10-1979 [L-0201] Fidelity - **Chess Challenger 10 (C)**

Fidelity model UCC10 (= Upgraded Chess Challenger 10) is een zeer opmerkelijke schaakcomputer die meer vragen oproept dan antwoorden geeft! Want is de **Challenger 10 (C)** nou (software technisch gezien) een directe verbeterde versie van zijn voorganger de **Challenger 10 (B)**, of heeft dit model toch meer overeenkomsten met de (upgrade) **Challenger 3**? Een paar grote verzamelaars hebben in het verleden al diverse onderzoekingen naar dit mysterieuze model gedaan. Helaas kwamen zij niet tot een gezamenlijk eenduidig oordeel. Voorlopig komt daaraan geen einde, want de grote verzamelaar Luuk Hofman heeft onlangs zijn **Challenger 10 (C)** laten bekijken door een PCB-expert! Zijn naam mag voorlopig niet bekend worden gemaakt, gelukkig wel zijn opmerkelijke bevindingen! Eén van zijn eigenaardige ontdekkingen was dat er sprake zou kunnen zijn van een **Challenger 10 (D)**!!

Innerhalb kurzer Zeit wurde der **Chess Challenger 10** zwei Mal überarbeitet, allerdings ohne große Auswirkungen auf die Spielstärke. Die Versionen A und B sind äußerlich identisch, der **Chess Challenger 10 (C)** dagegen knüpft mit seinem eckigen Gehäuse wieder an den **Chess Challenger 3** an, auch die Folientastatur ist an den Vorgänger angelehnt. (Bild: O. Hilsansky)

Date: 8 november 2011
Hi Luuk,

Hot news about Chess Challenger 10C!

Yesterday I opened the CC10C you sent me and I made a sensational find! In stark contrast to whatever is to be found on the web about that machine, it is not a brother of the CC10A or CC10B (both Z80 based), but a 8080 based machine built on the same PCB as the CC1 and CC3 !!! It seems it even runs only at 2 Mhz (yet unconfirmed by measurement). More strange, it does nothave a ROM sitting in the socket, but a small PCB carrying a ROM and a small TTL IC. I suspect the machine has a 8Kbyte ROM (the CC3 and CC1 seem to have 4K) and so the small "rider" type PCB was necessary. Further investigations are necessary to tell the whole story but nevertheless we already have some small sensation that will be of interest to the Fidelity collectors world! How come that a humble 8080 program can play stronger than a Z80 program running at twice the speed????? Or are the ELO ratings wrong for those machines ? I'll keep you updated! Best regards, ...

Date: 8 november 2011
Hi ...,

That is indeed sensational! It must be a totally new chess programm in comparasation with the CC1 or CC3, don't you think so? Of course you are well known with the description on http://www.schach-computer.info/wiki/index.php/Fidelity_Chess_Challenger_10. But there is no mention of a different processor, or even Rom information. I saw at the site of Mike Watters http://www.chesscomputeruk.com/html/collection.html that he already spoke about Chess Challenger 10 C (CC3 upgrade)1979. Perhaps it is usefull to contact him and give eachother some information to discuss.

Enjoy your work!
Regards, Luuk

FIDELITY

Date: 8 november 2011
Hi Luuk,

Mike Watters seems to know the "secret" that the CC10C is just a CC3 upgrade but the rest of the world apparently doesn't know. My current hypothesis is that the CC10C owes its existence to the CC1-CC3 upgrade offer of Fidelity. They must have had piles of sent back CC1s. When I disassembled your CC10C I had the impression somebody already has worked in it because when I used my professional desoldering equipment on the keyboard connector some of the solder pads came off - this is a sign of overheat which cannot be the case with my expensive equipment. (Don't worry - the machine will be fine again when put together). So most likely, all the CC10C are CC1 which were disassembled again at Fidelity and then the upgrade ROM was put in.

Best regards, ...

FIDELITY

Date 12 november 2011

Hi ...,

I had some discussion per email with my good friend Hein Veldhuis (he knows much, much about chess computers) and he told me that there were possibly two versions of the 10C. One upgrade from the CC3 and one "original" with Z80a processor. So Mike Watters could compare his computers if they play differently. I only have one... If it is the same program could it play on two different processors? I don't know that much about hardware. What I know is that I must collect a 10C with Z80a!

Regards,
Luuk

20 november 2011
Hi Luuk,

that's very interesting information, but I think there's something mixed up. Let me explain: Besides the CC10C you have, there seem to be anomalous CC10 machines like the one of Nils Eilers: http://home.germany.net/nils.eilers/cc10.htm. This is a CC10 Z80 Hardware in a rectangular case like the CC1,CC3,CC10C.

However, it lacks the 556 IC and the piezo so it can't beep. The program (at least of the machine of Nils) is the one from the CC10B. It also does have 16 keys. My theory is as follows: the refurbished CC1 were mutated to CC10C like the one you have. It's a 8K program running on a 8080 CPU. When the supply of the CC1 boards were exhausted, they might had some cases left, and those were turned into the "silent" CC10s like the one Nils Eilers has.

If my theory is right, there are at least four different CC10 machines!
- CC10A - Z80, 16 key rounded corner case, with the program that won't castle.
- CC10B - Z80, 16 key rounded corner case, improved program (still 4k size).
- CC10C - 8080, 12 key rectangular case, 8K program.
- CC10D - Z80, 16 key rectangular case, same program as CC10B, no beeper.

I'm curious about the program family tree - a Z80 can run a 8080 Program without changes but if a Z80 program needs conversion to 8080, all the special Z80 instructions have to be replaced by 8080 code, and this means a lot of work (and extra memory) unless the Z80 specific instructions were used only sparingly. BTW, the CC1 turned out to be a 2K program. I've also found some strange things in your Champion - it's ROM layout differs from the mine, and I'm currently building an adapter to read it out as I don't want to spend the time to desolder all the ROMs.

Regards, ...
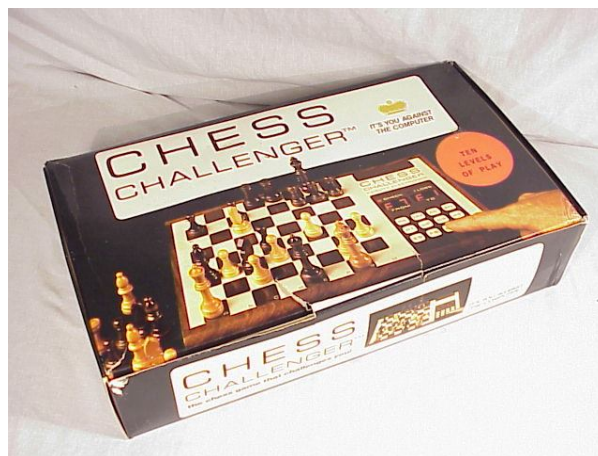
Hierboven een zeer speciale verpakking van de Chess Challenger 10 (C), die in het bezit is van de Engelse verzamelaar Mike Watters. Kenners zien meteen wat er zo bijzonder is... ja natuurlijk, de verpakking met de rode sticker "Ten Levels of Play"...

Chess Challenger 10 (C) printed circuit board...

Chess Challenger 10 (C) housing + PCB...
(foto's: Luuk Hofman - 06-01-2012)

Date: 21 november 2011
Hi Luuk,

It would be interesting to find some ads for the "CC10C" to see how it was advertised. I did not let the machines play against each other, but I don't think a 2Mhz 8080 can beat a 4 Mhz Z80 given the same thinking time. Playing strength comes largely from search depth, not from complex eval functions, which I suppose are in the 8K program - maybe they also put in special handling for endgames. For a more in-depth analysis of the program I don't have the free time these months, but maybe I can take a deeper look into the 2K CC1 program over this winter.

I'll keep you updated on my progress with your machines. The final confirmation of the ROM readout is yet missing, and I intend to play a few test games to make sure everything works fine. BTW, I found two real killers in two of the machines. One electrolytic capacitor had a badly corroded can (in the CC10C) and this was on the power supply - it could have done great damage, like on the photos of Nils Eilers. The second was in the Champion - there is a capacitor they supposedly soldered in by hand to adjust timing and they forgot to solder one of the two connections.

This is the sort of intermittent failure causation that drives repairmen nuts - I was lucky to have seen it during routine inspection of the PCB. BTW, the SC-8 also had signs it was opened before by someone who does not know the tricks - so two internal snap connectors were broken off and missing. I've taken photos of all relevant things and will send them back to you with your machines. It won't happen this week, though, because I am very busy with my bread job (a deadline is lurking).

Best regards, ...
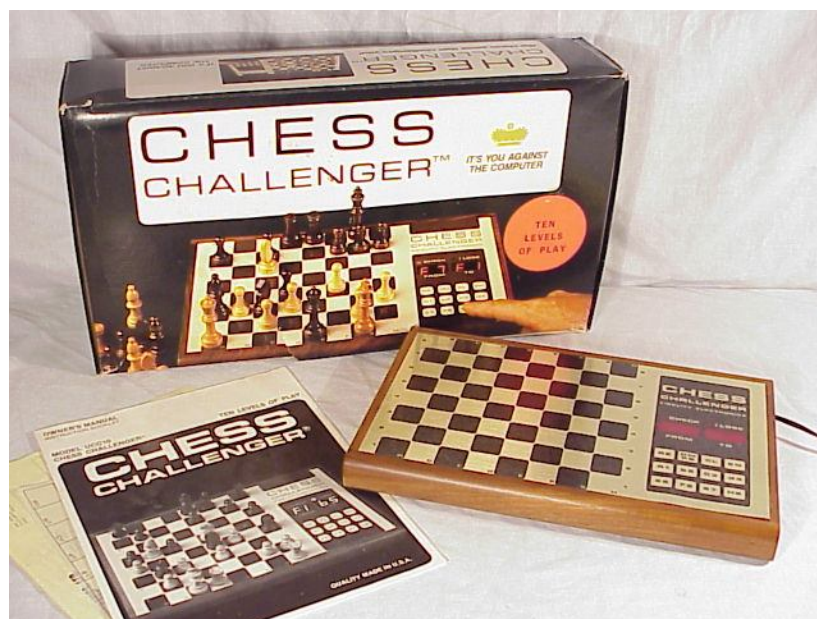
En nog een afbeelding van de Chess Challenger 10 (C),
die in het bezit is van de Engelse verzamelaar Mike Watters.

Luuk deed een oproep naar meer informatie op Schachcomputer.info

Date: 7 december 2011
Hallo Alle,

Ich habe eine Frage fur diejenigen die daruber etwas mehr wissen. Wie bekannt gab es einen Fidelity Chess Challenger 10 (C) - Modell nummer UCC10 -, ausgefürht wie zum Beispiel in http://www.schaakcomputers.nl/schaakcomputers/Fidelity/chess3cc.php?item=10&merk=FidelityCC#2. Genau dieses Gerät ist geöffnet geworden von einem Deutscher Bekannter von mir und er machte folgendes bekannt:

Es ist einer 8K Program das lauft mit einen 8080 CPU, genau wie beim CC1 und CC3. Konnte es sein das CC10C ein überbearbeitete Version ist von CC3? Einen sogenannte "upgrade" mit neue Name, denn es gab vielleicht viele unverkaufbaren CC3's....Wie ist es möglich das dass 8080 Programm besser spielt wie der CC10B mit Z80A Processor, das lauft mit doppelten Geschwindigkeit? Mike Watters hat auf seinen Seite so etwas aufgemerkt über seine CC10 in seiner Sammlung. Dan gibt es noch dieses Modell in Internet von Fidelity (noch niemals vorher gesehen von mir) an: http://home.germany.net/nils.eilers/cc10.htm. Ist das vielleicht das genannten CC10D Modell? Es hat einen Z80A Processor. Das Programm scheint identisch zu sein mit CC10B??

Mit freundlichen Grüße, Luuk

Date: 7 december 2011
Hallo Luuk,

der CC10 bei Nils Eilers ist ein "normaler" CC10 A oder B. Einen D hat es meines Wissens nicht gegeben, das D in der Anleitung steht für "D"eutsch. Interessant ist die Erkenntnis, daß das Programm tatsächlich nur 2K belegt, was das ROM-Listing belegt. Ich vermute daß CC1/3 und auch CC10C mit 2 K auskommen. Die Spielstärke der CCs ist an den Level gekoppelt, das Programm verwendet pro Level fest eingestellte Suchtiefen. LV2 spielt auf allen Hardware-Plattformen immer gleich, egal ob es mit 2 oder 4 Mhz läuft. Es ist dann nur schneller fertig. Da der CC10C für LV2 ca. 10 Sek. benötigt, läuft dieser umgebaute 10C (im CC3-Gehäuse) bei 2 Mhz mit 20 Sek. in LV2, passen also beide in die Aktiv-Schach-Vorgabe. LV3 ist bei allen CC10 zu langsam, beim CC10A/B mit 35 Sek. knapp drüber (er hält diese Vorgabe aber meist nicht ein und ist noch langsamer). Da 10C etwas besser in LV2 ist als ein 10B, bleibt dies auch bei 2 Mhz so.

Gruß, Achim

Date: 7 december 2011
Hallo Achim,

Danke fur deine Reaktion. Der CC10 of Nils ist meiner Meinung nach dennoch nicht einer "normaler" CC10A or B denn es hat keine beeper (keine beeper circuits) eine 2 K Programm (statt 4K) und das Holzgehause ist doch etwas besonderes.

Viele Grüße aus Holland, Luuk

Hot news about the Chess Challenger 3 and Chess Challenger 10 (C)

Date: 17.01.2012

Hi Hein,

Luuk has suggested I should contact you directly. First, thanks a lot and praise for your great website! It is a tremendous asset for the chess computer collector's community hand has been an instrumental guideline for building my own collection of Fidelity machines. I've also "lured" Luuk into lending me the more rare machines from his collection for analysis and ROM readout, in return, I changed all the old electrolytic capacitors in his machines to new high-quality ones so these machines should now work well into the mid 21st century. There is a reliability issue with some of the mask ROMs of the time (bit rot) but now having the ROM dumps, I could repair these machines by replacing the mask ROMs with EPROMs. Believe me I am a highly qualified electronics engineer and my bread job is actually to design chips and I am not prone to beginner's errors as some of the other guys placing wrong information on the web do.

Fidelity Electronics Chess Challenger 10C
(Bild:Luuk Hofman)

For instance, Nils Eilers wrongly read out his CC10 and thought it had a 2Kbyte program. He even ran it through a disassembler and got pseudo source code that, when assembled, would again give 2Kbytes of the same object code. This type of fallacy can be done with any fractional piece of software. The root cause is that these mask ROMs may have mask programmed locations of some address inputs and chip select inputs. It is wrong to treat them as EPROMs. Even alike ROMs in the same machine may have somewhat different pin configurations on the pins in question. It requires great care to read them out correctly.
So, coming to the CC1, CC3 and 10C.

I am absolutely sure the CC1 is a 2Kbyte program, the CC3 is a 4Kbyte program (same size as the CC10A, CC10B, CC7) and the CC10C is a 8Kbyte program.

I guarantee it and I would stand for it with my name, but alas, I do not want my name to be published. Why? Very easy - I do not want people asking me to give them the ROM dumps. This is a legal issue and I simply don't want to bother with that or be dragged into lawsuits. I also do not want that dozens of collectors ask me to repair or refurbish their machines. I would consider doing this only on a case by case basis and only for the greatest and most renowned collectors. Doing such work always involves risk and needs lots of mutual trust and establishing this basis is impossible on a broad basis (lots of people).

Let's come again to ROM sizes. These always come in powers of 2. So you get 512bytes, 1024 bytes (= 1K byte), 2048 bytes (= 2K bytes) and so on. Multiply that by 8 and you get the number of bits. Some chess computer manufacturers did that to boast more impressive numbers. "32768 bits of program ROM and 2048 bits of RAM" looks much more spectacular than the humble "4Kbytes of ROM and 1/4 Kbyte of RAM" which it actually is.

Regarding the ROM fill grade, the early programs all used up all available ROM space, or nearly all. I think it's pointless to discern that and give smaller, non-power-of 2 numbers. For instance, is a copyright message embedded in the ROM part of the chess program or not? However, if a particular computer combines larger and smaller ROMs, such as an 4Kbyte ROM and a 8Kbyte ROM, of course the correct software size is 12Kbyte.

So much to say about ROM sizes. In the next weeks, I intend to sum up my findings of technical data (ROM, RAM size, speed, etc.) and if you are interested, I will provide that data to you for a cross-check.

Just tell me what you think, and keep up the good work on your webpage.
best regards, ...

<div align="center">***</div>

The author of this article wants to remain anonymous.
_____

Date: 17.01. 2012

Hallo ...,

Allererst sehr vielen dank für ihren vielen arbeit an Luuk's schachcomputers. Diesen alte computers sind von historische werte, und mögen nicht verloren gehen. Ihren erfahrung mit printer circuit boards nehme ich im ernst, und ich sollte die technische daten von CC3 und CC10C ändern auf unseren webseite. Auf ihren wunsch sollte ich ihren name in die schachcomputerwelt auch sicher nicht bekannt machen.

Mit freundlichen Grüße, Hein Veldhuis

Ein Sammler: Ich besitze alle drei Typen des CC10. Der Unterschied ist, dass CC10A+B das gleiche Gehäuse besitzen (16 Bedienungstasten und abgerundete Ecken). Der CC10B hat eine leicht verbesserte Software, indem er jetzt an den geeigneten Stellen die Rochade spielt, die man vom CC10A noch vermisste. Der CC10C hat nur 12 Bedienungs-tasten und eckige Enden. Auch habe ich festgestellt, das die Software nochmals anders ist als bei den Vorgänger. Ich habe viele Partien zu dieser Zeit gespielt und eher den Eindruck bekommen, dass das Gerät eher etwas schwächer spielt als CC10A+B. Das hat zutun, dass die Zeiteinteilung unter der bestimmten Stufe und vor allem im Endspiel schneller geschah, ohne dass das Programm verbessert wurde. Das Gerät ist sicher interessant, da es sicher seltener ist als seine Mitbrüder! Als grosser Erfolg kam danach wie ja sicher überall bekannt der CC7 in Plastik heraus.


Wie der CC3 verfügte er über keinen Kontrollton und hatte nur 12 anstatt 16 Bedienungstasten wie die beiden Vorläufermodelle A + B. Der erste Blick in die Anleitung zeigt, daß nicht nur die Bedienungsfunktion, sondern auch das Programm überarbeitet wurde. Die 10 Stufen haben weitgehend andere Rechenzeiten als der Vorgänger und feinere Abstufungen erfahren. Stellungskorrektur und Problemeingabe sind einfacher geworden.

OWNER'S MANUAL
INSTRUCTION BOOKLET

MODEL UCC10
CHESS CHALLENGER®   **TEN LEVELS OF PLAY**
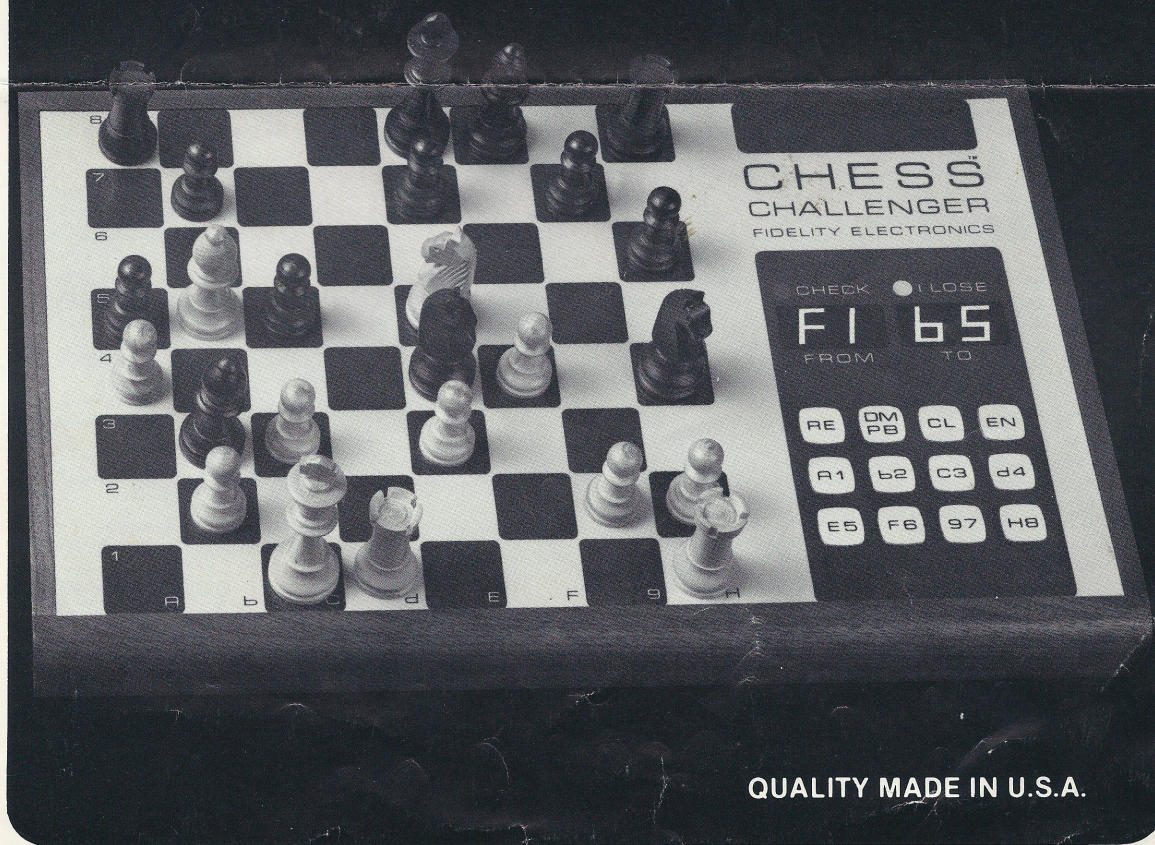
SELECTING CHESS LEVEL

Plug in the game. The designation **CL1** (CHALLENGER® Level 1) will appear in the display windows.

To play one of CHESS CHALLENGER'S® more advanced programs, press the CL Key (CHALLENGER® Level), and **CL2** will appear in the windows. By continuing to press the CL Key, the windows will display **CL3**, **CL4**, **CL5**, **CL6**, **CL7**, **CL8**, **CL9**, **CL10**, and then **CL1** again, thus indicating the level of difficulty that CHESS CHALLENGER® is ready to play.

CHESS LEVEL	AVERAGE RESPONSE TIME
CL1 - Beginner	3 seconds
CL2 - Intermediate	10 seconds
CL3 - Experienced	50 seconds
CL4 - Advanced	1:20 minutes
CL5 - Tournament Level	3 minutes
CL6 - Tournament Practice	6 minutes
CL7 - Superior	12 minutes
CL8 - Expert	20 minutes
CL9 - Postal Chess	1:10 hours
CL10 - Mate in Two	15 minutes

The CL Key can be used at any time, either before or during the game, to change the level of difficulty. When the CL Key is used during the game, the windows will display the level currently being played. By continuously pressing the CL Key, the desired level of difficulty can be selected.

SELECTING OFFENSE OR DEFENSE

Set up all the chess pieces according to the rules of chess. Since the light pieces have the first move, CHESS CHALLENGER® presumes you will choose the light pieces, and thus you are ready to make the first move and commence playing.

To play the dark pieces press the EN Key (enter), and CHESS CHALLENGER® will display the first move.

To change sides and play from the top of the board, press the DM/PB Key (Double Move/Problem Mode), and the windows will display **do ub**. Then press the EN Key. CHESS CHALLENGER® will then display the first move for the light pieces from the bottom of the game board.

THE GAME BOARD

Each of the squares of the chess board is designated in accordance with international chess notation by a letter of the alphabet and a number, which must be conveyed to the computer when chess moves are made. The vertical (the file) squares are lettered A to H; the horizontal squares (the rank) are numbered 1 to 8. Therefore, when the game begins, the white King's pawn is on square E2; the black King's pawn is on square E7.

THE PLAY

ALWAYS ENTER THE ALPHABETICAL LETTER FIRST, AND THEN, ENTER THE NUMBER.

EXAMPLE: To move the white King's pawn two squares forward.

1. Press Key E5. The FROM window will display **E**.
2. Press Key b2. The FROM window will display **E2**.
3. Press Key E5. The TO window will display **E**.
4. Press Key d4. The TO window will display **E4**.
5. Manually move white King's pawn from square E2 to Square E4.
6. Press EN Key, which registers the move in the computer.
7. The computer will respond with its randomly chosen countermove.
8. Manually move the computer's piece according to the instructions in the display windows. (As the computer is considering board position and choice of available moves, the lights in the display windows will tend to flash. This movement indicates that the computer is "thinking".)

To erase a move before it is entered into the computer, press the CL Key (clear).

CHESS CHALLENGER®
FIDELITY ELECTRONICS

CHECK
Lights when the computer has you in check.

FROM WINDOW
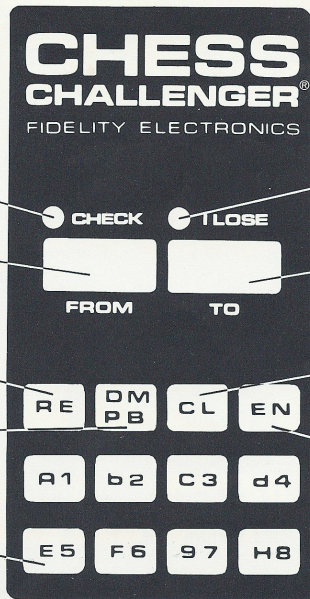Displays the position of the piece you want to move (your starting position).

RESET
Starts the game — will cancel memory.

DOUBLE MOVE/ PROBLEM MODE
Override Key to enter multiple moves; to set up chess problems or replace lost pieces.

KEYS
Designate rank and file board moves.

I LOSE
Lights when computer admits defeat and is in checkmate.

TO WINDOW
Displays the new position to which you have chosen to move your piece.

CLEAR/CHALLENGER® LEVEL
To clear an unwanted move before pressing ENter, to determine level of difficulty (choose from 10 different levels).

ENTER/ POSITION VERIFICATION
To enter your move into the computer; displays the board position of each piece.

CHECK   I LOSE
FROM   TO

RE   DM PB   CL   EN
A1   b2   C3   d4
E5   F6   97   H8

SPECIAL FEATURES

CASTLING

CHESS CHALLENGER® is programmed to castle when it decides such a move is advantageous. The computer informs you that it has castled when its King moves two spaces across the last rank. `FROM E8 TO g8` indicates a castle to the King side, and `FROM E8 TO C8` indicates a castle to the Queen side. If you, the player should elect to castle, the procedure is the same. For King side castle enter FROM E1 TO g1; for Queen side castle, enter FROM E1 TO C1. Castling can only be performed when the rules of chess permit this maneuver.

EN PASSANT

The computer will execute the En Passant maneuver when it deems such a move to be beneficial.

If you, the player, choose to execute an En Passant maneuver, simply enter the move in accordance with the rules of chess.

EXAMPLE: From d5 TO C6 would capture the computer's pawn which had just moved to space C5 from space C7.

BOOK OPENINGS

CHESS CHALLENGER® has been programmed to initiate and follow the opening lines of a broad vocabulary of book openings (e.g. French Defense, Ruy Lopez, Guico Piano, Sicilian, Queen's Gambit Declined).

SOLID STATE

Turning the game OFF or pressing the RE Key (reset) automatically resets the program. For lengthy games, leave the game ON, as CHESS CHALLENGER® is all solid state and is designed to be left ON for days or weeks, as desired.

ILLEGAL MOVES

The computer will always respond with a legal move. Moreover, CHESS CHALLENGER® expects the human player to do likewise. If you make an illegal move, the computer will stop you by immediately displaying `---` in the display windows. Enter a legal move to continue with game play.

POSITION VERIFICATION

CHESS CHALLENGER® possesses the ability to display the exact position of each of the pieces on the board at any time during the course of the game. By pressing the EN Key, the FROM window will display the position of each piece starting from Rank 1 and File A. The digit displayed in the TO window will display the code which defines each piece, as described in the table below. An `E` (enemy) will appear in front of the digit in the TO window to indicate that the piece belongs to you, the human player. By pressing the EN Key, the computer will continue to display the chess pieces for each Rank, reading from left to right. To stop the position verification at any time, continue the game by pressing the CL Key and entering the next move.

Code as represented in the TO windows:

PAWN	- 2	ROOK	- 8
KNIGHT	- 4	QUEEN	- A
BISHOP	- 6	KING	- C

EXAMPLE: To verify the position of chess pieces at the beginning of a game, press the EN Key, and `A1 E8` will appear in the windows to verify that there is an enemy's (human) rook on square A1. Press EN again and `B1 E4` will appear to verify that there is an enemy's knight on square B1. Continue to press the EN Key to verify the position of as many pieces as desired.

PAWN PROMOTION

As in a normal game of chess, when a pawn reaches the "8th Rank", the computer will automatically promote the pawn to a Queen. However, if you choose to promote a pawn to some piece other than a Queen, simply use the DM/PB Key (explained later in Problem Mode instructions) to substitute any other piece desired.

CHECK AND MATE

Whenever CHESS CHALLENGER® places your King in check, the "CHECK" light will be activated. If CHESS CHALLENGER® should checkmate your King, the display windows and "CHECK" light will flash to designate that the computer has been victorious. If the computer's King has been checkmated, the display windows and "I LOSE" light will flash to signal your victory.

In a stalemate situation (not stalemate by repetition), the display windows will flash to indicate that the game has ended in a draw.

In the higher levels of play, if CHESS CHALLENGER® determines that you are mated in two moves, it may start to flash a victory even before the actual checkmate. This feature alerts you that it has set up a "Mate in Two" situation from which you cannot escape.

OVERRIDE

The DM Key (double move) can be used at any time during the game to instruct the computer not to respond as you move pieces. Press the DM Key, and the display windows will exhibit `do ub` . Enter a move (in this mode, the computer will accept any move, whether legal or illegal) and the windows will again display `do ub`, indicating that your move has been effectively registered and CHESS CHALLENGER® will not respond with a countermove. Press the CL Key, and enter your next move to continue the game.

RANDOM PLAY

When a choice of advantageous moves are available, CHESS CHALLENGER® will choose a move at random, so that each and every game will be different. With the combination of random play and selected moves, you should enjoy many hours of exciting chess play.

PROBLEM MODE

CHESS CHALLENGER® is a most extraordinary, versatile device, which will permit you, the player, to perform numerous special moves at any time either before or during game play. It is possible to set up chess problems before a game has begun, or to alter the position of pieces during game play, or even to "resurrect" any pieces which were previously captured by either side.

The Problem Mode feature may be used before starting the game by pressing the DM/PB Key twice. The windows will then exhibit `Pr ob` . If you desire to place a chess piece such as a white pawn on space F2, press the F Key and `F` will appear in the display window. Then press the 2 Key and `F2` will appear in display, press E for enemy and then 2 for the pawn. The display window will now exhibit `F2 E2` , indicating that an enemy's pawn is ready to be placed on space F2. Enter this information into the computer by pressing the EN Key. By continuing this process, you can decide to place pieces wherever you wish. If you wish to place the black Queen on g7, press g7, 1, and EN. If you wish to remove the black Queen press g, 7, and EN. Note that, when in the Problem Mode, a queen is represented by `1` and King is represented by `3`. By using the Problem Mode before starting the game, it is possible to set up various chess problems and "Mate in Two" puzzles as desired. Moreover, by using the Problem Mode during game play, it is possible to alter the direction of the game; strengthen your side or the computer's side, resurrect lost pieces, or even to move your King out of an imminent checkmate situation.

If you wish the computer to solve a "Mate in Two" situation for a particular chess problem, set up the pieces in the Problem Mode. Press the DM/PB Key to disengage the Problem Mode. Enter a move to arrive at the "Mate in Two" position, and CHESS CHALLENGER® will respond with the first move of the solution.

If you elect to use the Problem Mode during game play, the same procedure may be used at any time after the first move is entered, except that the pieces already on the board will be displayed. It is then up to you if you wish to eliminate or add certain pieces by using the method described above.

TEST PROGRAM

By means of the science of microprocessors, a miniaturized computer implanted in a solid state system within the game analyzes each position. After considering all possible chess moves, the computer makes a decision which it has determined to be the best available move.

Since the sophisticated program used in this decision-making process is thoroughly tested, the possibility of computer error is remote. If you suspect that your game is responding improperly, we would ask that you write down the series of moves and forward the same to our customer service department.

The following is a test program that indicates correct functioning within the micropressor unit:

COMPUTER RESPONSE

1. Press RE Key — `CL 1`
2. Enter FROM E2 TO E4 — `E7 E5`
   Because of the random feature of CHESS CHALLENGER® the computer may respond with a differend move (i.e. `E7 E6` or `C7 C5`). Repeat steps 1 and 2 as necessary until the computer responds with `E7 E5` .
3. Enter FROM G1 TO F3 — `B8 C6`
4. Enter FROM F1 TO C4 — `F8 C5`
5. Enter FROM F3 TO H4 — `D8 H4`
6. Enter FROM A2 TO A3 — Checkmate

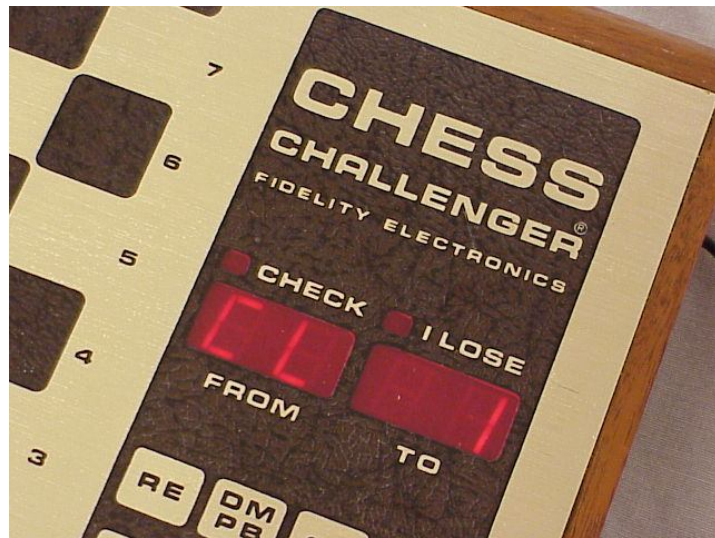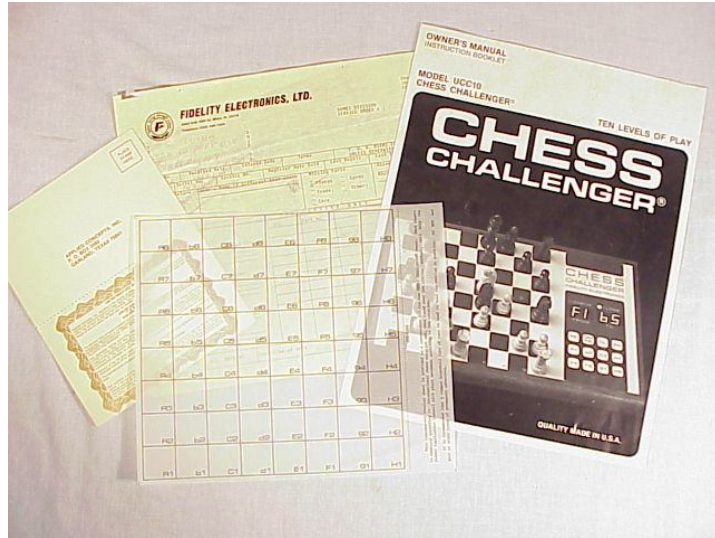## FIDELITY ELECTRONICS, LTD.

Programmierer / **Programmer**
- Ronald C. Nelson
- Bill Fink (Eröffnungsbuch)

Baujahr / Release
- Erste Einführung: Oktober (?) 1979
  (H.P. Ketterling, Schach dem Computer (aus 1980): Ende 1979)

Technische Daten / Technical specifications
- Zugeingabe: Tastatur
- Zugausgabe: 4-stellige 7-Segment LED Anzeige
- Mikroprozessor: 8080 (!)
- Taktfrequenz: 2 MHz (!)
- Programmspeicher: 8 KB ROM (!)
- Arbeitsspeicher: 512 Byte RAM (!)
- Stromversorgung: Netz = 9V- 400mA

Eröffnungsbiliothek / Opening book
- 76 Halbzügen (CC 10 C unterscheidet sich in mehreren Linien von CC 10 A und B)

Spielstärke / Playing strength
- Spielstärke (DWZ/Elo): ca. 1250
- Bewertung: Am besten geeignet für Anfänger und Gelegenheidsspieler

Verwandt / Family
- Cassia - Chess Mate
- Toytronic - Chess Electronics
- VEB Mikroelektronik Erfurt - SC2

Internet
http://home.germany.net/nils.eilers/cc10.htm
[Website Nils Eilers met enige opmerkelijke bevindingen over de Chess Challenger 10 (C).]

http://www.schach-computer.info/wiki/index.php/Fidelity_Chess_Challenger_10
[Schachcomputer.info - Wiki: Chess Challenger 10.]

http://www.chesscomputeruk.com/html/collection.html
[Website Mike Watters - Collection key.]

http://www.schaakcomputers.nl/schaakcomputers/Fidelity/chess3cc.php?item=10&merk=FidelityCC [Collection and game Luuk Hofman vs Chess Challenger 10 (C).]

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Last Updated on January 19, 2012