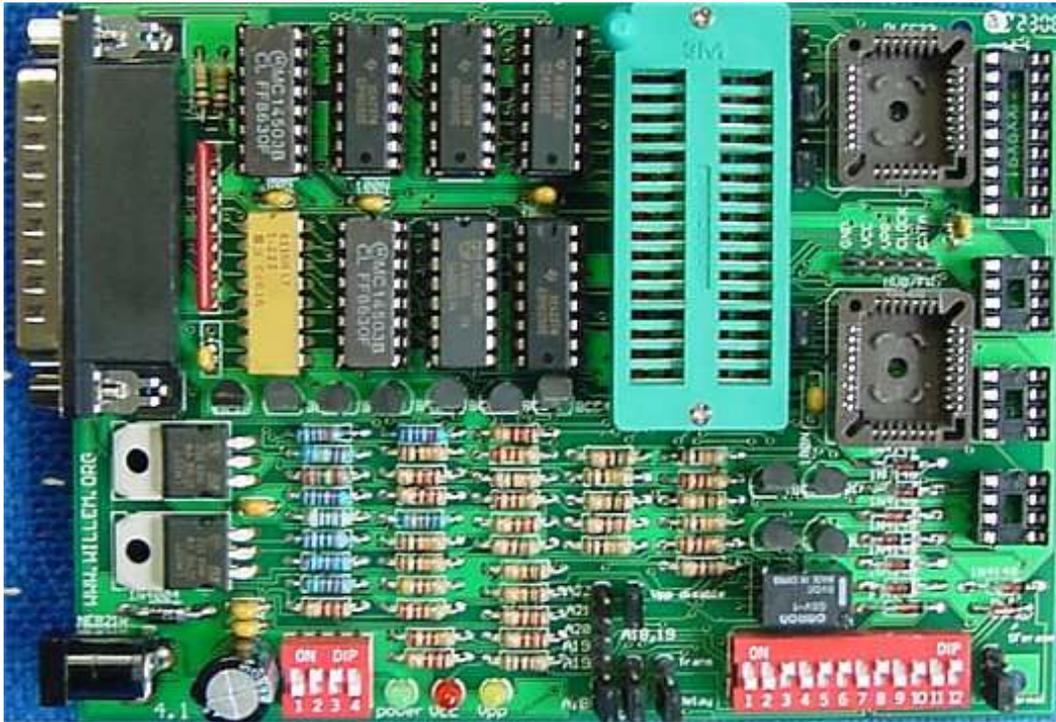MANUAL WILLEM PROGRAMMER 4.0, 4.1 & 4.5

Board 4.0/4.1
Standard setting: Vpp, for 29F040,29C040 and for the 27C080(801) A18,19.
The SF erase header is now 3 pole and has 2 positions : normal and erase.
For DIP 24 chips there are 2 headers Normal/DIP 24 and Vpp/A11.
Standard setting is normal and A11.
For DIP 24 chips set jumpers to: from Normal to DIP 24, 2732 -> A11, 2716 ->
Vpp.
The 29C256 jumper must only be closed for the 29C256, normal setting is
open.
For the HUB/Firmware socket there is one Vpp header.Standard settings open,
closed for Intel 82802 chips.
To set Vcc and Vpp there is a 4 way DIP switch:
1 and 2 are for Vpp: 1 ON Vpp=21 volt , 2 ON Vpp= 12.6 volt, standard setting 1
OFF, 2 ON Vpp=12.6 volt,
both OFF Vpp=25.

3 and 4 are for Vcc: 3 ON Vcc=5 volt, 4 ON Vcc= 3.3 volt, 3 OFF and 4 OFF
Vcc=6.0 volt.
Standard setting 3 ON and 4 OFF Vcc=5.0 volt.
Vpp and Vcc voltages can be modified easy with different resistor values.
For low voltage flash devices the 3.3 volt setting can be used,
in that case voltage drop diodes on adapters must not be used of course.
On the tsop 48 adapter short the 5 volt jumper.

For the Firmware/HUB adapter set to 5 volt.
Sometimes it's necessary to increase R/C delay time: set it higher until the chip ID is correct.
The ICSP connector is for external PIC chips programming.

Board 4.5 has no SF erase option and no support for serial eeproms and Microchip PIC's.

To use the TSOP 48 ZIF see **tsop page**, you don't need to connect the higher address lines of course.
You can choose between 5 different Vcc voltages, this depends on the chip youare using,
check a datasheet if in doubt.
For LV(low voltage)chips 3.3 will be ok.
4-way dipswitch setting: 1 ON 2.7, 2 ON 3.0, 3 ON 3.3, 4 ON 5.0, all OFF 6.0 volt.
Vcc voltages can be modified easy with different resistor values.

Board 4.1 and 4.5.
Set the jumpers to A18 and Vpp for standard use.

Set the jumper to A18,19 for 29F040,29C040.Set the jumper to A19 for XXX080 devices.
A19,A20,A21 can be used to connect to the TSOP 48 adapter.
For connection details see the **tsop page** .

A19,A20,A21 can also be used to connect to the 16 bit 42 pin adapter(27C400..27C322).
For connection details see the **16 bit combi adapter page**.

Set the 27SF erase jumper only to erase SST27SFXXX devices.

The power supply can be a standard "12 Volt adapter" 300-500 mA unstabilised that gives about 16 volt.
This is not critical, output voltage can be between 15 and 20 volt.
Supply voltage must be 24 Volt min. for Vpp=21 Volt operation, about 30 for Vpp=25 volt.

Check the printerport setting in the BIOS,it should be EPP or Normal.
Also check or there are resident programs active that use the printerport like TWAIN drivers.
You may have to remove them.

XP can also give problems when you connect your programmer see **XP polling problem**
It's highly recommended to do this registry update if you use XP,
Eprom's can be changed(written to) during a read or verify.

Connect to the printer port with a 25 SubD cable,
the cable should not be longer than 1.8 meter(6 feet standard cable).
This must be a fully wired 1:1 cable,a null modem or serial cable won't work.
Connect the power supply,the power led must go on.
Make sure that the PORTIO drivers are in the same directory as the main program.

Some driver problems may occur under Windows 2000:
* first, delete an entry in the device manager as follows:
1. On the Start Menu, click Start --> Settings --> Control Panel.
2. In the Control Panel, double click the System icon.
3. In the System Properties window, click the Hardware tab.
4. On the Hardware tab, click the Device Manager button.
5. In the Device Manager menu, click View --> Show Hidden Devices.
6. In the device list find the Non-Plug and Play Drivers entry.
Click the 'plus' sign on the left of the entry to expand the list.
7. Find the dlportio entry and right-click it.
Click on Uninstall in the context menu that appears.
If it is not there already, then no problem carry on.
* in the registry, I deleted entries that had to do with dlportio.
search for dlportio and delete any folder that refers to it.

I think this just removes any OS reference to dlportio so like you are starting fresh.
* download TLDPortIO from the web
* install the drivers using the utility--play around with it a bit--the point is to get the DLL and SYS file installed in the system and start a service.
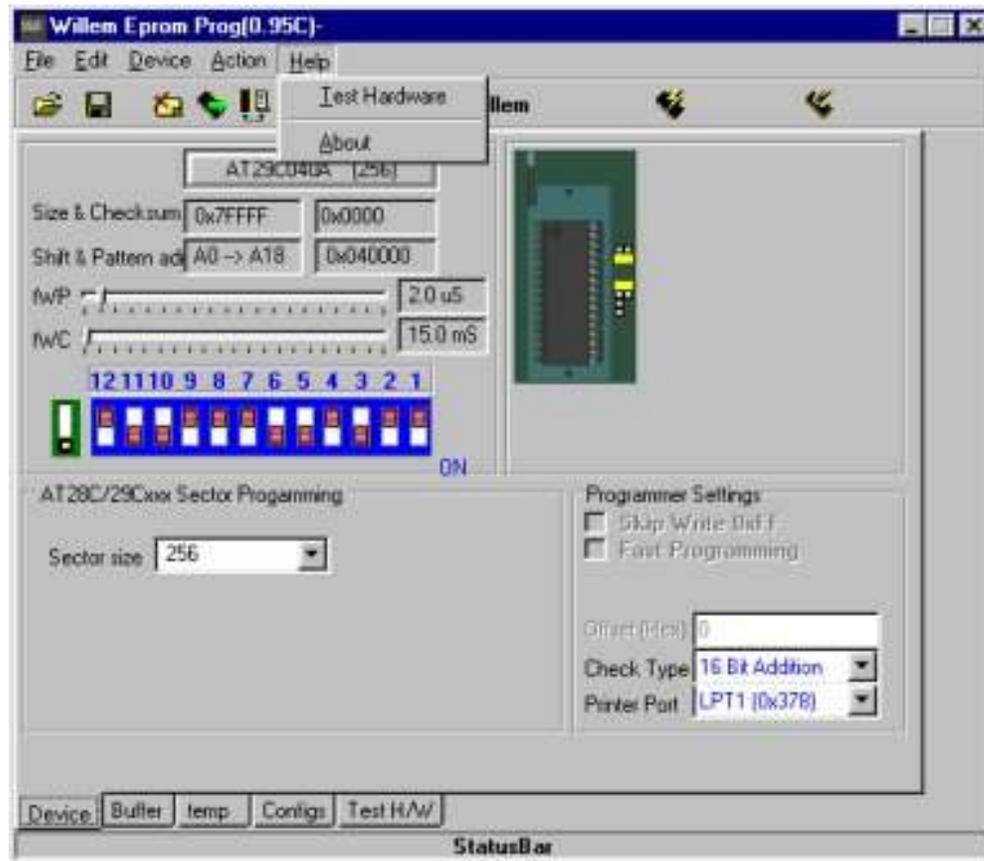* notice that with the driver files installed, and the driver files in the director that willem97g
is in had better be the same..
...and that the burner software still requires the DLL and SYS file in the same directory
Thanks to sadolph.

Test the connection with TestHardware

Select device type and set the DIPswitch .
DIPswitch switches can be red(like in the sofware),white or other colors.

Insert chip and check ID.(not possible with older 27(C)XXXX devices)
If you can't get a valid chip ID it's useless to try reading,erasing or writing.
A valid ID gives the right manufacturer and chip type.

Erase if necessary,load program file and program,the Vcc led will light and with 27,28 devices the Vpp led also.

Programming can fail in different ways:
First byte,error message: error at 0x000000 Buffer=0xXX ,Chip=0xFF or 0xXX.
Causes: chip not inserted right,faulty chip, Vpp too low, Vcc too low or Vcc too high.
random error,error message: error at 0xXXXXXX ,Buffer=0xXX ,Chip=0xXX
Causes: 27CXXX eprom not completely UV erased,tWP/tWC too low,other causes.

Normally you should not change tWP and tWC unless you know what you are doing.
If you get random write errors with 27(C)XXX eproms try higher settings.
Some older NMOS eproms like the 2716 may need higher settings.

In the Buffer section you can see the contents of your program file or the chip if you have done a chip read.

The configs section give an overview of all settings and parameters.

If you need PIC in circuit programming, you can use a DIP connector for the 18 pin
PIC 16F84 socket(5 gnd.,12 clock,13 data i/o,14 Vcc).

The Test H/W section is for testing purposes,see the debug hardware page.

DEBUG HARDWARE PAGE.

This page is about eprom programmer versions 4.0, 4.5, 3.1
PCB3B from Gitti Ieo is much the same but there are also a lot of differences.
The voltage regulator section is totally different:3.1 uses a 7805 and 7812
regulator,Vpp 21 and 25 volt can be selected with zener diodes in the 7812 gnd
line.
Pcb3b uses a MC34063A to generate different Vpp voltages.
The jumper configuration is also different.
Visual inspection
after you have completed your programmer board do a thorough visual
inspection.
This is very important:lots of problems are caused by bad solderings,small
shorts,
bended parts and so on.Use a strong light source and a magnifying-glass.
Checking the voltage regulators and power lines
Connect the power supply,the green power led should light if not try to reverse
polarity.
Check or 12,7 volt is present at the 7812 output pin,if one of more zener diodes
are mounted
you can also check or Vpp=21 volt by switching the 2 way DIP switch.Power
supply voltage must
be 24 Volt min. for this check.If Vpp is too low,20.5 volt for example you can
mount one or
more(serial) 1n4148 standard diodes in pos. Z2 in the opposite direction.If you
want to use
Z2 for the 3.9 Zener diode mount the 1n4148 serial with the 8.2 zener,you can
also use a 9.1
zener instead of a 8.2 type
The 7805 output voltage must be 5 volt of course.
Check all IC's or they have Vcc 5 volt,the Vcc pin is 16.(4049 pin 1)
If the 7805 output is not 5 volt but zero and gets warm there must be a short
somewhere,if the
voltage is lower than 5 volt and gets warm it's most likely a chip mounted in the
wrong
direction,this chip will also get warm.
With 4.0 and 4.5 boards it's a bit different:
the 4.0 board use 2 LM317's that are set with several precision resistors and a 4
way DIPswitch.

The 4.5 board uses a 7812 with a fixed 12.6 volt output and a LM317 with precision resistors.

Testing your programmer
Connect your programmer board and start up the software as described in the **programmer manual**.
If Test Hardware fails check or the power supply and the connection cable are properly connected.
You can also try to set to lpt2 or lpt3,it's possible that your PC uses one of these printerport
addresses even if your system has only one printerport(you can also check this in the BIOS setting).
If the Test still fails you can try to follow the test signal through the circuit:
go to the Test H/W section and check "serial out(D0 pin 2)" ,normally "serial in (/Busy pin 11)"
should become '1' but if the test fails it stays '0'.Vcc will also be switched on.
Start at D-Sub pin 2 and check or the voltages changes between 0 and 5(3..5V) if you check and
uncheck "serial out(D0 pin 2)".If nothings happens there is a problem with the connection to your PC.
If the signal change is ok follow the signal in the same way through 4049(Pin 14->pin 15),
(the signal is inverted now!),transistor BC549 Q6 and Q5(the signal will be inverted again twice)
and through 4049(pin 9-> pin 10)untill you have found the problem.
 4049 pin 10 is connected to D-SUB pin 11,if the signal change is ok here it must be a connection
problem to your PC.
If Test Hardware is ok you can continue with other tests.

It's important to understand that Test Hardware says nothing about the parallel eprom(DIP 32)
section of the programmer,Test Hardware uses the serial devices circuit.
At this point you can try to program an eprom,it's best to use an 28F010 or 020.The whole programmer
hardware and Vpp will used this way and you can easily erase the chip with the programmer.
But you can also use eproms like a 27C020 or 29F040 of course.The test eprom must be empty of course.
If the Blank check fails and you are sure that the eprom is empty there must be a problem in the
reading section;see below how to test it.
Load a file that fills the whole buffer to use the whole device address range.Use a file with lots
of contents,a big *.zip file is perfect.Check device ID and Program if that works and Verify is ok
too your programmer has passed the test.As an extra you can test the address lines that are above
your test eprom address range,but normally that will be ok.

If programming fails you'll have to do more tests to locate the problem.
If programming fails at the first byte there can be different causes.
A failure at the same address every time like "error at 0x040000 buffer=0xXX
,chip=0xXX"
is caused by an addressing failure in this case A18(pin 31 or pin 1)
A random error,can be caused by a poorly UV erased chip or tWP maybe too low,
there can also be other causes like instability in the voltage regulator.

First set the DIP switches as shown in the Test H/W section(the DIP switches are not shown in the
reversed "Willem" direction here).Using the Test H/W function is not difficult:
in 'ZIF 32PIN' check the boxes one by one and use a voltage meter to measure or you get logic 1
(normally 5 volt,A9 (pin 26) is lower because of the erase circuit,3..4 volt)
You can find shorts to measure signals next to the one that is logic '1'.
For example:if you check A5,A4 and A6 should stay low.

To test the 4014 read function check and uncheck OE so that D0...D7 are "greyed out", you can now
apply a logic 1 (VCC 5 volt) or 0 (ground) to the different data inputs on the progamming ZIF
socket (pin 13,14,15,17,18,19,20 and 21).Use the "Read Data" button to test, all inputs at VCC
should read 0XFF, all inputs grounded 0X00 and all values between.You only need to test the 8
different data inputs of course.