

Building my dream chess computer Part IV: The image "Picochess V3"

... is unfortunately still under construction.

This will be the last thread regarding my personal version 3 of Picochess for my dream chess computer project and it is for all the brave & foolish people who really would like to check out my Picochess Version 3 on their own (risk ;-)



You can read the other parts of my dream computer project in these threads:

1. The hardware I use: <https://groups.google.com/g/picochess/c/jC-EEwEd15M>
2. More about the features of the PicoChess V3 software: <https://groups.google.com/g/picochess/c/HM2Dtzt6gic>
3. More about my „enhanced uci engine“ concept which allows to easily integrate my PGN replay engine and online engines: <https://>

groups.google.com/g/picochess/c/czHRxH9HLw4

Obviously there are some people who really seem to look forward to the enhancements of my Picochess 3 version so I thought I try to shorten the waiting time with some information about the upcoming image:

Because of all the broad hints to my V3 I could not resist to ask the apple marketing team for support in order to keep the excitement alive ;-))



<https://www.dropbox.com/s/jbhkw74dlair3d2/PicoChess%20Personal%20Version%203.0.mp4?dl=0>

This is the (probably incomplete) feature list of my V3 - actually I lost track of all the things I changed :-(

```
#####
#####
#-----
-----  
# Personal Picochess versions
#-----  
-----  
# The following enhancements to the 0.9N version have been  
implemented:  
#      0. Version set to 1.0 (finally ;-)  
#      1. Voice announcements even if time < 1 minute
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#      2. Possibility to continue playing even if one player runs out of time
#      3. Pre-Moves: Computer and user moves can be done in rapid
sequence
#          (no need to wait for registration of computer move). Even the
#          own move could be played before computer move - it doesn't
matter
#      4. New flexible ponder mode: no more checks if valid moves,
position can
#          be setup without any restrictions (of course it must be a legal
one)
#          Makes analysis and playing differenet variants much easier
#      5. Remote mode working again (without room handling, see
menu.py)
#
#-----
-----  

#      6. Version set to 2.0
#      7. Framework for adding (more or less funny) speech comments
based on
#          various events
#      8. Rolling display of time/score/depth/hintmove in Ponder On or
Normal Mode
#      9. Continue directly after start with an interrupted game if board
still shows
#          last position by reading the last games pgn file
#      10. New cool training mode with training options (with big thanks to
Wilhelm!!!!)
#      11. Configuration parameters for all 1.00/2.00 enhancements in
picochess.ini
#      12. Various bug fixes (eg. pressing the outer buttons for quick
restart
#          instead of shutdown like it was intended, calc. error in evaluation)
#          Again: big thanks to Wilhelm!
#      13. Renaming of the play modes! Now we have:
#          New mode name           Old mode name
#          a5 NORMAL (rolling info display off by default)   NORMAL
#          b5 PONDER ON (rolling info display on by default) BRAIN
#          c5 MOVE HINT           ANALYSIS
#          d5 EVAL.SCORE          KIBITZ
#          e5 OBSERVE             OBSERVE
#          f5 ANALYSIS (flexible option on by default)    PONDER
#          g5 TRAINING (this is new in 2.00)              -
#          h5 REMOTE (working again from 1.00 on)        REMOTE
#

```

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#-----
-----  
#      14. Version set to 2.01  
#      15. Added possibility to change voice volume via menu and  
picochess.ini  
#  
#-----  
-----  
#      16. Version set to 3.0 (a really big one ;-)  
#      I think most of the enhancements only make sense running on a  
Revelation II (or at least  
#      a DGTPI with better display capabilities. Especially on a  
Revelation II it is really fun  
#      to read game comments or the opening name etc. while this is  
exhausting on a DGTPI and awful  
#      on a standalone DGT Clock with its 8 chars)  
#      Some features (like tournament control or PicoTutor) even  
wouldn't correctly work on stand  
#      alone clocks together with picochess because the display can not  
show the correct time control  
#      setting.  
#      Furthermore additional libraries must be installed, a bug must be  
fixed in the python-chess  
#      code itself(!) for the tournament control option and you need  
additional engines for some  
#      of the new feature (don't ask me where to get them or where you  
can get an image etc.)  
#      !!!  
#      !!! Keep in mind: I did these enhancements in this Personal  
Version for my own pleasure  
#      !!! in order to have fun & play with picochess on my Revelation 2 -  
so it might be not  
#      !!! your cup of tea...  
#      !!!  
#      17. Support for Online Engines  
#      - Switch to Online Mode if online engine is choosen (engine name  
starts with  
#      Prefix 'Online')  
#      - Time control settings are taken from the online server challenge  
and are  
#      applied automatically as current time control settings  
#      - Clocks start after first white and black moves. After this the  
player's time already  
#      starts with the annoucement of the best move and no longer
```

```
when
#      the computer move has been done by the user (other than that
no real sync with server
#      times has been implemented)
#      - Online decrement: In order to better "sync" picochess times
with online server times
#      you can subtract X seconds after each own move from your
remaining game time in
#      picochess.ini, default value is 0.9s
#      - additional online info messages (login, seeking, opponent
name, game result)
#      - new online seek in case of 'start new game' event
#      - Online move is automatically played in case of white = online
opponent and clock starts
#      - last move is published to online engine in case of game ending
to inform the online
#      server
#      - online player names in pgn file(s) instead of engine or pico user
name only
#      - Online engines won't be saved in picochess.ini as last engine
#      - picochess.ini "Online decrement" parameter can be overwritten
in online uci files via parameter
#      OnlineDecrement (just add "[DEFAULT] OnlineDecrement = X"
#      - still work in progress (don't ask me when they are ready to
play...):
#      - basic FICS online engine (for this TELNET must have been
installed, default!?)
#      - very basic lichess online engine (for this the BESERK package
must have been installed, still in early beta and not released yet)
#      18. (Better) support for MAME emulated chess engines
#      - requirement: new SDL libraries (probably different for BUSTER)
#              and Q5 library must have been installed
#      - newer mame/mess versions do need BUSTER!
#      - longer startup time for mame engines necessary, voice/sound
end messages from mame engine
#      last ending move is published to emulator engine in case of
game end for specific engines
#      - "engine setup" message because of longer initializing phase of
mame chess engines
#      - support for pico timecontrol setting in uci file settings
according to mame engine levels
#      (just define the UCI parameter PicoTimeControl X Y Z in your
level settings) and time is set
#      automatically after choosing a level
```

- When switching back to non mame engine time settings are reset to last setting before it has been

eventually changed by the uci setting (default time setting can be defined in picochess.ini)

via parameter def-timectrl when having a mame engine as last engine after startup)

- automatic reset of the original time control settings after choosing a non mame/mess engine

- mame engine should not be saved as last used engine on a DGTPI because of possible clock problems when

starting mame engine directly after boot (very strange maybe a sync problem with dgtpicom lib!?)

19. Finally: practical support of remote engines and local engines at the same time(!)

- IMPORTANT! For windows server access an update of the spur and paraminko packages and a

modification of the spur package are necessary (ssh.py must be replaced from a different repository)

- name in engine.ini must start with prefix 'remote_'

- implemented via standard ssh connection, just add the remote login infos

in the corresponding parameters of picochess.ini and your remote engine in engines.ini

and make sure SSH server is running on your remote computer (default on MacOS)

20. Automatic takeback mode (only for mame engines) in case of a blunder move with active PicoTutor

(PicoWatcher must be switched on)

- Normally taking back moves when using mame engine is not possible so this is a nice feature for

beginners (like me ;-) who often play against mame engines.

- only the last blunder move can be taken back when using mame (of course this restriction is not

valid for other native uci engines!)

21. Bugfix: Set correct (old) engine (name) in case of engine error (very important for

new remote/online engines which could easily fail if server is not available)

22. Taking back moves: Now the next move which could be taken back is shown in display and

in long notation format (good for old people like me ;-)

23. After start up and new game events the current chosen engine is shown in the display

(setting in display menu & config parameter in picochess.ini)

24. Support for correct remaining game times for continued games from version 2 (finally!)

25. Synthesized voice support for moves in WebServer (unfortunately works only in desktop browsers and in Android Firefox browser): Big thanks to Martin (author of the ingenious TuroChamp python engine) and deletion of the non working remote room button functionality

Of course you can still use the remote play mode functionality (re)introduced since 2.0 and

the new handling of remote engines)

26. Replay of PGN games (semi automatic) via new engine

- Semi automatic replay of saved pgn games with hint move/score evaluation by an analysis engine

for a specific thinking period (time settings will be changed according to uci file and changed

back automatically)

- "Guess that move" game option for white or black (switch "guessing" sides by pressing the lever)

- Additionally this pgn replay mode can be used to train opening books when setting

an empty pgn file with name 'Book Test' and choosing a specific book in menu: just try and play

a move you think belongs to the chosen book opening (makes more sense when you create specific books

with a specific theme or famous player moves)

- Furthermore an audio comment file for the pgn file can be specified and will be automatically

played during the pgn game replay and can be manually started and stopped during the match

(I did this because I have a (german) genious radio play "Nahrungsauaufnahme während der Zeitnotphase"

which is playing in real time during a tournament game. Now I can listen to the radio play and

watch the game at the same time with picochess - how cool is that!?

- PGN Replay engine settings won't be saved in picochess.ini as last engine

27. Enhancement of supported tags in pgn file: opening eco code, pico remaining times, pico time

control setting

28. For online-, emulation- and pgn-mode: Automatically switch off opening books (setting "no book"

as book option)

```
#      29. Override pgn location from picochess.ini in case the parameter
'location' is set to
#          something different than 'auto' (you can use this if you always get
a wrong auto
#          location).
#      30. Basic chess tutor functionality (even in case the choosen engine
does not support
#          score & hint moves like almost all mame emulated engines) with
the following 3
#          functions (disabled in Online mode)
#          a) Pico Watcher (checks your moves and returns ??, ?, !?, ?!, !, !!)
#              You can change the control limits for the evalutions in file
picotutor_constants.py
#          b) Pico Coach (gives position score and move hint(s) - just lift a
piece and put it back into
#              the same position)
#          c) Pico Opening Explorer (displays current opening name
(alternative) independet of the
#              used opening book
#      31. Tournament time control settings:
#          Possible time control settings in picochess v3.0:
#          time = m, time = g i, time = n g i or time = n g1 i g2
#          Examples:
#          time = ... 7 (time per move, eg. m = 7 seconds)
#                  5 0 (game time, eg. Blitz g = 5 min. and 0 seconds
increment)
#                  5 3 (game time g= 5 min. plus I = 3 sec. increment)
#          Tournament time control settings: n moves in g1 minutes (plus I
increment seconds) and rest
#          of the game in g2 minutes
#          time = ...
#          new: 40 5 0 (n = 40 moves in g = 5 minutes)
#          new: 40 5 3 ((n = 40 moves in g= 5 minutes with I = 3s Fischer
inc.)
#          new: 40 60 0 30 (n = 40 moves in g1 = 90 minutes, I = 0
seconds increment and rest of the game in g2 = 30 minutes)
#
*****#
#      * Important: *
#
*****#
#      for this a python-chess bug in 22.1 version must have been fixed
to support the
#      movestogo go command option correctly!
#      If you have a higher python version look there (eg. 3.7 on
BUSTER)
```

```
#      (in file /usr/local/lib/python3.7/dist-packages/chess/uci.py:  
#       line 949 original: if movestogo is not None and movestogo > 0:  
#                           changed to: if movestogo is not None and int(movestogo) >  
0:  
#           That was not so easy to figure out...)  
#      32. Possibility to directly play an alternative move for the engine on  
the board after the engine move  
#           has been displayed in NORMAL mode (like in TRAINING mode or  
the DGT CENTAUR chess computer)  
#           (setting in menu and config para)  
#      33. Menu for saving, reading and continuing a game from pgn files  
(yes, finally!)  
#           *** IMPORTANT ***  
#           In order to load and continue a saved game you will need to use  
the webserver in order to set up  
#           the correct starting position of the game. For this you must open  
the webserver page BEFORE  
#           you read and restore the game or if not just use the sync button!  
#      34. Display of the book opening name(s) (function of the PicoTutor)  
#      35. New time control setting: Support of a specific max. search  
depth (with a fixed  
#           countdown movetime of 11:11 (unfortunately counting up the  
clock is not possible)  
#      36. Support of written game comments like it used to be in Boris or  
Sargon 2.5 MGS old chess computers  
#      37. Display of pgn event, players & result when loading an existing  
game  
#      38. Enhancements of REV2 and webserver display of moves/  
evaluation/depth/score  
#      39. Display of „new position“ message in case of analysis mode and  
user sets up  
#           a new position instead of playing an legal move (or in case he  
plays an illegal  
#           move which is seen as a new position)  
#      40. Removed the use of vorbis ogg player because of audio play  
conflicts with sound from  
#           mame chess engines in picotalker.py and OS update problems  
and missing start/stop/pause  
#           functions(now pygame.mixer is used instead), see <https://www.pygame.org/docs/ref/mixer.html>  
#           install additional lib via: "sudo apt-get install python3-pygame"  
#      50. Three new voices (one with commentary): Daniel (eng.), Boris  
(eng. with commentary)  
#           and Gust (german). Additinal voice samples (eng./german) for the
```

new picochess V3.0

feature which can be put additionally in all existing voice folders

51. Specific 'set pieces' sound (no voice) so you hear when something wrong with the board position

52. Set opponent pgn player to 'Player B' instead of engine name and user name ro 'Player A'

in case of 'Observe Mode'

53. No more searchmoves in UCI 'go' command for the engine in case normal moves (exception:

Alternative moves), otherwise this might cause problems with the use of internal

engine books etc.(thanks to Rasmus for the hint)

54. BugFix for Buster: Change of voice volume working again (big thanks to Wilhelm!)

55. New (Fischer) "simulated" median move time levels: 5s, 10s, 15s, 20s, 30s, 60s, 90s

(thanks to the schachcomputer.info Forum for this idea!)

56. New "favorite engines" options: It is nice to have all 60 and more engines installed

but it is a pain to select one out of these many engines...

=> new Favorite menu to keep your main and most often used engine separately.

just put your favorite engines into the favorite.ini file like you would do for the

main engine list in engine.ini and put it in the correct engine directory - that's it

*** IMPORTANT ***

Engines in favorite.ini must also appear in engines.ini!!!

57. BugFix: Continue game/load saved game and play in opposite board direction fixed

58. Support of engine subfolders: you can now organize your engines in subfolders

within the main engine folder (just specify the subfolder path in engines.ini in

in front of the filename eg. [MAME/mm5] where MAME is a subfolder within the armv7l

folder (thanks to Wilhelm for supporting the correct engine startup loading procedure!)

59. Fix for the strange clock times reset "bug" when playing without a clock with just a board,

PI and the webserver. With the voice move announcements of the webserver in V3.0 we even

don't have to look at the webserver screen when playing... (thanks to Marcel Swidde for

```
#      the fix in the picochess google groups forum)
#      60. Position correction message after the "Set pieces" error
message occurs the second time:
#      assuming that you are lost and don't know where to put the piece
to its correct position,
#      picochess will tell you what is wrong and how to correct (if you
have your PI hooked up
#      into your WLAN you could just check the correct position with the
webserver board display
#      by just pressing the Sync button of the webserver).
#      Picochess will stop the clocks and check its internal game
position against the external
#      DGT board position and will display two kind of correction
messages:
#      - Put w N f3 (=> put white night on f3)
#      - Clear h5 (=> remove piece from h5)
#      This will continue as long as the correct position has been set up.
#
#####
#####
```

Ans the usual the disclaimer:



This V3 image is based on my V1 and V2.01 forks of the last official Picochess V09N version.

Use the image at your own risk and I don't know if these images will really run on your device without any problems.

I am a python programming beginner and my V3 definitely still contains several bugs which may or may not occur in your set up - so keep that in mind. The software quality of my V3 enhancement is definitely not the best (lots of global variables etc.) but the best I could do and as nobody else tried it I just did it. Maybe some ideas of my code will find its way back into an updated later version of the main picochess repository...

Of course I don't offer any guarantee or support for this version - so if you don't like something or something does not work for you or you would expect: just use a different image/version - Picochess V09N still works fine!

BIG THANK YOU

This Version would not be possible without the great work of the picochess inventors, all developers and the great community which made all this possible - thank you guys!

After all these years I am still impressed of what has been created with such a small computer and only a chess clock and a chess board, incredible.

Big thanks to Al & Wilhelm for endless hours of testing and using my V3 in their daily chess life.

Special thanks to Al for providing a fresh compile of a really fine selection of the most interesting engines (at least in my opinion) and all the mame uci sfiles with detailed automatic time settings for picochess (a new V3 feature).

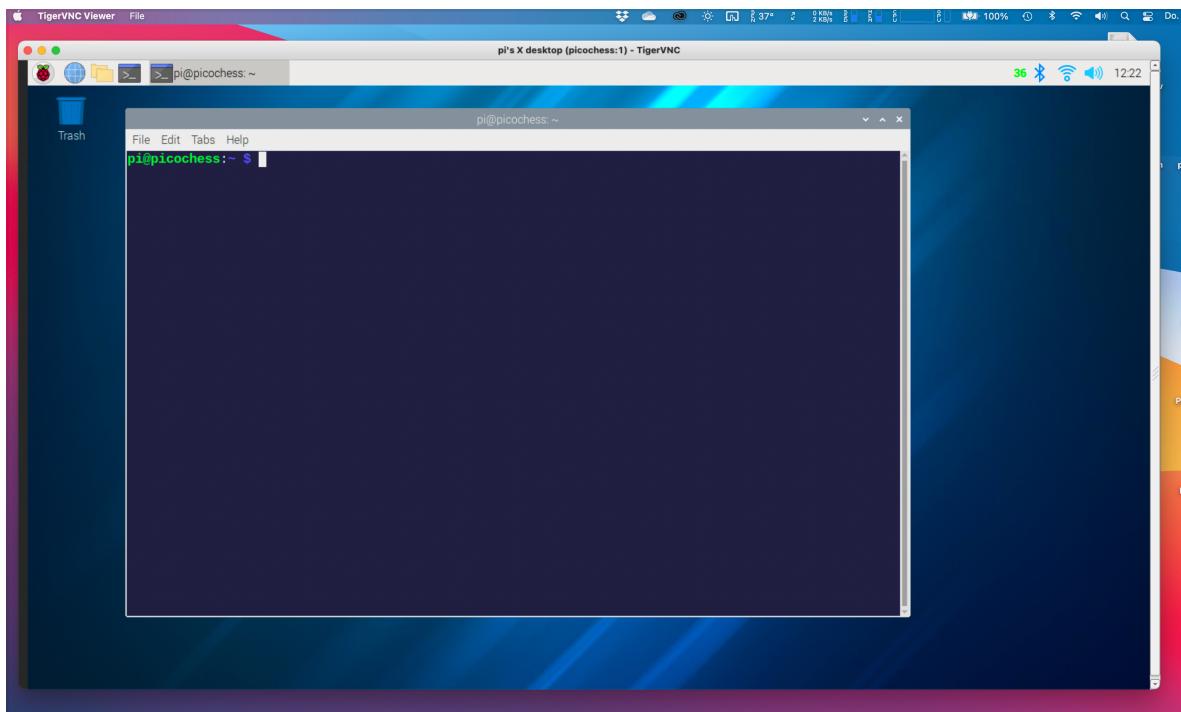
FAQs, Tipps & Tricks:

1. As there is no dedicated manual for my V3 version please read about the features in my above mentioned threads. I just put my 3 part thread forum description into a pdf/ePub format, you will find these

(together with all other documents I have gathered) in the manual folder of the main picochess folder.

2. So what's in this image? The V3 image is based on Marcels excellent picochess 10 image which means you have a Desktop O and also a samba and VNC server preinstalled (Henri will like this ;-). I have testet the VNC connection with the TigerVNC Viewer for Mac as the internal VNC client of macOS did not work for that. Bluetooth and WLAN are of course activated you just have to set your home SSID and password. I just do this directly after I flashed the image to the sd card by copying my wpa_supplicant.conf file into the main boot directory. The wpa_supplicant.conf file should look like this (for Germany DE as country)

```
country=DE
ctrl_interface=DIR=/var/run/wpa_supplicant GROUP=netdev
update_config=1
network={
    ssid="WLAN NAME"
    psk="PASSWORT"
    key_mgmt=WPA-PSK
}
```



3. Compressed image size is about 7,5 GB and uncompressed it will fit on a 16GB sd card. Keep in mind that different manufacturers could have small differences in sd card sizes so eventually you must use an even

bigger card when you get a warning when trying to write the image. As some of my enhanced uci engines use a file transfer for communication the faster the sd card the better.

4. The engines: Newest versions of all the standard engines including stockfish 12 (hello Peter ;-), all historic engines from the paper engines of Alan Turing and SOMA up to one of the first chess programs running on a real IBM computer Bernstein. Mame is preinstalled, see below. Some more python and lua script engines like the original Sargon I program and my own engines: PGN Replay and FICS Online engine.
5. Voices: New voices for supporting all new V3 features (sorry only German and English) but the new feature samples are added to every english and German existing voice. Also some voices with basic commentary like GLaDOS (thanks to Jon in this forum!) or my BORIS or Dimitri voice (try Dimitri with a quick online game - that's fun)
6. Regarding the DGTPI button to switch off picochess: This has slightly changed so that standby mode with bluetooth reconnection is possible: Pressing the button the first time when Picochess runs will shutdown the PI but the display stays on. Just wait until the computer connection icon vanishes and press the button a second time to switch off the display. Now the DGTPI is in standby mode. Pressing the button a third time will startup the PI again and bluetooth connection should be successful. So you don't have to cut the power supply for a successful reconnection.



7. Engine handling: engines.ini MUST consist of all existing engines. Your favorite engines of the engines.ini should be defined additionally in favorites.ini. These will appear in a separate „Favorites“ menu to give faster access to your most used engines (I have created an example based on the engines of this image). You can't add or delete engines in the favorites menu via the clock buttons, you must edit the favorites.ini file like an engine.ini file - sorry Henry ;-) I for myself just copy the most interesting engines for me from engines.ini into favorites.ini - that's it.
8. This image includes the most current mame/mess version 0225 and all needed libraries/packages, engine scripts and uci files for the emulated chess computers. You must put the roms of the chess computers you own(!) into the corresponding roms directory of mame installation: /opt/pico-chess/engines/mame_emulation. Roms must always match to the used mame version - so if you have problem with a rom you are most probable using wrong version of the rom which is not compatible to the mame version. The mame engine uci files consist of the emulated chess computer levels plus the time control settings for picochess so that the time will automatically set to the corresponding level (thanks to AI for defining these). After adding the roms you must add the corresponding engine.ini (and evtl. favorites.ini). I have included a engine_mame.ini from where you can copy the necessary entries.
9. The new feature „position correction message“ will be activated when the „set pieces“ message occurs a second time (not before this happens)
10. Opening books are automatically ignored for mame and online engines, all pico tutor features (watcher, coach) will be switched off for online chess.
11. The new tournament and search depth levels only work if the engine does support these uci commands.
12. Modifications to existing packages: python-chess for correct support of tournaments levels, ssh communication for correct windows remote engines
13. Almost all new V3 features can be changed via the clock menu - just click you throw the menu to see all possible settings etc eg. if you don't like the display of the engines name after starting a new game (or startup) switch it off within the system display menu.
14. The read game option is only for reading a saved game in order to continue it, not in order to replay it
15. Use the new PGN engine for replaying a game which has to be specified in the uci settings. You will have to edit these uci settings for new games or if you want to delete the examples I have added -

sorry Henri ;-). By default there are already entries for the game slots 1-3, the last game and all (played) games. If there are more than one game in a pgn file you can define the planning sequence of the games (up/down/by chance), if you just want to replay it or if you would like to guess the next move for one side. Furthermore you can specify an audio file (start/stop with pause clock button) the thinking time for the analysis engine which will calculate a move hint and evaluation (check these by using the normal buttons for this). Check out the uci parameter in my examples and you will know how this works. German users should have a look at the Hoerspiel (I liked it very much) and English spoken users at AI's game/commentary for this Kasparov game

16. FICS Online engine: By default you can start playing right away as guest. For a rated game or being able to play versus a friend you will have to create a (new) user on the FICS platform (I would suggest not to use your existing one for playing with the board) and enter your username and password to the corresponding uci [MatchFriend] settings of the fics engine (fics.uci) - sorry Henry ;-). If you want to challenge a friend add the correspond settings to the uci file, for waiting to be challenged by a friend add the [wait4friend] settings, see the default examples in the existing fics.uci file. You can easily try the match

... to be continued.

Ok now for the images:

1. DGTPI / DIY DGTPI



2. Non DGTPi (although this only makes sense in combination with a revelation II because of the enhanced display of 11 characters)

