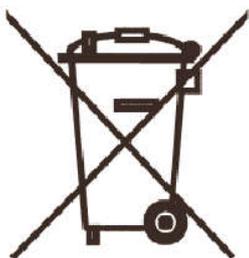


QUASAR PRODUCT 3149E – USB & SERIAL PIC PROGRAMMER (MBv25EP)

General Guidelines for Electronic Kits and Assembled Modules

Thank you for choosing one of our products. Please take some time to carefully read the important information below concerning use of this product. The assembly and operating instructions are on the following pages. Help with component identification can be found on our website at www.quasarelectronics.co.uk/componentid.htm. If you are unsure about any aspect of the assembly or use of this product please contact our Support Team before proceeding.



WEEE Directive (Waste Electrical and Electronic Equipment)

Notice To All European Union Citizens. Important environmental information about this product.

The crossed out wheeled bin symbol on this product, package or documentation indicates that disposal of this product after its lifecycle could harm the environment. Do not dispose of this product (or batteries if used) as unsorted municipal waste. It should be disposed by a specialized company for recycling.

The unit should be returned to your distributor or to a local recycling service. Please respect the local environmental rules. If in doubt contact your local authorities about

waste disposal rules.

Safety: General rules concerning safe use of our Kits or Modules.

To ensure your safety, please observe these safety measures. In no way are these complete. As safety requirements vary, please check with your local authorities, in order to comply with local requirements. If in doubt, seek the help of a qualified person.

Battery or wall-adaptor operated devices are safe devices. They do not require special attention unless mains voltage is connected to an output e.g. a relay.



To ensure electrical safety, and also protection from fire or personal injury, make sure your mains operated equipment complies with these safety hints:

- Use a suitable plastic enclosure. If a metal enclosure is used, make sure it is properly earthed.
- Use a power switch if the device consumes more than 10W. Use a double pole switch for mains operated, transformer-less kits.
- Mount a fuse in series with the mains switch. Use a slow blow (T) 50mA fuse for transformers up to 10W and a 100mA fuse for transformers up to 20W.
- Use a mains input connector, or a robust power cord with a clamp.
- Internal wiring carrying mains voltages must have a minimum cross-sectional area of 0.5mm².

If supplied, attach the power rating label near the power cord of the device and fill-out the mains voltage, frequency, power consumption and fuse values.

Troubleshooting and Support

90% of non working kits are due to poor soldering.

We operate a Get-You-Going service for non-working kits but there is a charge based on the time and components needed to complete the repair. Quite often it is not economically viable for us to repair and it is cheaper to supply a new ready made product at full cost.

Disclaimer

Quasar Electronics reserves the right to change product specifications or to discontinue products without notice. Quasar Electronics cannot be held responsible for any loss or damage, direct or indirect, which might occur from the use of a product. Quasar Electronics Kits or Modules are intended for educational and demonstration purposes only. They are not intended for use in commercial applications. If they are used in such applications the purchaser assumes all responsibility for ensuring compliance with all local laws. In addition, they are not suitable for use as or as a part of life support systems, or systems that might create a hazardous situation of any kind.

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This documentation was written 15 December 2016.

PLEASE READ IN FULL BEFORE PROCEEDING!!

WARNING! To avoid damaging your programmer, please ensure devices are placed in the programming socket with the correct orientation and position as indicated by the MicroBurn software interface. The programming socket should be empty when powering the programmer up or down or applying a reset. Extreme caution should be exercised when using the ICSP header to avoid incorrect connection and damage to your programmer. Do not switch from USB to Serial when the programmer is connected.

Kit 3149E has an extra 10K resistor needed to program the 16F88 chips supported by MicroBurn25ep. The programming transistors have been changed to BC327s for greater reliability and performance. It also has the 3 protection resistors, uses a USB 'B' connector and 6-pin header and harness for ICSP programming.

Parallel ports are slowly disappearing from PC's and laptops, which mean that our current PIC programmers are all facing extinction. So this is our first programmer using the USB port. It can also accept input from a serial port at the flick of a switch.

Note the PCB has a presoldered surface-mount IC on the top of the PCB. This is a FT232BM chip and details about what it does can be found at www.ftdichip.com/

Software

! PLEASE READ CAREFULLY !

Download the **MicroBurn25ep** Programmer software from: www.quasarelectronics.co.uk/zip/microbrn25ep.zip

! DO NOT USE ANY OTHER VERSION YET !

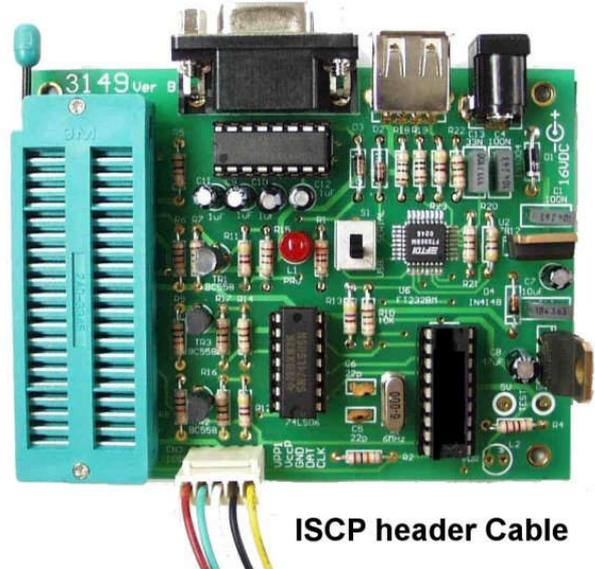
Unzip and run MicroBrn25ep.exe to install the software. The same program is used for all versions of the 3149. **If installing on Windows 8 or higher we recommend that you DO NOT use the default "Program Files" directory path as the software will not operate correctly. Change to a different location on your hard drive.**

Please print the README and 3149B-E Manual (see Windows Start Menu>Quasar Electronics >MicroBurn25ep) and read in conjunction with this document.

Photos - To aid assembly the colour version of the 3149B photo used in this documentation may be downloaded from: www.quasarelectronics.co.uk/jpg/3149b_1.jpg

Note: 3149E changes a 10K resistor, adds three 3K3 resistors and changes to BC327 for TR1-3.

Assembly - Check the components against the Component Listing in the 3149BC User Manual noting the changed of one 10K resistor position, the addition of 3 off 3K3 protection resistors, USB 'B' connector and BC327 for TR1-3 in 3149E. Solder the lowest height components first. Mount the crystal 2-3mm above the PCB.



ICSP header Cable

Do not put in any of the ICs. (Note component designators C2 and C3 were omitted.)

Make sure you do the 5V check at the TEST points in the lower right-hand side of the board before putting in the ICs. Make sure the ICs are around the correct way. (The notch on the firmware and the 74LS06 ICs are in the 6 o'clock position.)

Programming Socket - If you do not have a lot of programming then use the 3 x 20 pin IC sockets provided. Break one of the sockets to make pins 21-40 of the 0.6" wide socket as shown in the photo on p5 of the 3149a.pdf docs. However, if you program a lot then please buy a wide-slot 3M ZIF socket as shown in the photo to the left. We sell them at £15.00 plus postage. You can order direct on 0870 246 1826 or from our website at www.quasarelectronics.co.uk/zif40w.htm

The 3M ZIF socket has spade style legs but if you use an Aries ZIF socket with smaller pins then **do not feed to much solder into the pin/ pads when soldering**. You will just short-circuit to an adjacent pad with excess solder.

USB VCP Driver Installation - You will need to download and install the FT232BM USB Virtual COM port (VCP) drivers from www.ftdichip.com. These drivers are being updated frequently. At this time they can be found at www.ftdichip.com/Drivers/VCP.htm.

Select the file for your Windows OS version. We downloaded the WHQL Certified Version [2.12.24](http://www.ftdichip.com/Drivers/VCP.htm) dated 12/12/2016. Unzip it to a new folder in a convenient location on your hard drive or an external disk. Connect the programmer and follow the driver installation program pointing it to the new driver's folder when asked. You can download a Help file AN232-05 from

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<http://www.ftdichip.com/FTApp.htm> to guide you through the USB driver installation if you are unsure of how to do it.

The first time MicroBurn is run you must set the COM Port to the appropriate number (under File>Port). You can find the COM port number of the USB driver in the Control Panel under Ports (COM & LPT). In our system it is 4. MicroBurn will auto detect the programmer once the correct COM port is selected.

NB Only COM PORT numbers 1 to 9 are supported by the programmer due to hardware limitations. If you find the driver is allocated a COM Port number higher than this you just need to plug the programmer into a different USB socket and a new number will be allocated.

Connecting Up - Use a USB type A-B cable (Order Code LDC644 @ £2.95. Order online at www.quasarelectronics.co.uk/lcd644.htm) or a MF serial lead (Order Code LDC441 @ £2.95. Order online at www.quasarelectronics.co.uk/lcd441.htm) to plug connect the programmer into the PC. Select the DPDT switch accordingly.

A centre positive 16-18VDC supply is needed to power the programmer (our Order Code [661.130UK](#) is suitable). Since the FT232 draws about 50mA this means that the 7805 will get a little warm. Note that the FT232BM will turn off when it is not in use to save power.

Remove any target devices from the programmer before powering it up or down.

Connect the programmer to the power supply and check the Power LED lights up. Next connect it to the USB port and start the MicroBurn software. Make sure the correct COM port is selected (see above).

Note the 'Fly Window' under Options that allows the programmer to be used with MPLAB when a new hex file is compiled.

20-Pin Devices - The 3149 was not originally designed to handle 20-pin PICs but the 25ep software was extended to include them. The software will show these as 14 pin devices with pin 1 at programming socket position 13. Only pins 1, 4, 18, 19 & 20 of the MCU are needed for programming. If a ZIF is present it is possible to carefully insert the MCU at a sloping angle. If you intend to program more than a few use ICSP to save damaging the ZIF.

No-Keypress Programming - Flash chips are automatically erased in this mode if they are not blank.

Known Bug - Switching between USB & Serial modes may indicate an error when the COM port is reset. However, the port, if correct, will in fact be properly Reset.

ICSP - !! YOUR BOARD MAY USE DIFFERENT WIRE COLOURS TO THOSE SHOWN IN THE

MICROBURN SOFTWARE – USE PCB OVERLAY TO DETERMINE CORRECT CONNECTIONS!!

ICSP is still a 'black' art for some PIC chips. It is not the purpose of this kit to teach ICSP. That is assumed. **Remember to proceed with caution at all times to avoid any damage!**

Select Options>ICSP Mode in MicroBurn. Does **not support** low voltage programming. The LOW pin is an open collector output, which will pull the LOW pin to ground. It can be used in ICSP to hold the LVP pin low while programming, or OSC1 pin, or any part of the target board which may need control (in the manner) during programming. Click Options/ICSP Mode to use.

Refer to the MicroBurn software help file for detailed operational and safety advice before using ICSP.

Software and Firmware Upgrades - The USB drivers and MicroBurn software are frequently upgraded to add new features and extend the range of PICs supported. For the latest information look at www.quasarelectronics.co.uk/MicroBurn

Build Number - MicroBurn firmware now uses a build number and looks for the protocol number in the firmware. If they are the same version then the software and firmware are matched. The programmed firmware in this product release is version P018A. You can perform a protocol check from the MicroBurn Help menu.

Product Support

We offer Technical Support for a period of 12 months following the purchase of a new PIC Programmer or PIC Programmer Firmware Upgrade from us. Please submit your Support Questions to us via the form at www.quasarelectronics.co.uk/MicroBurn ensuring that you provide the **invoice number** on which the product was purchased.

Mailing List - If you would like to receive the latest information on new products and software updates join our mailing list at: www.quasarelectronics.co.uk/GuestSubscriptions

Please visit our website for details of our complete kit range: www.quasarelectronics.co.uk

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Trade discounts are available for bulk quantity purchases of this product. Please contact our Sales Team to discuss your requirements.

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