

November 2012

# *Validate your products*

*For simplified CANopen system integration*



*Conformance testing*

*Interoperability testing*

*CANopen test tool*

## Conformance testing

### Benefits for device designers

- ◆ Independently approved compliant devices
- ◆ Devices support functionalities as promised
- ◆ Independent quality monitoring

Implementing CANopen according to the well-established international standard EN 50325-4 and its refined version CiA 301 V4.2 does not guarantee compatible devices.

Conformance testing is the process to test devices according to defined rules. These rules are defined in the CiA 310 series. Tested devices guarantee end users that products are compatible and expected functionality work as advertised. Tested devices reduce the needs by end users to implement in-house testing.

Conformance testing should be done just by one instance, to guarantee comparable results. Only comparable results and a single interpretation will guarantee compatible devices.



### Benefits for system integrators

- ◆ Independently approved compliant devices
- ◆ Devices support functionalities as advertised
- ◆ Quality control as a buying decision

CiA provides the manufacturer independent testing facility for testing devices according to the CiA 310 series. CiA uses the CANopen test tool to test the devices and provides one single interpretation of the test results.

The additional equipment for conformance testing is provided complimentary by Ixxat Automation, National Instruments, Port, and Vector Informatik.

Please contact CiA for further details: [conformance@can-cia.org](mailto:conformance@can-cia.org)

# Interoperability testing

Conformance tested and compatible devices do not guarantee that those will work any environment. Conformance testing does ignore the dynamic behavior of devices.

Interoperability testing is the process of testing devices in a defined environment. This process guarantees that a certain dynamic behavior can be expected from the device.

CiA provides the manufacturer independent testing facility for interoperability testing. The interoperability test stand is made of a mid range industrial PLC, actuators and sensors, and diagnostic tools. The device will be configured by the PLC based on the provided electronic datasheet. The device will be diagnosed and configured by the tools. The device will be stress-tested to guarantee robustness.



The devices for the interoperability test stand are provided complimentary by Fritz Kübler, Ixxat Automation, Janz Tec, Maxon Motor, Micro Control, Port, Posital Fraba, Schneider Electric Automation, and Vector Informatik.

Please contact CiA for further details: [interoperability@can-cia.org](mailto:interoperability@can-cia.org)

## Benefits for device designers

- ◆ Devices are interoperable with other manufacturers devices
- ◆ Devices are as robust as they can
- ◆ Devices fulfill general timing requirements

## Benefits for system integrators

- ◆ Devices will be interoperable across different suppliers
- ◆ Devices will work as advertised
- ◆ Devices will not degrade network stability

### Benefits for device designers

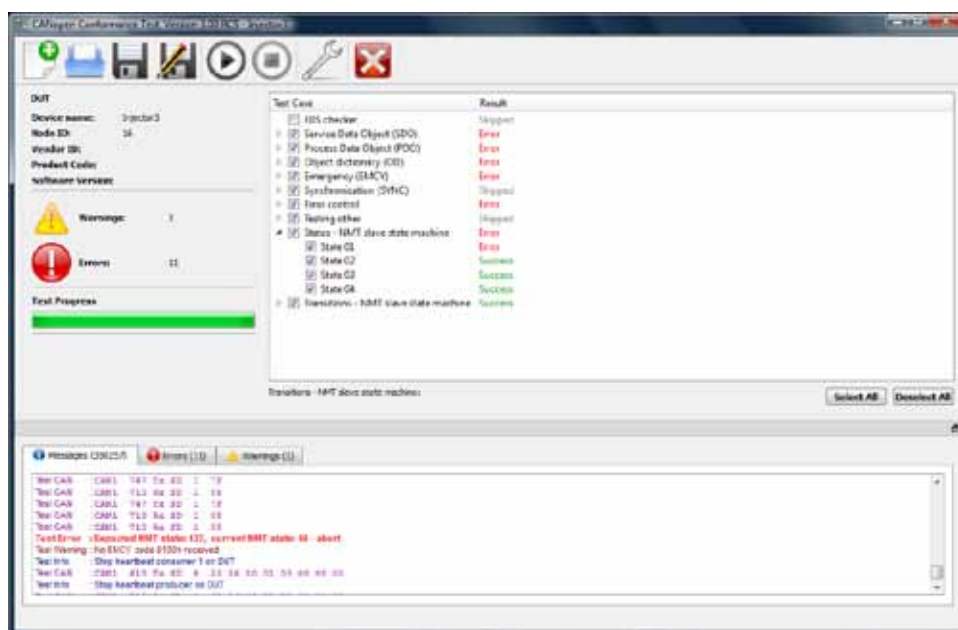
- ◆ Devices fulfill CANopen requirements
- ◆ Testing during development to maintain quality
- ◆ Deliver products as specified by the electronic datasheet

### Benefits for system integrators

- ◆ Pre-testing of devices during system integration
- ◆ Allows continues quality control of supplied devices
- ◆ Simple to use interface

The implementation of CANopen devices have to be tested according to defined rules. The CiA Interest Group CANopen has defined these rules in the CiA 310 series specification. Device manufacturers can test while developing their devices. Device users can use these rules for testing devices they want to buy.

The CANopen test tool implements the definition of CiA 310-1 to provide an automated test. Only automated tests will guarantee repeatable results. These tests include the verification of required and optional device's functionality. The device's functionality is indicated by the provided electronic datasheet. Testing includes the correct implementation of the CANopen object dictionary and CANopen basic services. The following CANopen basic services are tested: Emergency (EMCY), Network Management (NMT), Process Data Objects (PDO), Service Data Objects (SDO), and Synchronous operation (SYNC).



The CANopen test tool is implemented complimentary by ESD, Emtas, Micro Control, Port, and Sandvik Mining and Construction.

Please contact CiA for further details: [testing@can-cia.org](mailto:testing@can-cia.org)

**CAN in Automation e. V.**  
**Kontumazgarten 3**  
**DE-90429 Nuremberg**

**Phone: +49-911-928819-0**  
**Fax: +49-911-928819-79**  
**[headquarters@can-cia.org](mailto:headquarters@can-cia.org)**

