DIYPACK25a Expansion Pack, COPYRIGHT 2006-2007 DIY ELECTRONICS and Jim
Robertson.

WEB: http://www.kitsrus.com

Dear Customer,

Thank you for purchasing a DIY Programmer.

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IMPORTANT COPYRIGHT NOTICE!

This readme is brought to you by Jim Robertson of NEWFOUND ELECTRONICS on
behalf of DIY ELECTRONICS (HK) Ltd.

This latest (and last) update is mostly the work of Jim Robertson with some
assistance from beta testers on the DIY forum board.

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DIY PRODUCED programmers known as K128, K149(A...F), K150 and K182. The
intended use of these programmers is for the READING, WRITING, VERIFYING,
ERASING and BLANK CHECKING OF PICMicros on genuine DIY produced programmers
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firmware that contains copyright intellectual property of Jim Robertson.
YOU MAY NOT ALTER (OR 'REBADGE' AS YOUR OWN) THIS TEXT WITHOUT PERMISSION.
Nor may anyone use the latest firmware or chipdata file with any programmer
other than a genuine DIY programmer. Users may not reverse engineer the
P18A firmware by any means.

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LIMITATIONS OF USE, PLEASE NOTE:

The DIY programmers are hobby level programmers and not designed for
professional level use. DIY cannot warrant the programmers to be completely
free of errors. There are many new PICs added to the 'chipdata.cid' file so
that it is possible for there to be some errors despite the lengthy testing
that has been done. Due to some limitations in MicroBrn, not all possible
config word options are supported in the GUI as MicroBrn only supports up
to 34 unique groups of settings. This slight limiation mostly affects the
larger, more complex 18Fxxxx family of devices. However, all possible
settings are available when embedded in the HEX file. There is no
limitation for settings specified in the HEX file.

Unfortunately the author of MicroPro is no longer associated with DIY and
despite the efforts of a number of Delphi experts, we were unable to get
MicroPro to compile and as a result we are all left to use the existing
executable file without the possibility of updating it even to correct some
known bugs.

It was possible to patch the EXE file to change a few identifying bytes and
text strings. By doing this we were able to create new PIC identifying
strings that helped fix long standing bugs. The EXE was then compressed to
speed up the downloading.

As a result of the above limitation, the plan is to retire MicroPro and
develop an alternate programmer platform.

IT IS ENTIRELY UP TO THE END USER TO DETERMINE THE SUITABILITY OF THIS
EXPANSION PACK FOR THEIR REQUIREMENTS. THIS ALSO MEANS CHECKING FOR
ACCURACY OF THE CHIPDATA FILE. USERS ARE ASKED TO REPORT ANY ERRORS ON THE
DIY FORUM.

http://www.websitetoolbox.com/tool/mb/diykit?forum=13943

Because there are many new PICs added and some important changes to fix
some bugs the 'chipinfo.cid' file has been renamed 'chipdata.cid' and
'MicroPro' has been renamed 'MicroBrn'. Renaming these files helps users to
ensure that they are using the right chipdata file with the altered version
of the software. The altered firmware also has a new protocol
identification.

PROTOCOL - > P18A

IT IS VITAL THAT THE NEW FIRMWARE, CHIPDATA.CID AND MICROBRN FILES INCLUDED
IN DIYPACK25-EP ARE USED TOGETHER. THEY SHOULD NOT BE MIXED WITH ANY
PREVIOUS VERSIONS OF FIRMWARE, CHIPINFO.CID OR MICROPRO. THERE ARE CHANGES
TO THE PROTOCOL AND INCOMPATIBILITIES DO EXIST. DUE TO THE WIDE SPREAD
MISUSE OF THE INTELLECTUAL PROPERTY OF DIY, AND IN AN ATTEMPT TO LIMIT THIS
INTO THE FUTURE, DETAILS OF THE EXACT PROTOCOL CHANGES ARE NOT BEING OPENLY
PUBLISHED.

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OLDER AND OUTDATED DOCUMENTATION

Much of the documentation for the DIY programmers distributed in the
DIYPACKS such as the "README.TXT" file, the product PDFs and the help file
is outdated. Due to the departure of key people associated with DIY and the
death of the founder and owner of DIY Electronics, Peter Crowcroft some
information regarding the frequency of updates etc is not applicable
anymore.

Some of the information on the DIY web site and the DIY programmer forum
board is also very outdated. There is no current effort to develop what was
known as P019.

Additionally, information in the "PROTOCOL.TXT" file is just not correct
even for the intended P018 and now even less so for the new protocol P18A.

That being said, there still is important information in the older
documentation. The "RESMOD.PDF" is required reading for owners of older DIY
programmer models and the update procedure found in the "README.TXT" file
distributed in the DIYPACK installation files is similar to the required
update procedure for the new firmware in this expansion pack.

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BUGGED FIXHEX AND FIXHEX2

FIXHEX2 IS THE COPYRIGHT MATERIAL OF JIM ROBERTSON AND IT MAY NOT BE
DISTRIBUTED WITHOUT WRITTEN PERMISSION FROM JIM ROBERTSON.

FIXHEX is a small program written by Bob Axell and it is required to alter
HEX files produced by some "C" compilers to be compatible with MicroBrn.
MicroBrn is not capable of reading lines that contain an ODD BYTE COUNT and
attempting to load such a HEX file will cause an error condition in
MicroBrn. This limitation in MicroBrn was not apparent until after the
author of it had moved on and the problem surfaced in later versions of
some compilers.

Unfortunately there is a bug in the original FIXHEX in that it does not
correctly write altered lines if the last byte of that line ended with a
"0" This means there is a 1/256 chance per odd line of FIXHEX not producing
a loadable file for MicroBrn.

A new version of FIXHEX called FIXHEX2 has been written by Jim Robertson
and this replaces the bugged FIXHEX. It also offers a few new features like
automatic background operation so the user is not burdened with having to

perform extra steps to load a HEX file for the 18Fxxxx family. FIXHEX2 is
distributed as an EXE file only however it requires a few common DLL files
to be installed on the target PC. If these are not present (you get an
error message) then they can be obtained off the Microsoft web site:

http://download.microsoft.com/download/vb60pro/install/6/win98me/en-
us/vbrun60.exe

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UPDATE PROCEDURE FOR THE DIY EXPANSION PACK

This expansion pack does not require any special PC installation other than
to copy the included files into your existing DIY programmer folder or any
folder of your choice. It does not overwrite any older files as all the
files in the Expansion Pack are uniquely named. None of the existing files
in DIYPACK25 are in any way altered or overwritten. No effort has been made
to update these files. The resources required to do this just are not
available.

None of the older DIYPACK files are required for the operation of the
expansion pack however there is some important information in the previous
documentation and the latest DIYPACK should still be installed.

To use this expansion pack once you have extracted the files into a folder
of your choice, simply use MicroBrn instead of the older MicroPro. MicroBrn
will load and use the updated and newly named chipdata.cid file and a newer
help file.

LOADING THE NEW HEX FILES

The expansion pack does require new firmware to be installed on your DIY
programmer. Run your OLD copy of MicroPro.

Choose 16F628 from the chip selector. If you have a 16F628A or 16F648A
these can also be used if you select the matching part in MicroPro and
simply ignore the "Fuse program error" message you get at the end of
programming. This message does not matter. It only relates to unused bits
in the newer PICs

Look for the following files in your NEW installation directory.

K128 USERS

Load the file called "epk128.hex"

K149-A USERS

Load the file called "epk149a.hex"

K149-B to F USERS

Load the file called "epk149bf.hex"

K150 USERS

Load the file called "epk150.hex"

K182 USERS

Load the file called "epk182.hex"

BEFORE you Press PROGRAM to program the chip check that the EEPROM OVERRIDE
option found under the "OPTIONS" menu is NOT selected (the icon must NOT be
depressed.) Failure to ensure this will result in incorrect operation of
the new firmware.

When completed, close MicroPro and then turn off the programmer power.

Remove the 16F628 from the IC socket on the programmer board and replace it
with the newly upgraded chip making sure it is placed correctly.

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KNOWN (UNFIXABLE) PROBLEMS WITH MICROBRN (Version: v200807)

- Some of the newer 18Fxxxx series have more CONFIG settings than can be
  displayed and edited in the MicroBrn GUI (MicroBrn only allows 34 max).

- MicroBrn may write code memory contents into its data EEPROM buffer for
  the 18Fxxx family before overwriting it with correct data EEPROM data.
  If there is no data EEPROM data embedded in the HEX file then the data
  EEPROM space will be programmed with part of the program code and not
  left in the default "0xFF" state.

- Does not 'SAVE' the config word settings correctly.

- Does not 'SAVE' ID values correctly.

- Does not 'SAVE' the Data EEPROM correctly.

- Does not always display the ID values in the 'Fuses' window for the
  12-bit core parts. MicroBrn may display an ID textbox for the 12-bit
  core Flash parts but it does not contain valid values that are either
  passed to the programmer or read back from the programmer. However, ID
  values embedded in the HEX file do seem to program correctly with the
  P18A firmware. (Previous firmware did not always support ID locations
  for 12-bit core PICs.)

- The blank check operation may not correctly display 18Fxxxx fuses as
  blank even when they are. This applies to most of the newer added
  18Fxxxx PICs.

- Does not support 18F parts greater than 64kbytes - attempting to will
  cause a syntax error message when reading the chipdata file. (Note:
  the P18A firmware only supports newer 18Fxxx PICs up to 32K. Existing
  (P018) support for 64K PICs is still available with P18A.

- Does not have independent timing for the code and data eeprom programming
  causing excessive program times for some PICs.

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UPDATED FIRMWARE P018 TO P18A

In order to support newer devices, the existing P018 firmware from
DIYPACK25 under went a substantial code rewrite. The main aim of this code
rewrite was to enable support of the newer 18Fxxxx parts and to correct
existing bugs in the firmware that prevented correct programming of the
10Fxxx parts and, in some cases, existing supported 18Fxxxx and 16Fxxx
parts. A number of other minor errors and omissions were corrected.

Existing DIYPACK25 PICs subject to firmware corrections in P18A include:

- 10Fxxx
- 12C50x and 16C50x
- 16F7x7
- 18Fx2x5

As a result of the corrections to the 10Fxxx support, more PICs using a
similar programming algorithm can be supported. Most of the 12-bit core
Flash parts are now supported by the firmware and entries can be added to
the chipdata.cid file for these parts.

NOTE: New (currently marked as 'future product' by Microchip) 12-bit core
parts with data EEPROM are not supported by P18A. It is expected that most
other newer parts will be supported however it is impossible to know what
Microchip will do to alter the programming requirements so there are no
guarantees.

MORE STABLE OPERATION

P18A has been coded to hopefully offer more stable communications than

P018. While it is not possible to confirm that this will be the case for
everyone, intial feedback does support that P18A works better than P018.

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USER SUPPORTED UPDATES

The DIY programmers use a user editable file for chip information and this
can be added to by anyone. While it can be a little daunting at first look,
often a new PIC is a version of an older supported PIC and it can simply be
a cut 'n' paste of it. There is some documentation in the Microbrn help
file and you may also find help here on DIY's forum:

http://www.websitetoolbox.com/tool/mb/diykit?forum=13943

Microchip's programming specifications also are required reading and are
available here:

http://www.microchip.com/stellent/idcplg?IdcService=SS_GET_PAGE&nodeId=1407

What you are looking for in the programming specifications are other PICs
supported by the same spec that are already included in the 'chipdata.cid'
file. Typical changes to an existing PIC include the CHIPid value (found
toward the end of the programming spec), the size of the code and/or data
EEPROM and sometimes a change to the config word ('Fuses'). Other common
changes that are not found in the programming spec and relate to MicroBrn
and the DIY programmer are the PIC's footprint (KITSRUS.COM=) and the
required Vdd/Vpp (PowerSequence=) switching. Both these can be found by
looking for a similar pinout package in the chipdata.cid file. It is rather
intuitive when you look at it.

It was never the intent of DIY to be the sole source of updates and there
are some PICs that are not included in the chipdata file that can be added
without to much effort by the end user.

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PARTS NOT SUPPORTED BY P18A (and possible roadmap)

All the following PICs cannot be supported by P18A due to limitations in
the existing firmware and/or Microbrn and/or the chipdata.cid file.

These devices immediately below are supported by a future upgrade however
this is not currently not owned by DIY ELECTRONICS and is not planned as a
free release, rather as a very substantial upgrade offering much quicker
programming and more supported PICs.

- 16F88x (due to 2nd config word and incompatible programming command set.)
- 16F716 (incompatible programming command set)
- 12F519, 16F526 (plus other 12-bit core parts with data EEPROM)
- Any newer 18Fxxxx part added since DIYPACK25 that is over 32KB code
space.
- Any 18Fxxxx Data EEPROM over 256 bytes including parts supported by
  DIYPACK25.
  Data EEPROM support is still available but only to a 256 byte maximum.

Not supported but maybe later on:

- dsPIC30F

Additional unsupported PICs that are very unlikely to be supported on the
DIY programmer platform ever:

- 18Fxx39 motor control kernel parts
- 16C64x, 16C66x, 16C716 parity bit parts
- dsPIC33 (3.3V) - PIC24 (3.3V) - PIC14000
- PIC families that are 3.3V devices like the PIC18J, PIC18K, PIC24 and
  dsPIC33 cannot be supported by the existing hardware. In addition,
  Microbrn does not support the 5V dsPIC30 family as support for this
  device is not included in the existing MicroBrn or the P18A protocol.
  It may well be supported by a further endeavor outside the scope of
  this expansion pack.

End of this readme.