# Time synchronization of electronic devices in RACKs NICA-MPD-PLATFORM using GPS NI-9467-c-RIO

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# Structure of the presentation

- 1. Introduction to the project
- 2. System architecture
- 3. Interface
- 4. Future plans

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# Introduction to the project

- The main goal of the project is to provide accurate time synchronization for all CompactRio cassettes working in RACKs platform using GPS NI 9467 module.

- The project is a continuation of Rafał Koguciuk's work from 2017.

Used devices:

- Module NI-9467

- CompactRIO 9039

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# CompactRIO 9039



- Real-time embedded industrial controller
- Reconfigurable IO Modules
- FPGA module
- Ethernet expansion chassis

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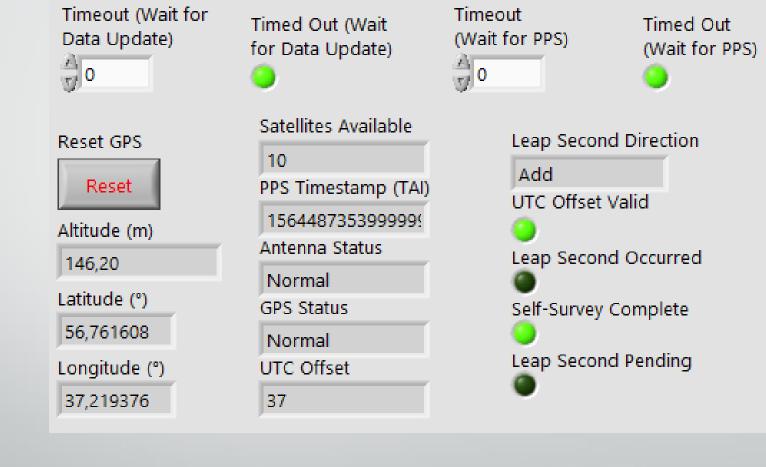
# Module NI 9467



- Provides accurate time synchronization for CompactRIO systems

- Data synchronization GPS C Series

- Returns stationary global position after self-survey

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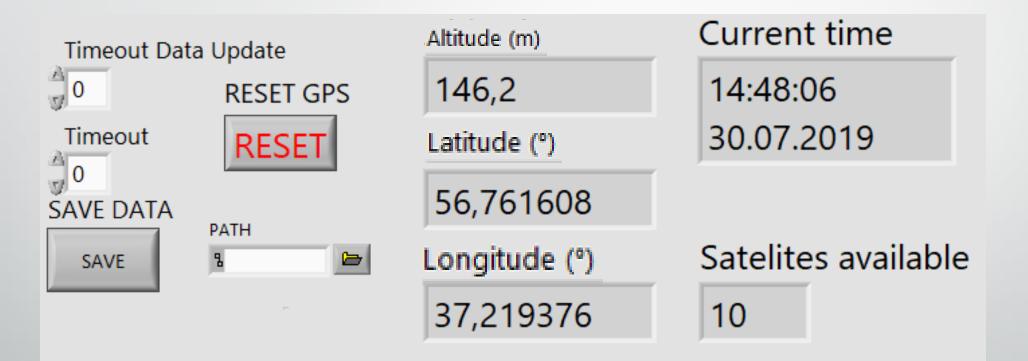
# Specification of NI 9467

- PPS accuracy +/- 100ns

- GPS antenna connector type SMA female

- Maximum altitude  5000 m above sea level

- 30 seconds to receive the ephemeris and almanac data and start computing location and timing fixes

- Time update every 1s

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# Interface working on FPGA



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# Interface working on a user's computer



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# Future plans

- Synchonization of many cRio cassettes on a 4 floor platform with RACKs in order to provide the same time to every electronic device

- Implementation to the NICA project

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# Thank you for your attention