# ODYSSEY 4000 PING-PONG GI AY-3-8600

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L'Odyssey 4000 è l'ultimo sistema PONG rilasciato da Magnavox nel 1977.

Il sistema introduce rispetto ai modelli precedenti otto emozionanti giochi a colori (Tennis, Hockey, Smash e Practice, gli altri sono invece delle varianti dei primi quattro giochi). La console inoltre è caratterizzata da due veri joystick come quelli offerti da altri modelli di console.

Dopo l'Odyssey 4000 la Magnavox rilasciò un sistema completamente differente noto come Magnavox Odyssey² e conosciuto in Europa come Videopac. Questo sistema fu progettato per competere con le console basate sui sistemi a cartucce di Atari e Coleco.

Scheda Tecnica

MAGNAVOX ODYSSEY 4000

Anno
1977

Produttore
Magnavox

Modello
Odyssey 4000

Tipo
Console

Origine
U.S.A.

Giochi Inclusi
TENNIS, HOCKEY, SMASH, PRACTICE e loro varianti

Controller
2 joystick separati

CPU
General Instruments AY-3-8500

Pulsanti
Nessuno

Interruttori
Selezione del gioco
Selezione il livello di abilità (PRO / AM)
Accensione / reset

Punteggio
Su schermo

Colori
Si

Sonoro
Altoparlante

Taglia / Peso
Sconosciuto

Porte I/O
RF TV uscita video

Batterie
6 x “C” (Mezza torcia)

Alimentazione
Alimentatore esterno (9V)

Pistola
No

Prezzo
Sconosciuto

Immagini

Un classico Pong su un sistema tedesco, che utilizza il chip della General Instruments AY-3-8500, capace di far girare quattro giochi, basati sul sistema del PONG. In questa versione non è stato inserito nessun gioco di tiro al bersaglio. Una cosa rara per quel periodo era che i controller non erano integrati al sistema, ma collegati tramite cavi facilmente scollegabili dalla console stessa rendendoli completamente indipendenti. Questo significava che quando uno dei due si rompeva, non era necessario cambiare l'intero sistema.

La forma del case è abbastanza strana. Sembrerebbe concepita per contenere un piccolo computer. In effetti al posto del pannello di controllo davanti, si sarebbe potuta alloggiare una piccola tastiera a membrana, mentre tutta l'ampia parte posteriore avrebbe potuto contenere una scheda madre, o un qualsiasi altro hardware.

In realtà tutti questi spazi vengono utilizzati per la sistemazione dei controller quando il sistema non viene utilizzato, c'è anche un vano per le batterie.

Quando il sistema viene aperto, si può osservare che sotto il pannello di controllo ci sono diversi fori, che non vengono utilizzati dal sistema e sono nascosti da sottili pellicole di plastica nera. Si possono distinguere benissimo anche un paio di fori per il collegamento di altri due controller addizionali. E' quindi facile dedurre che lo stesso case, sarebbe potuto essere impiegato per sistemi di gioco a quattro giocatori.

Interessante far notare che molte marche differenti dalla Alex hanno utilizzato questo case particolare per i loro sistemi. Il Conic TV Sports TG-621 ad esempio utilizza lo stesso sistema.

Scheda Tecnica

ALEX VIDEO SPIEL TG-621

Anno
1977

Produttore
Alex

Modello
Video Spiel TG-621

Tipo
Console

Origine
Germania

Giochi Inclusi
Tennis / Hockey / Handball (Pallamano) / Practice (Pratica)

Controller

Due piccoli controller staccabili con manopole

CPU
GI AY-3-8500 (General Instruments)

Pulsanti
Servizio manuale, reset

Interruttori
Accensione / spegnimento
Suono on / off
Velocità (veloce / lenta)
Angolazione 20° / 20°-40°
Dimensioni respingenti (lungo / piccolo)
Servizio automatico / manuale

Punteggio
Su schermo

Colori
Bianco e nero

Sonoro
Beep interno

Porte I/O
Nessuna

Batterie
UM-2 (Tipo “C”) 1,5v x 6

Alimentazione
9v DC

Immagini

Background:

In 1975, Atari and Magnavox started selling improved systems using integrated circuits. Magnavox used several Texas Instruments (TI) chips, which replicated the design of the first Odyssey, itself based on 1967 transistor circuits. Atari, however, had the smart idea of designing the first "PONG in a chip" device, but these Atari chips were not available to other manufacturers, thus limitating the market considerably. Most Atari systems used a different chip because of the different games and features. Of course, a few discrete components interfaced the chip to the other parts of the system: the video modulator, the player controls, etc. These chips replaced most of the numerous components used in the early analog and digital systems. Although Atari chips were a smart design, the idea of integrating complex circuits into a single chip was a common idea at that time, and other video game manufacturers soon released their own video game chips.

Texas Instruments (TI) had an important role in 1975 since Magnavox asked the manufacturer to design a special chip set for their next models, the Odyssey 100 and 200. Each chip had a special function: character generator (paddle, ball), game logic (serve, ball rebounds, collision detection, etc.), on-screen scoring, etc. They are detailed in the summary table at the end of this page. These chips were exclusively manufactured for Magnavox (at least, in the begining). Their original references were SN94xxxN, but Magnavox required that they show only a 6-digit reference, probably to hide the manufacturer and avoid potential competition.

While the first chips only allowed to design simple Ball and Paddle games, TI soon released two important types of chips: digital on-screen scoring and programmable (complex) characters. While the former obviously added a catchy feature which almost no other system had without the use of a more advanced, single chip device, the latter allowed designing his own graphics and therefore, more advanced games for the time. The first Magnavox systems to use these chips were the Odyssey 400 and 500.

The most interesting advantage of these chips was their modular design. Unlike every single-chip device which offered a limited number of games, these chips allowed designing any game based on the ball, paddle and wall graphics, and eventualy complex characters.

TI had a potential market ahead and decided to release an entire chipset in 1976: the Universal Game Circuits. Unlike the Magnavox chips, they were part of the Consumer Circuits Catalog and could be purchased by any manufacturer and any hobbyist. They allowed building various games ranging from Ball & Paddle variants to complex games like Tank Battle, Helicopter Battle, Gunfight, and Space War. If some of the chips are rumored to be same as those originaly designed for the Magnavox Odyssey 100 and 200 (but sold under different references), the additional ones allowed designing more challenging games. As per modular design, the chips could only handle a small part of game logic, and additional logic (TTL, CMOS) chips were required.

An interesting internal TI Market Plan dated August 1976 shows not less than nine game kits envisioned. TI even considered selling a basic chips kit for each game, which avoided the need of programming characters (whether some chips were made available with specific characters like Tank, Helicopter or similar is unknown). Still, the games clearly showed the potential of those chips.

Although these chips were unsuccessfull despite the catchy battle games, TI released their first all-in-one device in 1976: the TMS-1955 and TMS-1965. There was nothing really new here: the chips were both pin compatible with the General Instruments AY-3-8500 mentioned below, hence a higher success.

In 1977, TI copied the Executive Games Television Tennis circuits and integrated them into a new chip: the SN76410N. David Winter asked Glen Dash (who designed the Television Tennis) how this came to his attention. His reply was crystal clear: "The Tennis game was absolutely same, so much that it had the same bugs as my original design". The chip added two more games and additional ball english. But 1977 was already too late for releasing a new Ball & Paddle chip except for a very successful company such as General Instruments who could afford the risk and propose new devices to existing clients. Moreover, two much more advanced microprocessor based systems appeared in 1976 and clearly indicated how the home video game would rapidly change: Fairchild's Channel-F and RCA's Studio II. For all thease reasons, the new SN76410N chip was so unsuccessfull that very few systems used it: Tele-Match 3300R, Ricochet Super Pro (model MT-4A), and Venture Electronics Video Sports VS-5.

While the bell rang the end of video game chips for TI, the company would soon become another leader of high integration devices: handheld games. But this is another story.

## The low-cost Ball & Paddle genius

General Instrument Microelectronics, also known as General Instruments (GI), was well known for designing Large Scale Integragion (LSI) chips. In 1975, GI had a revolutionar idea: the design of a low-cost chip playing several Ball & Paddle games, and available to any manufacturer. This chip changed the video game industry within a year and marked the end of discrete components systems like the Odyssey 100, 200, 400 and 500 (Magnavox used a GI chip in the Odyssey 300, but this particular system was just an answer to Coleco's Telstar system, which we will detail later). Even the more advanced discrete components systems that featured digital on-screen scoring and graphic characters were prone to oblivion. Atari continued designing its own chips, playing more games (all in color with digital on-screen scoring).

GI's first video game chip was the AY-3-8500. It played six games: four Ball & Paddle variants and two target shooting games, which all had variable difficulty settings changed using switches. In addition, a seventh undocumented game could be played when none of the previous six was selected: Handicap, a football/hockey variant where the player on the right has a third paddle. Very few systems played this game. Interestingly, two versions of the AY-3-8500 exist: the early one with dashed central line (about twice larger) and solid horizontal boundaries. The later one is shown below. The following table shows the AY-3-8500 games:

AY-3-8500

| GAMES | PLAYERS |
|---|---|
| Tennis | 2 |
| Hockey / Football | 2 |
| Squash | 2 |

Practice / Solo
1

Target 1
1

Target 2
2

Handicap
2

SETTINGS
PRO
AM

Ball speed
Fast
Slow

Player size
Small
Long

Ball angle
20°
20°/40°

The General Instruments catalog contained interesting circuit diagrams, the most interesting being the player multiplexer. By alternating two pairs of players at every frame, a four player game could be played. Few commercial systems featured the 4-player mode.

GI, a huge success:

The AY-3-8500 chip was extremely successful: hundreds of different game systems used it worldwide. Some manufacturers did not hesitate to create a line of systems equiped with this chip. In many case, they differed by the picture (black and white or color) or the games: only the four ball and paddle games, or the six games including the two target shooting games. The line got eventualy extended with models using more advanced GI chips produced later. Coleco, Magnavox and Radio Shack are typical examples of manufacturers who sold a whole line of systems built around GI chips: Odyssey 300 played three games in black and white, Odyssey 2000 added the fourth AY-3-8500 game but only Odyssey 3000 allowed setting the four difficulty levels individualy. Of course, a technician could easily modify his system to add the missing games or change the way the difficulty settings were limited.
Soon, GI released improved versions of the AY-3-8500: the AY-3-8550, which added horizontal player motion and composite video output, the AY-3-8510 (four games in color), the AY-3-8512 (same as AY-3-8500 but in color) and the AY-3-8600 (eight Ball & Paddle variants and two shooting games). GI also released special color encoders which allowed producing a color picture: the AY-3-8515 for the AY-3-8500 and the AY-3-8615 for the AY-3-8600 and

AY-3-8610 chips.
The worldwide success of the GI chips allowed hobbyists to build their own system: almost every electronics magasine published at least one construction project around this chip or another. Some other hobbyist articles talked about modifications and accessories: how to convert an existing black and white system in color using the AY-3-8515 color encoder, how to convert to four players, etc.

The story is far from finished. If GI released the AY-3-8500 in 1976, the competition was already present.

National Semiconductor (NS) released their chip integrating three Ball & Paddle games: the MM-57100N (also released as the MM-57105N in PAL format). NS advertised the chip as playing games with true and realistic colors (the background was green for Tennis, blue for Hockey, and magenta for Squash). This major feature probably boosted the sales. As a matter of fact, the basic configuration of the GI AY-3-8500, 8550 and 8600 chips delivered a black and white picture, and another GI chip was required to produce color pictures, hence a higher cost. The MM-57100N chip and its PAL equivalent only required two interfacing chips: the MM-53104N clock driver and the LM1889N color modulator. As the LM1889N was cheaper than GI's color encoders and widely available, every system designed with the NS chips played game in colors, as opposed to many systems built with GI chips.

The NS games also differed from the GI games. For instance, each player appeared alternatively in the Squash game when the ball was hit, and the Hockey game showed six square opponents (organised in two groups of three) moving up and down on the screen. The sound was directly sent to the TV set instead of coming from a speaker in the system. The game selection only required a push-button instead of a switch (rotary or linear) which could fail after many game selections. The scores appeared once a player lost the ball, the bats could have three different sizes, and the ball accelerated once it bounced four times on the players. Finally, the games could also be played in solo: the single player controlled both sides of the games using the same controller.

For the release of this new chip, NS launched a small system called National Adversary (model 370). Although not very nice, it played the three games of the chip and sold pretty well. The same system was sold in semi-kit form by Heathkit as Model GD-1999 (the circuit board was already assembled). The only problem was the competitive price of the AY-3-8500 and also its wide reputation as most manufacturers used it.

Although NS had a pretty smart idea by releasing the MM-57100N chip, the increasing success of GI became too high for NS, and facing the situation became more and more difficult. As an attempt to survive this situation, NS released another chip in 1978: the MM-57106N (also known as MM-57186N in PAL format). This one played six different games: those of the MM-57100N, plus Wipe-Out (Breakout clone), Flipper and Football. Each game was playable in several variants, giving a total of twenty-three games. This chip was not successful and the only systems known to use it are the Philips N30 (and its equivalents sold under the Radiola and Schneider brands) and the Philips Odyssey 2100, both released in Europe. NS advertised an improved Adversary system (model 600) based on this chip, but no specimen surfaced yet.

The National Adversary by NS, with the three games of the MM-57100N chip:
Tennis, Hockey,Squash (two players), Squash (solo), all during game play and after scoring.

MOSTek, another manufacturer well known in the micro computer market, released a quite advanced line of video game chips in 1977: the MCS-7600 series, quickly replaced with the MPS-7600 equivalents (the only difference were their package: Ceramic at first, and Plastic just after). Rather than integrating the components of a complete Ball & Paddle game, the chips contained custom graphics and sound generators driven by a simple processor and a 512-word ROM (Read Only Memory). Four versions of this chip are known to exist. Each of them contains customised circuits adapted to the games played. For example, the Ball & Paddle version (MPS-7600-001) plays four games for two or four players and uses special paddle and ball generators. This particular chip was also released in PAL format as

MPS-7601. So far, only Commodore is known to have used it in a system (model 3000H). Only one manufacturer used all of the MOSTek chips: Coleco (see the Telstar Arcade and Telstar Gemini systems). All others used the MPS-7600-001 chip.

UNIVERSAL RESEARCH LABORATORIES, INC. and the Car Racing games:

In 1976, Universal Research Laboratories, Inc. (URL) contracted Omnetics to design a quite advanced chip: the F4301. The chip was so complex that it could not fit on a single silicon dice. Therefore, two dice were mounted on a thick film substrate and connected together. The F4301 chip played two Ball & Paddle variants and two car racing games. The car games were a major addition which no other Ball & Paddle chip played. The F4301 games could be played by up to four players ("human mode"), and the Ball & Paddle games could also be played against the system ("robot" mode) with variable "intelligence" (paddle reaction time). Interestingly, the F-4301 inherited the Ball & Paddle circuits used in the URL Video Action 3 system. The VA-3 circuit board shows what got integrated in the F-4301 chipset to play the Ball & Paddle games. URL used the F4301 chip in their Indy 500 system (also known as Video Action 4, model S100) released in 1976. URL also had an order from Sears, which released that game in limited amount under the same name and model (see the URL page for more information). Sears also used the F4301 in the Speedway and Speedway IV systems. Ricochet Electronic, already known for their very successful Ball & Paddle system (model MT-1A), used it in Formula 500 (Model MT-5A). Some european systems also used this chip: Interton Video 2800 (Germany), MBO Tele-Ball VIII (Germany), etc. MBO's Tele-Ball VIII had a rare feature: it also included the AY-3-8500 chip. Thus, the F-4301 only served for playing the two car racing games.

More advanced GI chips:

To face this competition, GI improved the AY-3-8500 and released two new chips in 1977: the AY-3-8600 and the AY-3-8610. The AY-3-8600 played eight Ball & Paddle variants (the four Ball & Paddle games of the AY-3-8500, plus four new ones, including basketball and gridball games) and two shooting games. It added new features such as the possibility to change the size of each player, the manual or automatic serve, and the horizontal player motion. The AY-3-8610 was same, the differences between the two chips remain unknown. As the AY-3-8500 could be coupled to the AY-3-8515 (color picture generator), the AY-3-8615 could be used with the AY-3-8600 and AY-3-8610 to produce a color picture. Magnavox used the AY-3-8600 and 8615 in the Odyssey 4000 released in 1977.

As technology improved, video game systems became more and more advanced, and also cheaper. However, another major fact started in 1976: the release of microprocessor systems using plug-in game cartridges containing software programmed games in ROM chips. Since these new systems were expensive, Ball & Paddle systems were still successfull. But in 1977, Atari released a revolutionar system: the Video Computer System (Atari 2600). Still expensive, this system did not kill the Ball & Paddle games market until other advanced systems appeared in the late 1970s and early 1980s: Mattel Intellivision, Bally Astrocade, Magnavox Odyssey^2 (also known as Videopac in Europe), etc... But this is another story.

Ball & Paddle games to end:

Faced to all these facts, GI designed new game chips in 1977. Still based on the same idea (a single chip playing several variants of a same game, and available to any manufacturer), they played more advanced games. These chips

were not vastly sold in the USA (although Coleco and Atari used some of them), but were very successfull in Europe and had an important role in the release of early cartridge-based systems. The new GI game chips were:

Roadrace (AY-3-8603): The games consist in a vertical road that scrolls down at an increasing speed (since the driver is supposed to accelerate), and with some opponent cars coming down. Obviously, the player has to stay as long as possible without touching the opponent cars. The sound effects are pretty well done for such a chip. The game could be played by one or two players. Foreign titles include "Race", "Grand Prix" or "Course de Voitures".

Submarine (AY-3-8605): The game displays a boat moving on the sea which has to drop torpedos to destroy submarines. The chip played three game variants. Foreign titles include "Bataille Navale", "Warefare" or "Jeux de guerre".

Wipe-Off (AY-3-8606): These Breakout games could be played by one or two players. Ten variations were available. Depending on the game, the brick wall was either solid or made of spaced squares. When the game was played by two people, each player had break the wall of the opponent while protecting his own wall. Although the walls were vertical, the ball would not bounce on the left and right sides of the screen once it had broken enough bricks to cross the wall. In other words, the ball was lost when it crossed the wall, and the opponent scored a point. It was nearly impossible to destroy a complete wall, which made the games pretty hard to finish. Foreign titles include "Wipe-Off", "Destruction Game", "Brix Game", or "Jeux de destruction".

Tank Battle (AY-3-8700): The game is similar to Atari Combat. Unlike the previous three chips which were apparently never used in commercial systems the USA (though they were advertised), this one was used by Coleco in the Telstar Combat system. Atari supposedly released a Tank system too. In Europe, several manufacturers like Occitane and Soundic used this chip in some of their systems. This chip played the most impressive games of the GI chips. It also existed as AY-3-8710, which could be an improved version of the AY-3-8700.

Cycle (AY-3-8760): The chip played four motor cycle game variants, and was used by Atari and Sears in the Stunt Cycle and Motocross systems. The player drives a motor-cycle on three levels. Depending on the variant, the player has to jump over small obstacles, and finally jump over an increasing number of buses as long as the player finishes each level. Some variants are timed, which increases the difficulty. The chip also exists as AY-3-8765 in PAL format. Foreign titles include "Skill Cycles", "Stunt Cycles", "Cycle Race", or "Course de motos".

Other games: In order to provide even higher quality games, GI released a small number of ROM chips of the AY-3-8800 family, to be used with the then new GI CP-1610 chip, a 8/10/16 bit microprocessor, later used by Mattel in the Intellivision system in 1979.

There are still a number of obscure video game chips made by various manufacturers. Some may not be Ball & Paddle chips, but it is interesting to know their references. The story of these devices is summarized in the following table. It is not incomplete but contains most (if not all) Ball & Paddle game chips and derivates released between 1975 and 1978.

The original GI "GIMINI" catalog (January 1977 and 1978 editions) covers most, if not all of the GI chips mentioned here, including unreleased ones. Click here to view the 1978 edition in PDF. Most GI chips were available both in PAL (625-line, 50Hz) and NTSC (525-line, 60Hz). NTSC versions have a -1 suffix. For example, the AY-3-8500 (PAL) was released in NTSC as AY-3-8500-1. Therefore, a GI reference followed by (-1) indicates that both PAL and NTSC versions existed.

ATARI

3659-1C/C2566
1975
1 PONG game (Atari PONG, 2 player version)

3659-3
1975
1 PONG game (Atari PONG Doubles and Sears PONG IV: 4 player version)

C010073-3
1976
4 PONG variants (Atari and Sears Super PONG)

C010073-01/C2607
1976
10 PONG variants (Atari Super PONG Ten)

C010765
1977
32 PONG variants (Atari Ultra PONG and Ultra PONG Doubles)

C011500-11 / C011512-05
1977
7 Pinball/Breakout games (Atari Video Pinball)

GENERAL INSTRUMENTS

AY-3-8500 (-1)
1976
4 Ball & Paddle games and 2 shooting games

AY-3-8510
1978?
Improved version of the AY-3-8500: 4 Ball & Paddle games in color

AY-3-8512
1978?
Improved version of the AY-3-8510 with two target shooting games

AY-3-8515 (-1)
1976?
Color picture encoder for the AY-3-8500

AY-3-8550 (-1)
1976
Improved AY-3-8500 with horizontal player motion

AY-3-8600 (-1)
1977
8 Ball & Paddle games

AY-3-8601 (-1)
1976
Square Off: Combat Squares, Racing Squares, Shooting Squares, 2 Jungle Games (supposedly unreleased)

AY-3-8602 (-1)
1976
Volleyball Plus: Volleyball, Protection, Hazard (supposedly unreleased)

AY-3-8603 (-1)
1976
Roadrace: Two car racing games

AY-3-8604 (-1)
?
Barricade (2-player Snakes game)

AY-3-8605 (-1)
1977
3 submarine war games

AY-3-8606 (-1)
1977
10 breakout games

AY-3-8607 (-1)
1977
Target shooting games

AY-3-8610 (-1)
1977
Improved version of the 8600 with 2 target shooting games

AY-3-8615 (-1)
1976
Colour picture encoder for the AY-3-8600

AY-3-8650 (-1)
1976
Advanced controls and options when used with AY-3-8600

AY-3-8700 (-1)
1976
Tank battle game

AY-3-8710 (-1)
1976
Tank battle game

AY-3-8760 (-1)
1976
4 motor-cycle games: Skill cycle, Cycle race...

AY-3-8765 (-1)
1976
4 motor-cycle games: Skill cycle, Cycle race...

AY-3-8800 (-1)
1976
4 games: Black Jack, Draw Poker, Acey/Ducey and WAR

AY-3-8888 (-1)
1976
2 Vegas games: Black Jack and Slot Machine

AY-3-8889 (-1)
1976
Tic-Tac-Toe and LEM (Lunar Landing Module)

MOSTEK

MPS 7600-001
1977

4 Ball & Paddle games for 2/4 players (NTSC)

MPS 7601-001
1977
4 Ball & Paddle games for 2/4 players (PAL)

NINTENDO

M58816P
1977?
6 Ball & Paddle games in color (also used with M51342P, M58471L)

NATIONAL SEMICONDUCTOR

MM-57100N
1976
3 color Ball & Paddle games: Hockey, Tennis and Squash (NTSC)

MM-57105N
1976
3 color Ball & Paddle games: Hockey, Tennis and Squash (PAL)

MM-57106N
1977?
23 games (6 different types). NTSC version. Possibly unreleased

MM-57186N
1978
23 games (6 different types). PAL version. Possibly unreleased

SIGNETICS

CR861 (MUGS)
1977
Several Ball & Paddle games, one or a few Tank and Helicopter games. Supposedly unreleased

TEXAS INSTRUMENTS (only the first three are single chip game devices)

TMS-1955
1976
4 Ball & Paddle variants

TMS-1965
1976
6 Ball & Paddle variants

SN 76410N
1977
6 Ball & Paddle variants

SN 76423N
1976
Automatic random english, automatic serve, automatic upper/lower rebounds for Ball & Paddle games

SN 76424N
1976
System regulator and wall generator for color applications

SN 76425N
1976
System regulator, wall generator, horizontal/vertical sync generator (may be same as SN 94025N used by

Magnavox)

SN 76426N
1976
Dual vharacter generator (may be same as SN 94026N used by Magnavox)

SN 76427N
1976
Wall and ball generator for Ball & Paddle games (may be same as SN 94027N used by Magnavox)

SN 76428N
1976
Hockey, Tennis and Handball game logic, and video summer (may be same as SN 94028N used by Magnavox)

SN 76430N
1976
Horizontal and vertical sync generated by counting-down from 3.58MHz clock, color generator, video summer (combines ball, paddle, wall, scores, etc.)

SN 76431N
1976
Position generator for two complex characters

SN 76432N
1976
Programmable ROM for three complex characters (Hockey, Tennis, Handball)

SN 76440N
1976
Space War game logic

SN 76442N
1976
Complex characters for Race Car, Rocket Ship and Universal Man

SN 76443N
1976
Complex characters for Flying Bird and Universal Man

SN 76444N
1976
Complex characters for Rocket Ship, Hockey and Tennis

SN 76445N
1976
Complex characters for Gunfighter and Universal Man

SN 76446N

1976
Complex characters for exploding rocket

SN 76449N
1976
Complex characters for exploding helicopter

SN 76460N
1976
Digital on-screen scoring generator (scores 0-20 and 'W' for winner)

SN 76462N
1976
Digital on-screen scoring generator (scores 0-18 only)

SN 76477N
1976
Programmable complex sound generator

SN 76483N
1976
Space War obstacles generator

SN 76484N
1976
Space War switching logic

SN 76499N
1976
2.045MHz clock output generated from 3.58MHz crystal input, color phase generator and video summer designed to interface with TMS 1955 or equivalent (GI AY-3-8500)

SN 94025N (612086)
1975
Regulator, Sync and Wall Generator (Odyssey 100 and 200)

SN 94026N (612087)
1975
Player Generator (Odyssey 100 and 200)

SN 94027N (612088)
1975
Ball and Wall Generator (Odyssey 100 and 200)

SN 94028N (612089)
1975
Video Summer and Logic (Odyssey 100 and 200)

SN 94029N (612090)
1975
Scoring Generator (Odyssey 200)

SN 94069N (612109)
1976
Color Generator (Odyssey 500)

SN 94092N (612108)
1979
Score Generator (Odyssey 500)

SN 94093N (612101)
1976
Character Controller (Odyssey 500)

SN 94192N
1976
Character Generator (Odyssey 500)

UNIVERSAL RESEARCH LABS (URL)

F4301
1976
2 Ball & Paddle games and 2 car racing games

UNKNOWN

NTL 600
1977?
3 Ball & Paddle games

Tennis (AY-3-8500 and following)

Race (AY-3-8603)

Tank Battle (AY-3-8710)

War (AY-3-8800)
Several games by GI.

Draw Poker (AY-3-8800)

Several manufacturers released some systems playing the different games released by GI. These systems used cartridges containing a GI chip and a number of interfacing components. Very few of these systems were released in the USA, mostly because the new systems like the Atari 2600 became affordable. However, they were very successfull in Europe, where those new Atari 2600 systems (and others) were extremely expensive and not yet famous.

The most common systems date the late 1970s, and typical manufacturers are HANIMEX, ITMC, RADOFIN, ROLLET, SOUNDIC, UNIMEX, SANWA, MUSTANG, A10, etc... Some were even same and only differed by the manufacturer label. They all used ten push-buttons to select the games, two detachable controllers, three difficulty switches, and some others like Reset and Power. Most cartridges could be played on different systems, though a few formats existed. The most common formats are the PC-50x the 100x.

PC-501 cartridge for use with many European systems.
It contains an AY-3-8610 chip and plays the 10 games.

Immagini

Un classico Pong su un sistema tedesco, che utilizza il chip della General Instruments AY-3-8500, capace di far girare quattro giochi, basati sul sistema del PONG. In questa versione non è stato inserito nessun gioco di tiro al bersaglio. Una cosa rara per quel periodo era che i controller non erano integrati al sistema, ma collegati tramite cavi facilmente scollegabili dalla console stessa rendendoli completamente indipendenti. Questo significava che quando uno dei due si rompeva, non era necessario cambiare l'intero sistema.

La forma del case è abbastanza strana. Sembrerebbe concepita per contenere un piccolo computer. In effetti al posto del pannello di controllo davanti, si sarebbe potuta alloggiare una piccola tastiera a membrana, mentre tutta l'ampia parte posteriore avrebbe potuto contenere una scheda madre, o un qualsiasi altro hardware.

In realtà tutti questi spazi vengono utilizzati per la sistemazione dei controller quando il sistema non viene utilizzato, c'è anche un vano per le batterie.

Quando il sistema viene aperto, si può osservare che sotto il pannello di controllo ci sono diversi fori, che non vengono utilizzati dal sistema e sono nascosti da sottili pellicole di plastica nera. Si possono distinguere benissimo anche un

paio di fori per il collegamento  di altri due controller addizionali. E' quindi facile dedurre che lo stesso case, sarebbe potuto essere impiegato per sistemi di gioco a quattro giocatori.

Interessante far notare che molte marche differenti dalla Alex hanno utilizzato questo case particolare per i loro sistemi. Il Conic TV Sports TG-621 ad esempio utilizza lo stesso sistema.

Scheda Tecnica

ALEX VIDEO SPIEL TG-621

Anno
1977

Produttore
Alex

Modello
Video Spiel TG-621

Tipo
Console

Origine
Germania

Giochi Inclusi
Tennis / Hockey / Handball (Pallamano) / Practice (Pratica)

Controller
Due piccoli controller staccabili con manopole

CPU
GI AY-3-8500 (General Instruments)

Pulsanti
Servizio manuale, reset

Interruttori
Accensione / spegnimento
 Suono on / off
 Velocità (veloce / lenta)
 Angolazione 20° / 20°-40°
 Dimensioni respingenti (lungo / piccolo)
 Servizio automatico / manuale

Punteggio
Su schermo

Colori
Bianco e nero

Sonoro
Beep interno

Porte I/O
Nessuna

Batterie
UM-2 (Tipo “C”) 1,5v x 6

Alimentazione
9v DC

Immagini