ADQDSU Datasheet

The ADQDSU is a high-speed solid-state disk device for ADQ digitizers. The ADQDSU and an ADQ digitizer form a high-performance PXIe recording system. ADQDSU features:

- **PXIe form factor**
- **8TB or 32TB per slot**
- **6.8 GSPS data streaming**
- **Peer-to-peer streaming**

1 ADQDSU INTRODUCTION

1.1 Features

- SSD storage device
- 8 TBytes per slot option
- 32 TBytes per slot option
- 6.8 GByte/s peer-to-peer data streaming
- Data interface PXIe Gen3 x8

1.2 Applications

- Data Recording
- RF systems
- LIDAR
- Scientific instruments

1.3 Advantages

- A compact high-performance disk that optimize the system solution
- Turn-key recording system
- Teledyne SP Devices' design services are available for fast integration to reduce time-to-market

1.4 System design streaming data to disk

High-performance data acquisition systems produce big amount of data at high speed. The ADQDSU offers a concept of storing large amount of data without loading the PC's RAM[1].

ADQDSU supports two modes of operation, peer-to-peer streaming, and storage device with random access.

1.5 Mode high-speed streaming including peer-to-peer

ADQDSU supports peer-to-peer streaming from the ADQ series digitizer to an SSD storage. Peer-to-peer means that the large amount of data goes directly from the digitizer to the SSD storage via the PCIe switch in the backplane of the chassis.

[1] Data transfer values noted here represent the capacity of the ADQDSU. There may be other limiting factors in the system.

Each ADQDSU is up to 32TB in size. Multiple disks can be connected to seamlessly continue the recording. There is no limit on the amount of ADQDSU that can be included in the system[2]. The requirement is that all ADQDSU shall be within the same PCIe tree as the ADQ digitizer.

The peer-to-peer streaming requires that the ADQ digitizer has the FWDSU firmware option installed.

This operational mode is designed for highest speed during a long recording. This optimization has implications of the recommended sequence of use. Data has to be off-loaded from the ADQDSU before the next measurement. Notice that each time a new recording starts, the previously recorded data is lost. Reading the data is done via supplied read-out software[3]. The data read-out phase is for analyzing the data or organizing it in a file system in an archive.

1.6 Mode of storage device with random access

ADQDSU can also operate as a standard PCIe SSD disk using data streaming via PC ram and file system. The access to the ADQDSU is then done via the operating system and the user's application software. The ADQDSU can then be used mounted as a disk and used with a file system.

[2] There may be practical limitation, for example, the size of the PXIe chassis.

[3] There is no file system on the disk. Data format is optimized for high speed.

2 TECHNICAL DATA

Technical parameters are valid for ADQDSU operating with ADQ series digitizer. All parameters are typical unless otherwise noted.

Table 1 Store data

Parameter	Condition	Unit	Min	Typical	Max
Basic parameters					
Storage size	Option -32T	TB		32	
Storage size	Option -8T	TB		8	
Write speed[4]	PCIe Gen3 x8	GBPS		6.8	
Data format on SSD[5]				Custom	
Lifetime full write cycles	Option -32T	cycles			1700
Lifetime full write cycles	Option -8T	cycles			1200

Table 2 Environment and mechanical parameters

Parameter	Condition	Unit	Min	Typical	Max
Power and temperature					
Power consumption	-32T, -8T	W			35
Operating temperature[6]	-8T	°C	0		45
Operating temperature	-32T	°C	0		35
Size					
Width				1 slot	
Compliances					
RoHS 3 EU 2015/863				Yes	
CE				Yes	
FCC	Exclusion according to CFR 47, part 15, paragraph 15.103(c)				

Table 3 Data interface

Parameter	Condition	Value
Supported versions of data transfer standard PCIe		Gen1 Gen2 Gen3
Supported number of lanes		8

[4] The recording speed depend on the PC system. The PC has to support the required transfer rate. Figures given here are limits on the ADQDSU only.

[5] See user guide for ADQDSU

[6] The temperature is the temperature surrounding the PXIe chassis in which the ADQDSU is installed

Table 4 Software support

Parameter	Value
Operating system	Windows 10 Linux
Example code	C
API	C / C++

3 COMPATIBLE DIGITIZER MODELS

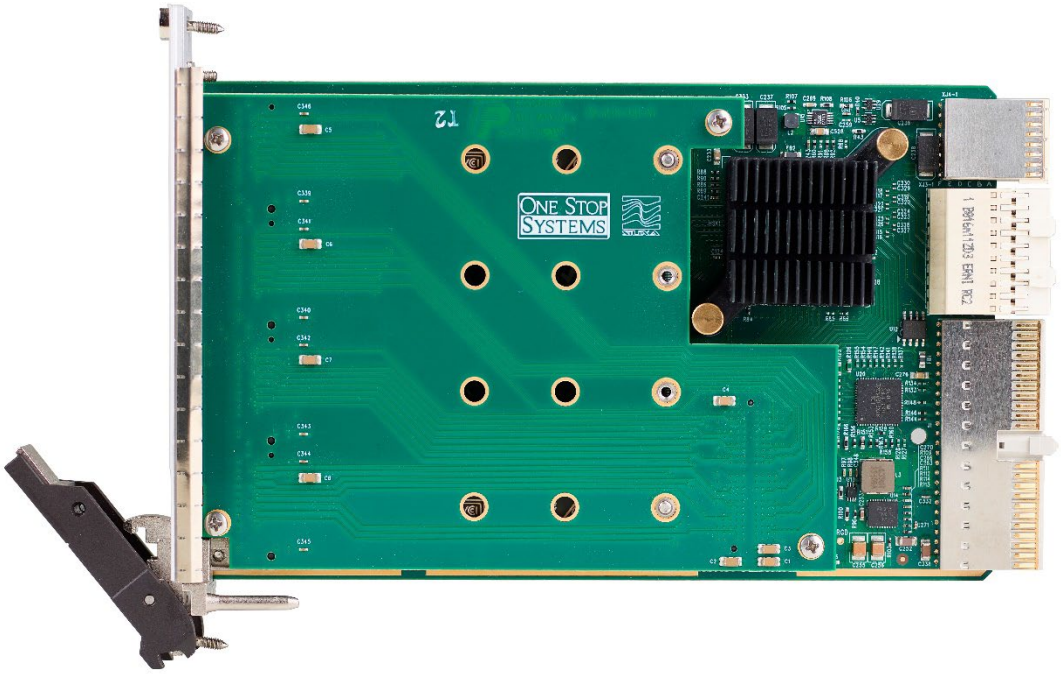
The ADQDSU is compatible with the following models for peer-to-peer streaming

- ADQ7DC-PXIe-FWDAQ 2 and 1 channels mode

ADQDSU is compatible with all ADQ digitizers for streaming data via host PC RAM. The user's application software then manages the data stream.

4 WARRANTY

The limited warranty of 3 years applies with the additional limitation of number of write cycles.



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