jω Electronics

PTM-1 Parallel-to-MIDI Converter

## Installation and Operating Instructions

Product Description

The PTM-1 from j-Omega Electronics is an electronic circuit module that can convert the on/off status of up to 128 electrical inputs into MIDI note on/off messages in real time. Additionally, The PTM-1 can produce Start, Stop and Timing Clock messages to allow synchronisation with an external metronome, time clock or positional encoder.

Installation

Carefully remove the PTM-1 circuit from its protective packaging, handling the board by its edges only. Five mounting holes of 3.2 mm diameter are provided on the circuit board to allow it to be securely fixed to a suitable surface. Suitable methods of fixing include self-adhesive pillars and screws or bolts with insulating spacers. Whatever method is used, ensure that no metal can come into contact with any wiring tracks or components on the circuit board.

Connection
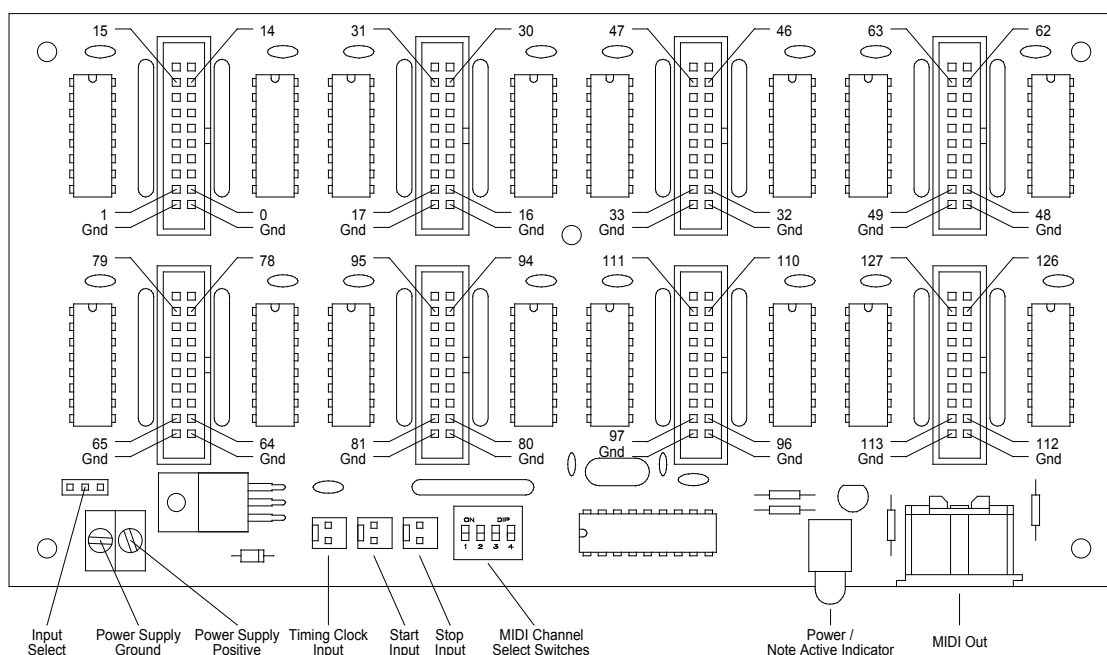
The note inputs are in groups of 16, each group being on a 20-pin connector suitable for connection by a plug-in IDC (insulation displacement connector) header and ribbon cable. Each 20-pin connector also has two pins connected to the Ground reference. The illustration above shows the allocation of MIDI note numbers to the pins of the 20-pin connectors.

The MIDI output is from the 5-pin DIN connector at the end of the board, near the indicator LED.

Power is supplied to the PTM-1 via the two screw terminals. The circuit has on-board voltage regulation and can use a smoothed DC supply in the range 8 to 35 Volts, with 9 to 12V being the optimum region. The power input is diode-protected against reverse polarity, but the circuit will only function when the polarity is correct.

There are three connectors related to the output of real-time synchronisation messages. These are all two-pin polarised headers on a 0.1" (2.54mm) pitch and are electrically identical, having the pin nearest the board edge connected to system Ground and the other pin pulled up to the circuit's 5V supply via an on-board 10k Ohm resistor.

Operation

Prior to use, there are two settings that must be made to determine the way the PTM-1 operates.

Firstly, the Input Mode selector, which is a three-pin header with a user-selectable shorting link, must be set. The PTM-1 inputs can be either active high or active low. If active high, the inputs are pulled down to ground by on-board 10k Ohm resistors and must be pulled up to 5V by the input circuitry to activate. If active low, the inputs are pulled up to 5V by on-board 10k Ohm resistors and must be pulled down to ground by the input circuitry to activate.

Secondly, the output MIDI channel must be set using the four-way switch unit. Viewed from the board edge nearest the switches, moving a switch slider up turns that switch on and moving it down turns it off. The settings required for each MIDI channel are as below:

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

The MIDI output from the PTM-1 is via the on-board standard 5-pin DIN connector. A standard MIDI cable can be plugged into this for connection to any MIDI-compatible data receiver such as a sound generator or sequence recorder.

When the circuit is powered, the Power / Note Active LED will light in green. When any note input is active, the LED colour will change to red and a corresponding MIDI message will be transmitted.

Timing clock, Start and Stop real-time MIDI messages will be transmitted whenever a corresponding synchronisation input is pulled to system ground (both pins of the two-pin header shorted together).

Electrical and MIDI Specifications

Supply voltage: 8 to 35 V DC.

Supply current: 15 mA typical in addition to current drawn by output loads.

Power-up: Initial supply voltage rise rate must be greater than 0.05 V/ms for reliable starting.

MIDI: Transmits Note On, Note Off, Start, Stop and Timing Clock messages.

Timing: Note, Start and Stop inputs scanned every 20ms, Timing Clock scanned every 320µs.

Important Note

Since the PTM-1 is intended to form part of a larger overall system, these instructions are to be considered as being for guidance only. It is assumed that the installer has a level of competence appropriate to the system being constructed. j-Omega Electronics will take no responsibility for any accident or damage to personnel or property caused by the mis-use of any of its products.

It is the responsibility of the installer to ensure that any system incorporating this unit conforms to the relevant laws concerning electromagnetic compatibility (EMC) and/or electrical safety.

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Model PTM-1   Version: 2

MIDI Implementation Chart

Function...		Transmitted	Recognised	Remarks
Basic	Default	1-16	X	User-selectable by
Channel	Changed	X	X	four switches
	Default	X	X	
Mode	Messages	X	X	
	Altered	X	X	
Note		0-127	X	
Number:	True voice	X	X	
Velocity	Note ON	O v=127, v=0	X	Note Off uses Note
	Note OFF	X	X	On, velocity 0
After	Keys	X	X	
Touch	Ch's	X	X	
Pitch Bender		X	X	
Control Change		X	X	
Prog		X	X	
Change:	True #	X	X	
System Exclusive		X	X	
System	Song Pos	X	X	
Common:	Song Sel	X	X	
	Tune	X	X	
System	Clock Commands	O	X	Start, Stop,
Real Time:		O	X	Timing Clock
	Local ON/OFF	X	X	
Aux	All Notes OFF	X	X	
Messages:	All Sounds OFF	X	X	
	Active Sense	X	X	
	Reset	X	X	
Notes				

O = Yes
X = No

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