

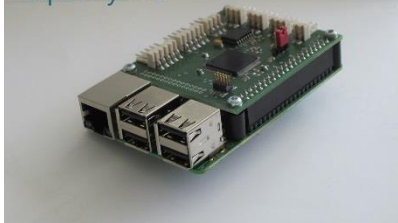


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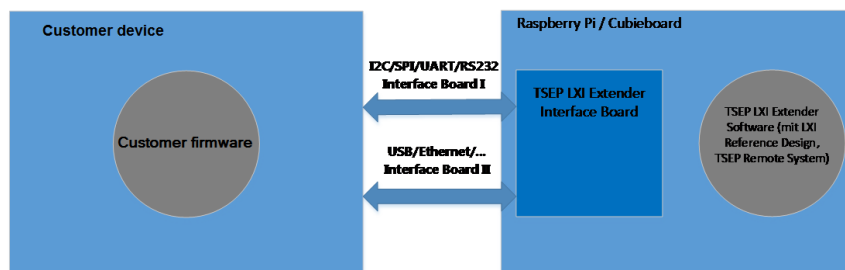
TSEP LXI Extender

TSEP LXI Extender with
Raspberry Pi 2



With the LXI Reference Implementation it is now simple for all LXI members to implement the LXI standard on their measuring devices. A great number of these devices use common operating systems such as windows and Linux. Here the complete infrastructure for

the LXI Reference Design is given. Additionally a not unimportant amount of measuring devices and test systems exist without operating systems as their hardware is equipped with a μC . For these devices the LXI Reference Design does not offer an easy expansion capability. For this reason TSEP has developed a TSEP LXI Extender. Based on a low-cost Linux System such as the RaspberryPi/Cubieboard and the TSEP LXI Extender Interface Board any μC can be connected via a standardised interface. Additionally it is of course possible to use the TSEP LXI Extender with customized hardware.



TSEP supplies an extended LXI Reference Design on a low cost Linux system. Via additional drivers, one can communicate with the established μC over a defined interface. Therefore, data and measuring results can be exchanged. Additionally the TSEP Remote System V2 is integrated in this solution with which clients are able to communicate via SCPI with the measuring device. The measuring instrument manufacturer has here the possibility to implement their own commands. Measuring devices and test systems get a considerable extension of their functionalities with the TSEP LXI Extender.

Who is TSEP?

TSEP is a software and hardware development company, which was founded in 1988 and employs more than 20 staff members with different skills.

TSEP develops complete solutions for measurement devices and test systems.

TSEP had the first experiences with LXI in 2005 implementing the LXI Standard 1.0 for an instrument manufacturer.

TSEP has been working on the LXI Reference Design for the LXI Consortium since 2014.

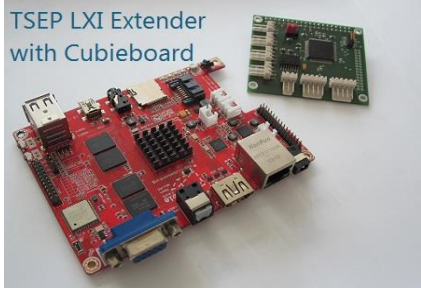


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TSEP LXI Extender / Cubieboard 3/5

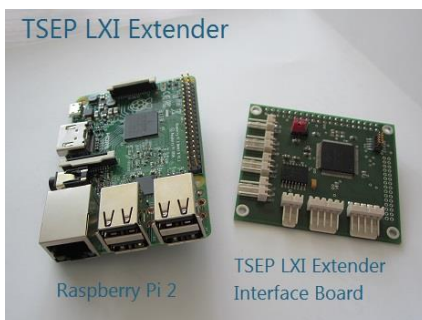
TSEP LXI Extender
with Cubieboard



The TSEP LXI Extender Software and the TSEP LXI Extender Interface Board is available for the Cubieboard 3/5. TSEP provides a Linux Image as well as necessary drivers and software. The Cubieboard is best suited if additionally to the TSEP LXI Extender also a visualisation of the device states or the like is required. TSEP delivers as a development platform a preconfigured Linux image with all necessary tools for the software development.

TSEP LXI Extender / Raspberry Pi 2

TSEP LXI Extender



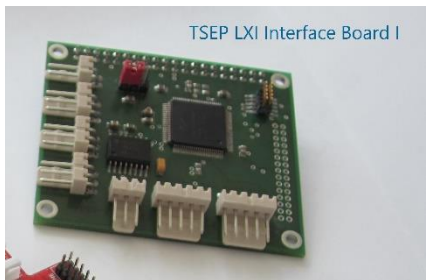
Raspberry Pi 2

TSEP LXI Extender
Interface Board

The TSEP LXI Extender Software and the TSEP LXI Extender Interface Board is available for the Raspberry Pi 2. TSEP provides a Linux Image as well as necessary drivers and software. The Raspberry Pi 2 is the low-cost solution for the TSEP LXI Extender. TSEP delivers as a development platform a preconfigured Linux image with all necessary tools for the software development.

TSEP LXI Extender / Interface Board

TSEP LXI Interface Board I



The communication with the established measuring device hardware takes place via a standardised interface. The TSEP LXI Extender Interface Board I offers the interfaces I²C (Master/Slave), SPI (Master/Slave), UART and RS232. The TSEP LXI Extender Interface Board II supports the interfaces with higher data rate like USB and Ethernet. The TSEP LXI Extender Interface Board is fitted directly onto the Linux basis board and communicates directly with the Linux system. The interface is set up bidirectional. To communicate between the device hardware of the vendor and the TSEP LXI Interface Board a protocol defined by TSEP is used, which is the same for all interfaces. For this protocol, a reference implementation in C is available. Via this protocol, not only the necessary data for the LXI Reference Design is exchanged but also vendor-specific data such as measured data and so on. This data can then be read or changed by the integrated remote system via the SCPI interface.



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TSEP LXI Extender / LXI Reference Design



The LXI Reference Design is integrated in the TSEP LXI Extender Software. The customization such as the “Look and Feel” of the web pages can easily be done by the vendor or TSEP. In the TSEP LXI Extender all functionalities of the LXI Reference Design are available. IPv6, HiSLIP or Lan Event Messaging are to the full extent available.

TSEP LXI Extender / Remote System

SCPI-99

The TSEP Remote System V2 is completely integrated into the TSEP LXI Extender Software. The TSEP RemoteSystem can use several parser as well as several data channels. With the help of modular representations of the data channels the channels TSP/IP, HiSLIP, RS232 or other data channels can be made simultaneously available. The individual data channels can be parameterised (e.g. port number for TCP/IP) and instantiated manifold. Additionally several parser modules can be loaded. Therefore the vendor has the possibility to build functional parser groups, which can be reused in other devices. TSEP delivers two standard parsers (Common Commands IEEE 488.2, SCPI-99 partially) with the remote system. The vendor also has the possibility to access the measuring hardware’s data and make these available via SCPI commands. To be able to, one must implement an own parser. TSEP provides the infrastrucatur to do so.

TSEP LXI Extender / LXI membership

As the development of the LXI Reference Design was financed by the membership fees of the LXI members, the LXI Reference Design is only available to members of the LXI Consortium. Currently the cheapest membership fee amounts to 2000 dollars a year. The LXI Consortium is responsible for the maintenance and the further development of the LXI Reference Design. Therefore any cost which arise due to changes of the standard or due to new technologies are with the LXI Consortium.

TSEP LXI Extender / LXI certification

The TSEP LXI Extender will most likely be certified at the LXI plug fest in Boston in October 2016. Therefore the usage of the TSEP LXI Extender within vendor devices is possible. At the moment the LXI Consortium is discussing to be able to certify devices which have the LXI Reference Design integrated via a “Technical Justification”. This would allow vendors of the TSEP LXI Extender a simple and efficient way of Certification.



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TSEP LXI Extender / Future Plans

TSEP plans to launch the TSEP LXI Interface Board II at the beginning of 2017, with which the interfaces with higher data rate will be supported. During the second half of the year 2016, TSEP will determine the possibility of an LXI Extender Board III with IEEE1588 support. The First pre-examination was more than positive. Due to this further prototyping with performance measuring is scheduled for the next half year. Should the results be further so positive, than a TSEP LXI Extender Board III can be reckoned with during the first half year of 2017.

TSEP LXI Extender / Licence modules

For the TSEP LXI Extender TSEP provides various licence modules. Therefore any customer can choose the optimal licence module for their usage and quantity.

No-Limit Model: The customer retrieves all relevant sources and documentation for all components. Therefore the customer has access to all components and can customize these. Additionally all changes and error corrections for the next 5 years are included free of charge. The customer can equip any number of devices with the TSEP LXI Extender

Per Device Model with Remote System: The customer pays for the TSEP LXI Extender per device. The customer retrieves all necessary sources to implement their own SCPI parser and channels. TSEP provides a development platform to develop. Error corrections over the next 3 years are included free of charge.

Per Device Modell without Remote System: The customer pays for the TSEP LXI Extender per device. The customer can not apply any changes to the SCPI parser or channels. All modules are available as binaries. Error corrections over the next 3 years are included free of charge.

More information?

Have we awoken your interest? Or do you need more information? Than send us an e-mail or give us a call:

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