

# TH7012

## CAN FD / LIN Disturbance Interface



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### Classic Application:

- ECU sampling point testing
- ECU bus-off behavior testing
- Frame disturbance and frame trigger output
- Bit tolerance testing

## Feature Overview

The TH7012 is a versatile device for CAN/CAN FD bus disturbance, LIN bus disturbance, and ISO 16845 testing. It connects to a PC via an RJ45 Ethernet interface or USB interface, and the driver-free design for Windows ensures broad system compatibility. TH7012 supports three working modes: CAN/CAN FD disturbance mode, LIN disturbance mode, and ISO 16845 testing mode. The following describes each mode in detail.

### LIN Disturbance Mode:

When configured with the PC software in LIN disturbance mode, TH7012 supports:

- Interfering with specific bits of a LIN frame
- Flipping specific bits of a LIN frame
- disturbance count statistics
- Sampling point testing
- Sending incomplete frame headers based on user configuration, where the header can include:
  - Sync break only
  - Sync break + sync field
  - Sync break + sync field + protected ID field
- Configurable data segments and inter-byte intervals in frame responses
- $\pm 14\%$  offset in transmit baud rate
- Bit-time measurement
- Trigger output for LIN frame disturbance



#### **CAN/CAN FD Disturbance Mode:**

When configured in CAN/CAN FD disturbance mode, TH7012 supports:

- disturbance with specific bits of CAN/CAN FD frames
- Configurable disturbance lengths
- Multiple trigger modes, including frame trigger, error trigger, and software trigger
- Bit-timing deviation testing
- Bus-off behavior testing
- Sampling point testing

#### **ISO 16845 Testing Mode:**

When configured in ISO 16845 testing mode, TH7012 can verify the IUT's (Implementation Under Test) handling of:

- Standard frames, extended frames, CAN FD frames, and CAN FD extended frames with various identifiers and lengths
- Error handling, including bit errors, CRC errors, stuffing errors, format errors, and overload frames
- Behavior in active and passive error states

TH7012 is designed for CAN/CAN FD/LIN protocol testing, ensuring that nodes comply with communication protocol specifications and guaranteeing safe and reliable network operation. It can also be used to verify whether the IUT's CAN IP core complies with the ISO-11898-1 CAN communication protocol standard.

## **Characteristics**

- Disturbance of specific bits in LIN frames
- LIN disturbance count statistics
- Full-bit disturbance, dominant/recessive bit inversion in LIN frames
- Configurable LIN frame disturbance pulse width
- CAN/CAN FD/LIN sampling point testing
- Configurable LIN frame headers
- $\pm 14\%$  LIN transmit baud rate offset
- Measurement of LIN frame time slots
- Trigger output for LIN disturbance
- Disturbance of specific bits in CAN/CAN FD frames
- Custom CAN/CAN FD disturbance sequences or message sequences (up to 65,536 points)
- CAN/CAN FD disturbance count statistics
- Full-bit disturbance, dominant/recessive bit inversion in CAN/CAN FD frames
- CAN/CAN FD disturbance sequence configuration and transmission
- Configurable CAN/CAN FD frame disturbance pulse width
- ISO 16845 verification of IUT response to special identifiers and frame lengths
- ISO 16845 verification of IUT handling of CAN standard frames
- ISO 16845 verification of IUT handling of CAN extended frames
- ISO 16845 verification of IUT handling of CAN FD frames
- ISO 16845 verification of IUT handling of CAN FD extended frames
- ISO 16845 verification of IUT response to bit errors
- ISO 16845 verification of IUT response to stuffing errors
- ISO 16845 verification of IUT response to format errors
- ISO 16845 verification of IUT response to CRC errors
- ISO 16845 verification of CAN frame bit-timing accuracy
- ISO 16845 verification of IUT handling of overload frames
- ISO 16845 verification of IUT response to non-nominal bit rates and error counter detection

## Specification

CAN/CAN FD Channel	1 x LIN / 1 x CAN/CAN FD / 1 x UART
PC Interface	USB 2.0 / RJ45 Ethernet
Driver	Driver-free for Windows
Power Supply	USB-powered or external DC input (9 to 32V)
Power Consumption	3 W
Case Material	Metal
Dimension	Approx. 191 x 118 x 38 mm
Weight	Net weight: approx. 420 g ; Gross weight: approx. 775 g
Operating Temperature	-40°C ~ 80°C
Operating Humidity	10% ~ 90% RH (non-condensing)
Operating Environment	Keep away from corrosive gases

## Ordering information

Product Name	Model Number	Function Description
Network Device	TH7012	CAN FD/LIN Disturbance interface

## Shipping list

- TH7012 device
- USB Cable
- 12 v 2 A power supply
- Category 6 Gigabit Ethernet cable



USB Cable

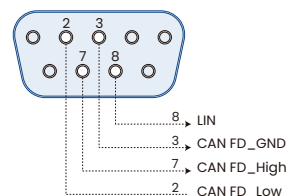



12 V 2 A power adapter



Cat 6 Gigabit Ethernet cable

## Pin definition



I/O Pin	PIN	Definition	PIN	Definition
	PIN 1	TXD/16845-CAN-TXD	PIN 2	AIAO 0
	PIN 3	RXD/16845-CAN-RXD	PIN 4	AIAO 1
	PIN 5	GND	PIN 6	AIAO 2
	PIN 7	DI1/16845-UART_RX	PIN 8	AIAO 3
	PIN 9	DI2	PIN 10	AIAO 4
	PIN 11	DI3	PIN 12	AIAO 5
	PIN 13	GND	PIN 14	GND
	PIN 15	DOI/16845-UART_TX	PIN 16	GND
	PIN 17	DO1	PIN 18	VCC_5V
	PIN 19	DO2	PIN 20	VCC_5V