# Comments about connecting an E-LAB Programmer to an XMega device

The programming interface (PDI) of the Atmel XMegas is a fast synchron bit-serial protocol. Because it is nearly impossible to implement this with bit-bangs, an UART in the programmer must be used. This UART is connected to pin1(XCK), pin9(RxD) and pin10(TxD) of the programmers target connector.

But Atmel recommends a 6pin header on the target as the programming connector. So these 3 controlling lines must be fed from the 10pin connector/cable to a 6pin connector. Furthermore the PDI data line must not be loaded with a resistor below 100kOhms. Unfortunately these lines (RxD/TxD) have build-in load resistors of 10kOhms. To satisfy this requirement the two load resistors (**R5/R20**) in the programmers **must be removed**. The locations can be seen below. The locations differ somewhat depending on the board revisions.
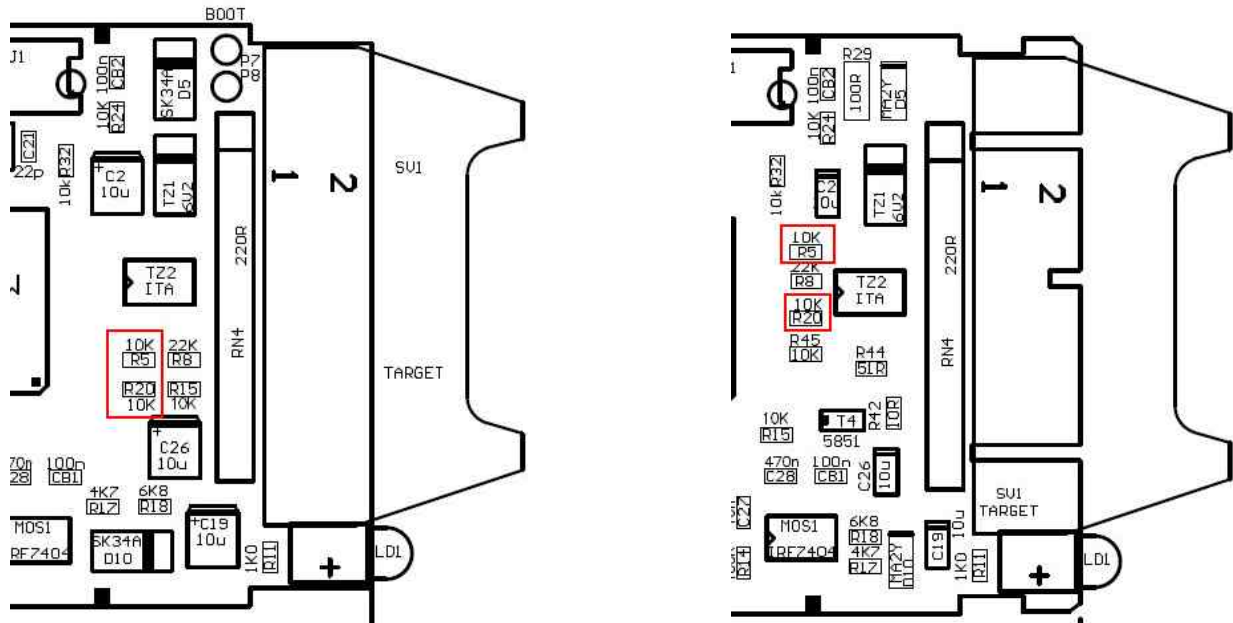
The wiring from the programmers connector (10pin) to the PDI target connector is shown in the schematic below. It easily can be build on a small board by yourself or you can order the E-LAB XMega Adaptor from E-LAB. Price €14.- +ship. Order number #2154
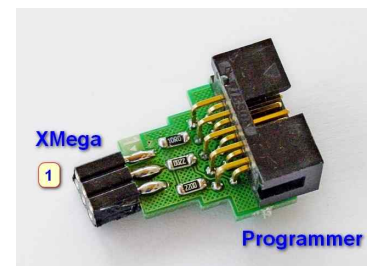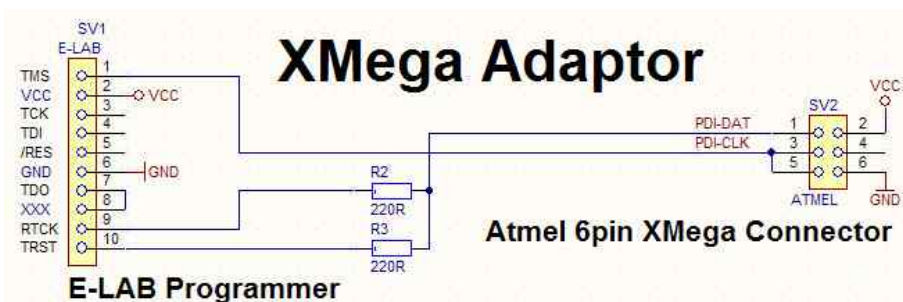
Attention:
The programmer types ISP3, UPP1 and UPP2 need a firmware update.

But **ISP3** and **UPP1** devices older than **04/2010** must be completely **re-programmed** by E-LAB.
UPP2 devices older than **04/2011** also must be completely reprogrammed by E-LAB.
These devices must be send back to our service to be updated for free.