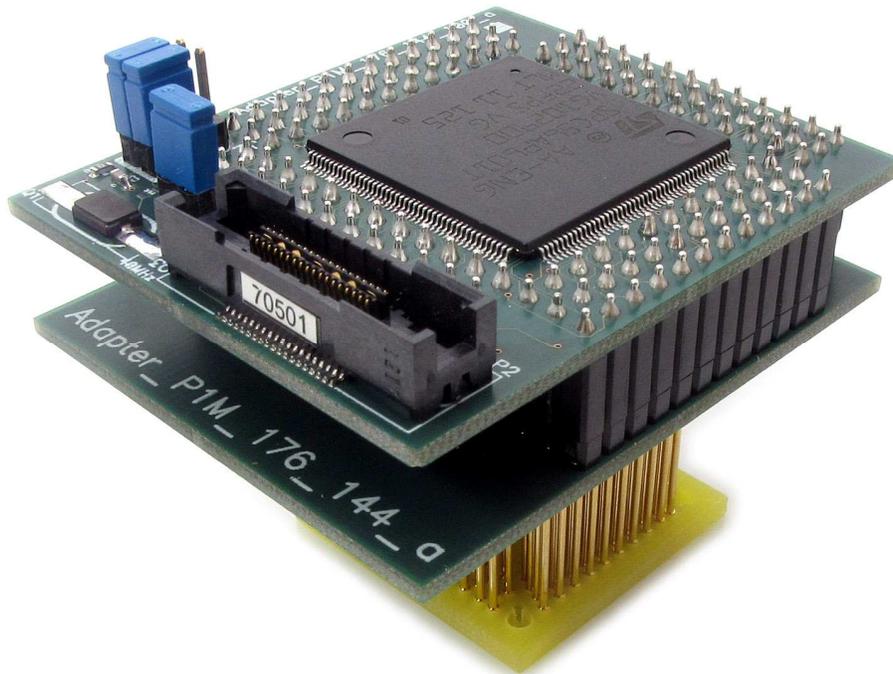


Adapters

“Pictus 1M” Nexus Emulation Adapter 176TQ - 144TQ

Ordering code	IA176QFP144TQ-5606P
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Target CPU package: QFP144

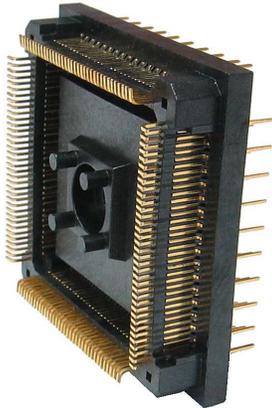
Freescale MPC5606P and ST SPC56AP60 microcontroller in the QFP144 package have no Nexus port at all which may be a significant drawback during the development and test process.

For this purpose, a “Pictus 1M” Nexus Emulation Adapter has been built. It’s based on Freescale MPC5606P or ST SPC56AP60 microcontroller in the QFP176 package, which exposes 12-bit Nexus port too. The Emulation Adapter exhibits the same behaviour to the target as the original 144-pin microcontroller and additionally provides the Nexus port, which allows advanced functionalities like trace, profiler and code coverage.

A 144-pin solder part, which must be ordered separately under the IA144TQ-SOLDER ordering code, is soldered to the target (PCB) instead of populating the original microcontroller in the 144-pin QFP package. Then the Emulation Adapter, which acts as the original microcontroller and additionally provides debug Nexus port, is connected on top.

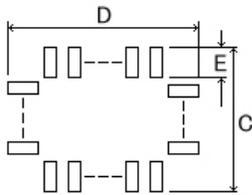
Contact iSYSTEM sales representative for more details on available Nexus tools.

- IA144TQ-SOLDER



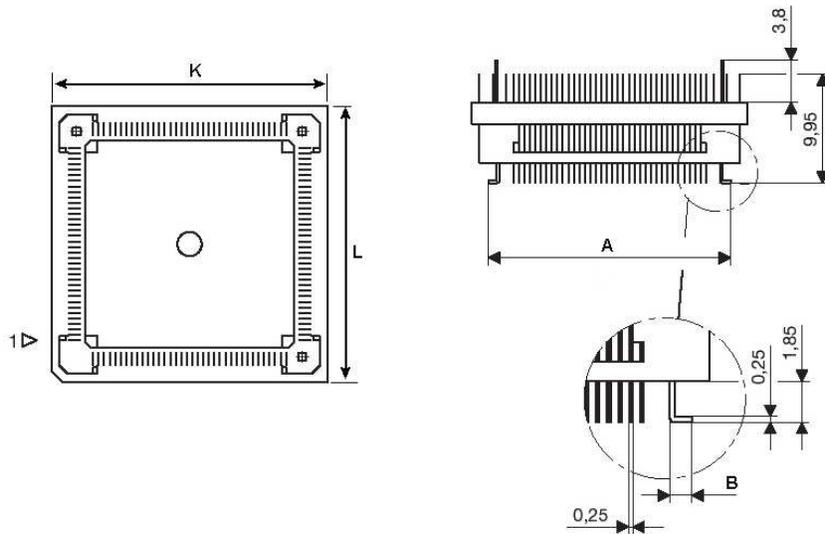
Solder part, which is soldered down to the target.

PCB footprint size recommended by TET:



(Unit: mm)						
A	B	C	D	E	K	L
22	1.125	23.0	23.0	2.15	25.05	25.05

When it's meant soldering the solder part manually, it's highly recommended prolonging the dimension E on the outer side (e.g. for 1.5-2 mm) during the PCB design. Note that without this modification it's very difficult to solder the solder part manually.



IA144TQ-SOLDER dimensions

Jumper configuration

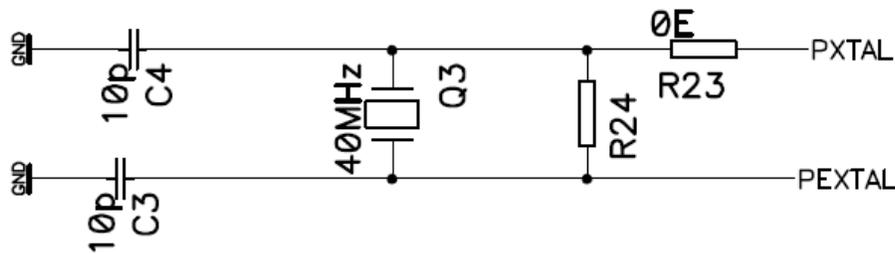
J1 and J2: clock source configuration

Jumpers J1 and J2 select clock source for the emulation device. Per default, both jumpers are set to position 1-2, which yields clock source being used from the emulation adapter.

For the first time after receiving the emulation adapter, it is recommended that it is tested with this setting. Once it's confirmed that it is operational, target clock use (J1 & J2 position 2-3) can be tested.

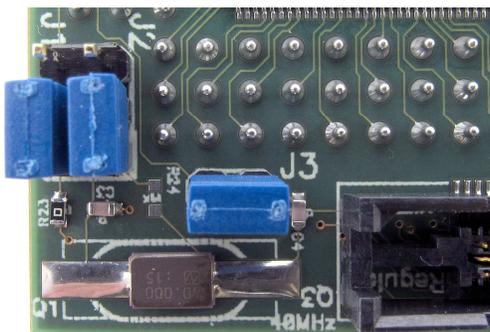
Note that the emulation adapter may not operate when crystal circuit is used in the target. Typical design guideline is that a crystal should be as close as possible to the microcontroller. However, it may happen that the target crystal may not oscillate with the emulation adapter since clock lines (XTAL, EXTAL) between the target and the emulation device on the emulation adapter are prolonged. There should be no problem with the oscillator being used in the target.

If an oscillator in the target is not an option and the target crystal doesn't oscillate in conjunction with the emulation adapter, clock from the emulation adapter must be used (J1 & J2 position 1-2). In this case, a crystal circuit must be assembled on the emulation adapter.



Crystal circuit

Crystal circuit is located in the corner of the emulation adapter, next to the Nexus (Mictor) connector and jumpers J1 and J2.



Per default, 10pF capacitors are populated for C3 and C4, 0 ohm resistor for R23 and 40MHz crystal for Q3. R24 must not be populated. Note that these values are valid for 40MHz crystal only. If different crystal is used, appropriate capacitors and resistor must be soldered (replace the original ones).

J3: target reset configuration

By default J3 is populated. Removing jumper J3 disconnects the CPU reset line between the emulation device and the target. Remove J3 only for troubleshooting the initial debug connection. If the debugger fails to connect to the CPU, it could be that the CPU reset line is actively driven from the target side and preventing the debugger to take control over the CPU. Once the emulation adapter is operational, J3 must be set.

Schematic

