



## 8-Channel Time-Digital Converter and Correlation

The QO-TDCC8 Time-Digital Converter and Correlation Device, designed for users seeking high precision and reliability, offers an excellent solution for optical time measurement and correlation processes. This device is optimized, especially for research laboratories, industrial applications, and scientific projects. Thanks to the AMD Zynq™ FPGA, it provides exceptional hardware upgrade flexibility and ensures the continuity of high performance. Additionally, the system is equipped with the Microchip CSAC-SA45S atomic clock, enabling the device to achieve maximum precision in its measurements.

QO-TDCC8 supports a wide range of measurements with 8 time measurement channels, 1 start channel, and 1 stop channel. In cases where it is needed, the system can also operate from the moment power is applied instead of using start-stop signals. The time data coming from 8 channels with picosecond precision is stored in memory, and the obtained

data through the compression algorithm we developed to overcome high data sizes can be transferred to different devices for correlation. The resulting correlation and time data can be saved to an SD card, USB drive, or computer via Gigabit Ethernet. This feature provides users with the convenience of quickly storing and analyzing data. It has the potential for use in optical systems, communications, medicine, astronomy, and many other scientific fields. It is an ideal choice to meet the needs of users with its precision and reliability.

### Features

- » Superior Performance with AMD Zynq™ FPGA
- » High Precision with Microchip CSAC-SA45S Atomic Clock
- » Correlation Analysis Supported by 8-Channel FPGA
- » Data Storage to MicroSD, USB Drive, or Computer
- » Data Transfer and Hardware Updates via Ethernet

### Applications

- » Time of Flight Measurements (LIDAR, OTDR)
- » Quantum Key Distribution (QKD) and Quantum Communication
- » Fluorescence Lifetime Imaging
- » Spectroscopy
- » Error Detection in Integrated Circuits
- » Single-Photon Source Characterization
- » Quantum Optics and Quantum Computers

## Mutlak Maksimum Değerler ve Karakteristik Özellikler ( $T_A = 25^\circ\text{C}$ )

Parameter	Symbol	Min	Typical	Maks	Unit
Power input	$V_{IN}$	4.5	5.0	5.5	$V_{DC}$
Operating Temperature	$Q_{OPR}$	0	25	50	$^\circ\text{C}$
Storage Temperature	$Q_{STG}$	-10	25	70	$^\circ\text{C}$
Current Consumption	$I_C$	0.2	1	3	A
Single-Channel Signal Counting	$F_{1CH}$	-	100MC/s	1GC/s	-
Channel Input Voltage	$V_{CH-IN}$	0.2	-	5	V
Jitter	$T_{JIT}$	5	10	20	pS
Time Accuracy	$T_\Delta$	-	20	-	pS