFF

This selection is either ON, IN, or OFF. The indication for this will be in the lower right corner of the LCD by the letter MO if on, MI if in, or nothing or blank if off.

ON

When ON is selected: This will send all of the console key, stop, and swell shoe data to the MIDI OUT port according to the channel assignments, allowing an external sequencer to have something to record. It will also send the midi stop data to the Midi Out port if any stops are on. Any data coming from a sequencer to the MIDI IN port will be transmitted to play the pipes as track 2, and any midi stop data will be retransmitted to the Midi Out port.

NOTE: The stops that are heard when playback from the sequencer is done will be the stops that have been recorded, the actual stops on the organ console will have no effect the incoming MIDI IN data stream.

NOTE: Since only changes are recorded, it is necessary to turn on the desired stops after the sequencer has begun to record, otherwise only note changes will be recorded with no stops being on.

NOTE: When recording with an external sequencer, make sure the recording device has Midi Thru disabled.

NOTE: PLAY/RECORD is not available when MIDI is ON. An external sequencer must be used for record and playback.

IN

Works as MIDI ON with the exception that the stops that will be heard with the MIDI IN key data stream will be the stops that are hand registered on the console.

NOTE: When the player piston is hit, all of the stops that are on will be cleared in memory and need to be turned on again when playback is resumed.

OFF

When OFF is selected: This will send only the midi stop data to the Midi Out port.

NOTE: The reason for the selection of ON or OFF is that there will be a noticeable delay in sound if many midi stops are selected at the same time that many 16' and 4' couplers are selected when Midi ON is enabled. There is simply too much data to transmit via the Midi Out port at Midi Specification data rates. MIDI was not designed to handle the large data needs of the pipe organ. If this delay in sound is encountered, something has to be turned off, either midi stops, couplers, or Midi OFF has to be selected.

MIDI IMPLEMENTATION - Tx - Midi Out

	Status	Data	Data
Channel Voice Messages			
Note On	Note On 9nh (n=0-15)	c1-d#64 #36-#99	velocity 0-127
Note Off	Note On 9nh (n=0-15)	c1-d#64 #36-#99	velocity 0
Control Change	Control Change 0bnh (n=0-15)	Main Volume #07h	volume 0-127
Control Change	Control Change 0bnh (n=0-15)	Expression Controller #0bh	value 0-127
Program Change	Program Change 0cnh (n=0-15)	Program Number #0=#127	
Channel Mode Messages			
All Notes Off	Control Change 0bnh (n=0-15)	All Notes Off #123	0 0

MIDI IMPLEMENTATION - Rx - Midi In

	Status	Data	Data
Channel Voice Messages			
Note On	Note On 9nh (n=0-15)	c1-d#64 #36-#99	velocity >0
Note Off	Note On 9nh (n=0-15)	c1-d#64 #36-#99	velocity 0
Note Off	Note Off 8nh (n=0-15)	c1-d#64 #36-#99	velocity 0-127
Control Change	Channel Mode 0bnh (n=0-15)	All Notes Off #123	0 0
Control Change	Control Change 0bnh (n=0-15)	Expression Controller #0bh	value 0-127