

2nd Generation Circuit Boards - Overview

A Zaccaria board set is comprised of four main circuit boards and five displays, all of which are mounted in the backbox. The four main boards are the CPU (upper left), Driver (lower left), Sound (upper right), and Power Supply (lower right). These are connected with a combination of wiring harnesses with Molex 7675-series .156" insulation displacement connectors (IDC) and 20-pin ribbon cables.

The original 7675-series Molex Insulation Displacement (IDC) connectors can be replaced with 7674-series; the difference is that the 7674 has "Trifurcon" female pins, with more contact surface available to grip the male pin. Either 7675 or 7674 will work, but the 7674 connector is preferable if you can get them. [Molex](#) part numbers:

Pins	7675 Series	7674 Series
13	09-06-0137	09-06-0139
12	09-06-0127	09-06-0129
7	09-06-0077	09-06-0079
5	09-06-0057	09-06-0059
key	15-04-0219	15-04-0219

Alternately, Molex KK series .156" housings and crimp on pins can be used.

Pins	Molex Part Number	Mouser Part Number
12	09-50-3121	538-09-50-3121
7	09-50-3071	538-09-50-3071
5	09-50-3051	538-09-50-3051
key	15-04-0219	538-15-04-0219
pin	08-52-0113	538-08-52-0113

These are much easier to obtain and are probably better in the long run. You will also need a crimper to install the pins on the wires. The hand crimper made by Waldom (Molex) is relatively inexpensive and works well.

There are 20-pin ribbon cables connecting the Driver and Sound boards to the CPU board. The displays are connected via a 20-pin ribbon cable to the CPU board. 20-pin cable can be bought in bulk from suppliers like Mouser, and standard 20-pin ribbon cable connectors can be crimped on to make replacements. 3M connectors (P/N 517-8920 from Mouser) work well and are reasonably priced.

On most 2nd Generation games, there is a black 8-pin connector in the middle of the backbox (on Pinball Champ and Soccer Kings, this is a round connector by the coin door). This connector was used to connect a serial printer to print game audits, and to connect a "coin meter". I have never seen either of these devices. Generally, it is safe to ignore this connector. There is

a setting in the game options to enable the coin meter support, which then disables the game if it does not detect that a coin meter is connected.

Connector pin / wire colour details:

1 Pink / White	2 Purple / Yellow	3 Grey / Yellow	4 N/C
5 N/C	6 Black / Pink	7 Orange / Yellow	8 N/C

Pin	Wire Colour	Connects to	Description
1	Pink/White	CN10 pin 3	Serial I/O TX-
2	Purple/Yellow	CN10 pin 18	Switch Matrix Column 7
3	Grey/Yellow	CN10 pin 2	Serial I/O RX-
6	Black/Pink	CN10 pin 4	Serial I/O TX+
7	Orange/Yellow	CN10 pin 1	Serial I/O RX+

Faking a coin meter being connected can be accomplished by connecting a 10K resistor between pins 6 and 7 of this connector. This pulls the SENSE line of the 2650 processor Low. I cannot think of any use for this, but I am including it to be complete.

Between Pinball Champ and Spooky, there were three revisions of the CPU board, two revisions of the Power Supply board, five different sound boards, and four different sets of displays used.

The overall system design did not change, and with the exception of sound boards, the circuit boards are generally very similar and are downward compatible, so that a board from a newer game will work fine in an older game. In almost all cases, a board from an older game will also work fine in a newer game.

Each circuit board has a part number, with revisions indicated by a trailing slash and a number. So a 1B1165 CPU board is similar to a 1B1165/2 board, but there will be some minor differences between them that may or may not be visible.

CPU Boards - Located in the top left corner of the backbox. Revisions:

- 1B1165
- 1B1165/0
- 1B1165/1
- 1B1165/2

Driver Boards - Located in the bottom left corner of the backbox. Revisions:

- 1B1166

Power Supply Boards - Located in the bottom right corner of the backbox. Revisions:

- 1B11167
- 1B11167/0

Sound Boards - Located in the top right corner of the backbox. Revisions:

- 1B1170
- 1B11136
- 1B11136/0
- 1B11178/1
- 1B11178/2
- 1B11178/3
- 1B11181/0
- 1B11181/1

Display Boards - Located on the backbox insert door. Revisions:

- 1B1168 (4x2 Digit)
- 1B13123 (7-digit)
- 1B11150/0 (8 Digit)
- 1B11187 (8 Digit LED)

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