

# 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 its 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 eight (8) stops that are available as midi stops. These stops, which are organist programmable, allow the choice of which division that they are played on, the choice of which channel they transmit on, and the choice of which program change is to be selected, and the choice of 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: G7 & G8
Line 3:  Enter: G1
Line 4:  Exit: Player
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General Piston 7 and General Piston 8 are used to scroll up and down thru the loop of options which are displayed on line 4 of the LCD.

General Piston 1 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

Midi Stops, keyboard data, and stop data has to be assigned to a unique Midi channel. This only needs to be done once keeping the data on the same channel whether going out or in. To program:

1. Select player piston.
2. Scroll with 'G7' or 'G8' for **MIDI** on the 4th line of the LCD.
3. Select 'G1' to enter. The 4th line of the LCD will now read: **MIDI: CH Assign**
4. Select 'G1' to enter. The LCD will now read:  
Line 1: **Midi CH Assign**  
Line 2: **CH Assignment**  
Line 3: **1 "choice"**  
Line 4: **Exit: Player**
5. Select the desired choice: midi stops, stops(non midi stops), swell, great, choir, pedal, swell-nc, great-nc, and choir-nc. This is done by scrolling through the choices with 'G7' or 'G8'.
6. Select 'G1' to enter. This will enter your choice and increment the CH(channel) to the next channel number.
7. 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:** The choices of Stops, Swell, Great, Pedal, Swell-nc, Great-nc, and Choir-nc can be made on only one channel. Any attempt to put one of these choices on a second channel will result in the first channel being reprogrammed to the choice Midi Stops. Midi stops is the only choice that can be assigned to more than one channel.

## MIDI STOPS

These stops, when selected, will send data via the Midi Out port based on their programmable choices as follows:

1. Select player piston.
2. Scroll with 'G7' or 'G8' for **MIDI** on the 4th line of the LCD.
3. Select 'G1' to enter. The 4th line of the LCD will now read: **MIDI: Prog Stops**
4. Select 'G1' to enter. The LCD will now read:  
Line 1: **Midi Stop:**  
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. Select 'G1' to enter.
7. Scroll with 'G7' or 'G8' 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. Select 'G1' to enter
9. Scroll with 'G7' or 'G8' to select the desired channel that this stop will send data on. Only channels that have been assigned to midi stops will be available.
10. Scroll with 'G7' or 'G8' to select the desired program change from 0 to 127.
11. Scroll with 'G7' or 'G8' to select the desired velocity from 0 to 127.
12. Select 'G1' to enter. 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 these eight midi stops are programmable on all nine levels of memory, for a total of eight times nine (72) stops.

## MIDI VOLUME

Main volume control is used on the 8 Midi Stops. The low and high limits of this volume can be programmed. The method of programming is as follows:

1. Select player piston.
2. Scroll with 'G7' or 'G8' for **MIDI** on the 4th line of the LCD.
3. Select 'G1' to enter. The 4th line of the LCD will now read: **Midi: Prog Stops**
4. Scroll with 'G7' or 'G8' for **Midi: Volume** on the 4th line of the LCD.
5. Select 'G1' to enter. The LCD will now read:  
Line 1: **Midi Volume**  
Line 2: **Low: xx**  
Line 3: **High:**  
Line 4: **Abort: Player**
6. Scroll with 'G7' or 'G8' for the desired low limit.
7. Select 'G1' to enter.
7. Scroll with 'G7' or 'G8' for the desired high limit.
8. Select 'G1' to enter. This will store these new limits in memory and return the organ to normal operating mode.

## **MIDI ON or OFF**

This selection is either ON or OFF. The indication for this will be in the lower right corner of the LCD by the letter MO if on and 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 the pipe chamber to play the pipes, and any midi stop data will be retransmitted to the Midi Out port.

**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.

**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 with 16' and 4' couplers when Midi ON is enabled. There is simply too much data to transmit via the Midi Out port at Midi Specification 1.0 data rates. MIDI was not designed to handle the large data needs of the pipe organ. If this delay in sound is encountered, something must be turned off: either some midi stops, some couplers, or Midi ON.

**MIDI IMPLEMENTATION - Tx - Midi Out**

	Status	Data	Data
Channel Voice Messages			
Note On	Note On 9nh (n=0-15)	c1-c61 #36-#96	velocity 0-127
Note Off	Note On 9nh (n=0-15)	c1-c61 #36-#96	velocity #0
Control Change	Control Change 0bnh (n=0-15)	Main Volume 07h	volume 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-c61 #36-#96	velocity >0
Note Off	Note On 9nh (n=0-15)	c1-c61 #36-#96	velocity 0
Note Off	Note Off 8nh (n=0-15)	c1-c61 #36-#96	velocity #0=#127
Control Change	Channel Mode 0bnh (n=0-15)	All Notes Off #123	0 #0