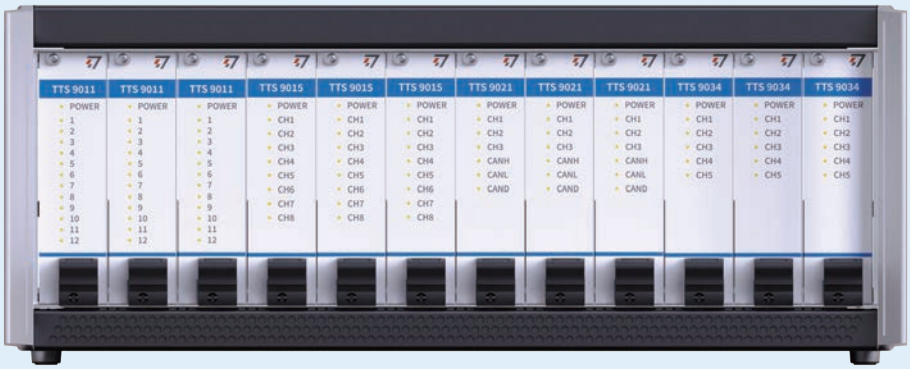
TTS Series Products

Scan the code to follow

1. Rack slot/chassis TTS0001



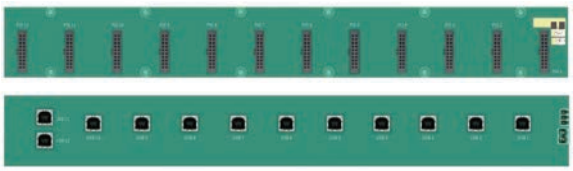
Feature Overview

TTS0001 is a rack slot/chassis for mounting the TOSUN TTS9000 series 3U height board card devices, supporting a maximum of 12 board cards to be used simultaneously.

Technical Data

Number of slots	12
On board terminal resistor (bus)	60 Ω
Overcurrent capacity	10 A

Hardware Interface



- Simplified female header 20 pin interface board card slot
- USB interface:
  3 pin phoenix terminal interface CAN communication
  2 pin phoenix terminal interface DC power supply

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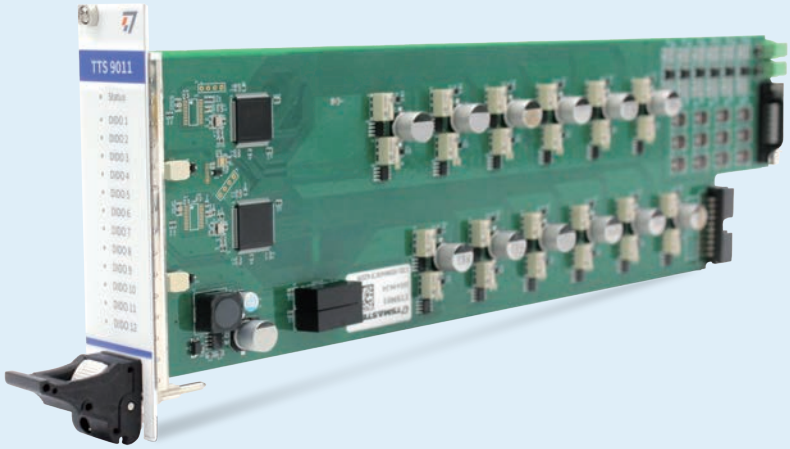
2. Digital I/O Board TTS9011



Feature Overview

TTS9011 is a digital input/output board card with a total of 12 channels. All channels can operate inde pendently for outputting high and low levels, collecting high and low levels, outputting PWM, and col lecting PWM.

Technical Data

Number of Channels	12 (shared for input/output)
Operating voltage	12 V
Static power consumption	2 W
Communication control	CAN 1 Mbps
Relay type	Magnetic latching relay
Board card height	3 U
Mounting method	Chassis slide rail

Hardware Interface

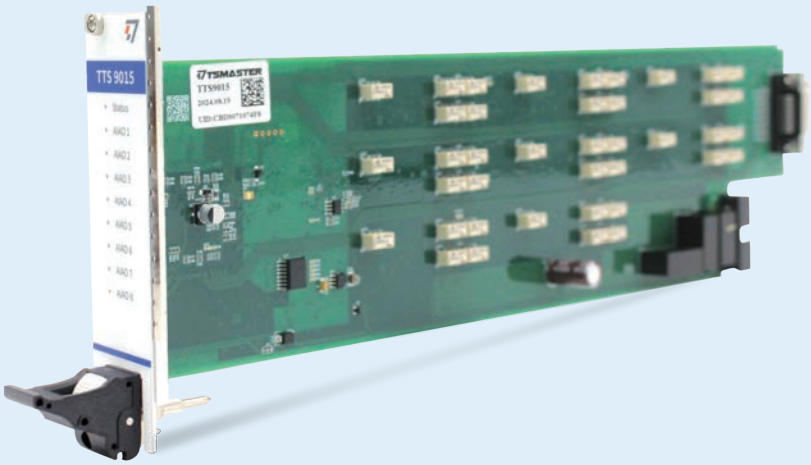
Pin	Definition
Pin 1	CH 1
Pin 2	CH 2
Pin 3	CH 3
Pin 4	CH 4
Pin 5	CH 5
Pin 6	CH 6

Pin	Definition
Pin 7	CH 7
Pin 8	CH 8
Pin 9	CH 9
Pin 10	CH 10
Pin 11	CH 11
Pin 12	CH 12

Pin	Definition
Pin 13	CGND
Pin 14	CGND
Pin 15	CGND
Pin 16	CGND
Pin 17	CGND
Pin 18	CGND

Pin	Definition
Pin 19	CGND
Pin 20	CGND
Pin 21	CGND
Pin 22	CGND
Pin 23	CGND
Pin 24	CGND

3. Analog Board TTS9015



Feature Overview

TTS9015 is an analog output/input board card with a total of 8 independent input/output channels. Each channel supports voltage output, voltage acquisition, current output, and current acquisition functions. When operating in voltage mode, it also supports the function of feedback output voltage. The voltage output supports high voltage output from 0 to 60 V, and the voltage acquisition supports a wide voltage range of 60 V to +60 V or 0 to +60 V.

Functional Data

Voltage Output

Number of Channels	8 (shared for input/output)
Output Range	0 V ~ +60 V
DAC Resolution	16 bit
Accuracy	±(0.4% + 60 mV) When outputting 0 V, there may be a maximum voltage of 300 mV due to channel differences
Output Current	The maximum for a single channel is approximately 30 mA, with a total maximum of about 10 W for 8 channels

Voltage Acquisition

Number of Channels	8
Measurement Range	-60 V ~ +60 V, 0 V ~ +60 V
Sampling Rate	250 KHz
ADC Resolution	20 bit
Accuracy	±(0.4%+60 mV)
Input Impedance	300 KΩ

Current Output

Number of Channels	8
Output Range	0 mA ~ 25 mA
DAC Resolution	16 bit
Accuracy	±1 mA

Current Acquisition

Number of Channels	8
Measuring Range	0 mA ~ 25 mA
Sampling Rate	250 Hz
ADC Resolution	20 bit
Accuracy	±1 mA

Hardware Interface

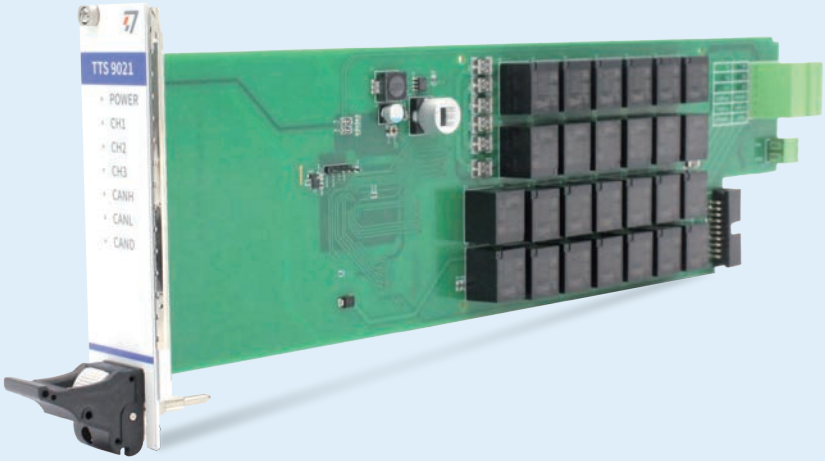
Pin	Definition
Pin 1	CH 1+
Pin 2	CH 1-
Pin 3	CH 2+
Pin 4	CH 2-
Pin 5	CH 3+
Pin 6	CH 3-

Pin	Definition
Pin 7	CH 4+
Pin 8	CH 4-
Pin 9	CH 5+
Pin 10	CH 5-
Pin 11	CH 6+
Pin 12	CH 6-

Pin	Definition
Pin 13	CH 7+
Pin 14	CGND
Pin 15	CGND
Pin 16	CGND
Pin 17	CGND
Pin 18	CGND
Pin 19	CGND

Pin	Definition
Pin 20	CGND
Pin 21	CGND
Pin 22	CGND
Pin 23	CH8-
Pin 24	CGND
Pin 25	CH 8+
Pin 26	CH 7-

4. Fault Injection Board TTS9021



Feature Overview

TTS9021 is a fault injection board card that can inject four different types of faults, such as power short circuit, ground short circuit, inter channel short circuit, and inter channel open circuit.

Specification

Operating voltage	12 V
Static power consumption	0.8 W
Communication control	CAN 1 Mbps
Relay type	power relay
Board card height	3 U
Mounting method	Chassis slide rail

Functional Data

Fault Power Supply Parameters

Input voltage	0 ~ 24 V
Current range	0 ~ 6 A

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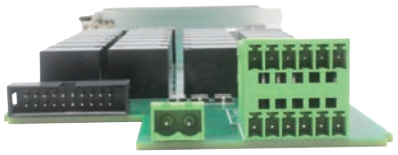
Fault Function Parameters

Standard channel (X1-Y1, X2-Y2, X3-Y3)	Short circuit to power VBAT
	Short circuit to power ground VGND
	Inter channel short circuit
	Inter channel open circuit
CAN Channel (CANH, CANL, CAN, GND)	Short circuit to power VBAT
	Short circuit to power ground VGND
	Inter channel short circuit
	Inter channel open circuit
	Load resistance (0 Ω, 60 Ω, 120 Ω)

Hardware Interface

- 2 pin phoenix terminal interface
- 12 pin phoenix terminal interface

Y 1	X 1
Y 2	X 2
Y 3	X 3
CAN High_out	CAN High_in
CAN Low_out	CAN Low_in
CGND_out	CGND_in



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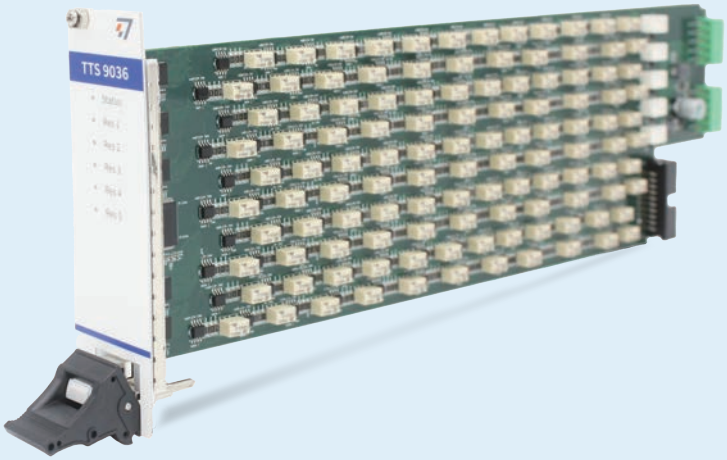
5. Resistor Board TTS9036



Feature Overview

TTS9036 is a resistance board card with a total of 5 independent channels. Each channel can output resistance from 1 to 4194303Ω. In cases where the resolution or range is insufficient, the channels can also be used in parallel or series. This resistance board card can be utilized in various signal systems and can simulate functions such as thermistors or resistive sensors.

Specification

Number of channels	5
Operating voltage	12 V
Static power consumption	0.6 W
Communication control	CAN 1 Mbps
Relay type	Magnetic latching relay
Board card height	3 U
Mounting method	Chassis slide rail

Functional Data

Output Resistance Range	1 Ω ~ 4194303 Ω
Step Value	1 Ω
Resistance Accuracy	1 Ω ~ 500 Ω, accuracy ±0.5 Ω 500 Ω~4194303 Ω, accuracy±0.1%
Resistance Power	1/4 W

Hardware Interface

- 5 pin phoenix terminal interface

CH5
CH4
CH3
CH2
CH1

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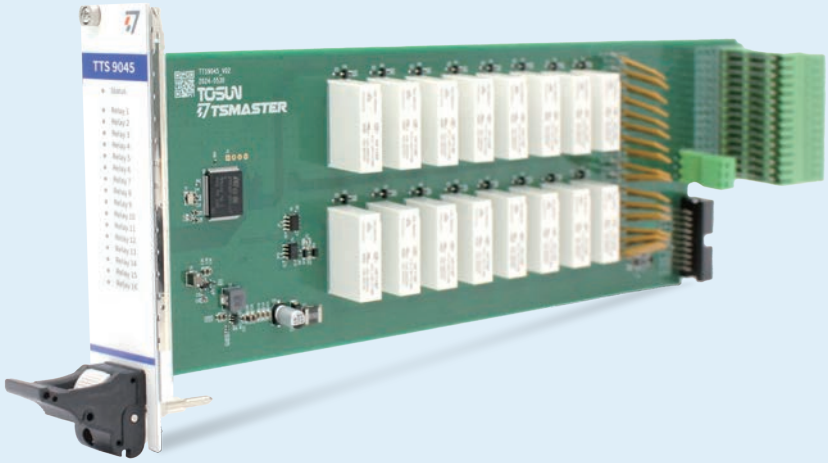
6. General Purpose Relay Board TTS9045



Feature Overview

TTS9045 is a general purpose relay board card with 16 channels. Each channel is controlled by one relay, and each relay has three terminals (CH/NO/NC).

Specification

Number of channels:	16
Operating voltage	12 V
Static power consumption	0.4 W
Communication control	CAN 1 Mbps
Relay type	Power relay
Board card height	3 U
Mounting method	Chassis slide rail

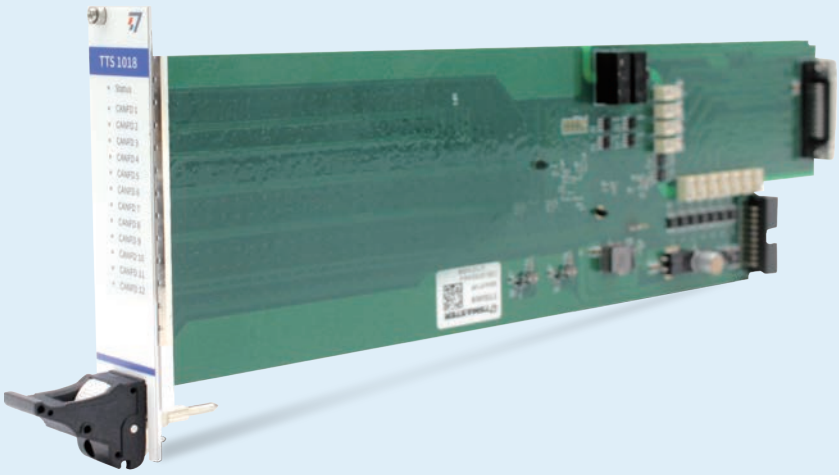
Functional Data

Channel Overcurrent Capacity	DC 36 V 2.5 A / DC 40 V 2 A

Hardware Interface

CH 1	NO 1	NC 1
CH 2	NO 2	NC 2
CH 3	NO 3	NC 3
CH 4	NO 4	NC 4
CH 5	NO 5	NC 5
CH 6	NO 6	NC 6
CH 7	NO 7	NC 7
CH 8	NO 8	NC 8
CH 9	NO 9	NC 9
CH 10	NO 10	NC 10
CH 11	NO 11	NC 11
CH 12	NO 12	NC 12
CH 13	NO 13	NC 13
CH 14	NO 14	NC 14
CH 15	NO 15	NC 15
CH 16	NO 16	NC 16

7. 12 channel CAN FD bus device TTS1018



Feature Overview

TTS1018 is a 12 channel CAN FD bus device launched by TOSUN. It adopts a chassis slide rail installation method, making it easy to integrate into the TOSUN TTS system. The CAN FD1 channel is connected to the board card control bus, allowing direct control of boards within the same bus network through the CAN FD1 channel. The CAN FD1 terminal resistor uses the resistor mounted on the TTS0001 slide rail slot, which is not software controlled. Other parameters are the same as the TOSUN TC1018 device.

With the powerful TSMaster software, it supports loading DBC, ARXML, etc. database files, making it very convenient to monitor, analyze, and simulate CAN FD bus data, and it also supports functions such as UDS diagnostics, ECU flashing, CCP/XCP calibration, etc.

Characteristics

- μs (microsecond) level hardware message timestamps to meet advanced requirements
- CAN channel DC 2500V isolation
- CAN channel baud rate adjustable from 125 Kbps to 1 Mbps, and CAN FD supports a maximum of 8 Mbps
- Supports blf and asc format data recording and offline/online playback
- Supports UDS diagnostics and CCP/XCP calibration
- Supports UDS based Bootloader flashing
- Supports information security testing
- Supports secondary development interfaces for Windows and Linux systems
- Capable of loading all paid licenses for TSMaster

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Technical Data

Channel	12 x CAN FD
PC Interface	Converted to USB 2.0 via backplane slot
Communication Port Interface	SCSI 37 Pin Interface
Driver	Driver-free design for Windows and Linux systems, ensuring system compatibility
Buffer	Each channel supports a transmit buffer of up to 700 CAN frames
CAN	Supports CAN 2.0 A and B protocols, compliant with the ISO 11898 1 standard, with baud rates from 125 Kbps to 1 Mbps
CAN FD	Supports CAN FD that complies with both ISO and non ISO standards, with baud rates from 125 Kbps to 8 Mbps
Timestamp Accuracy	1 μs, hardware message timestamp
Terminal Resistor	Built in 120 ohm terminal resistor, software configurable
Relay Type	Magnetic latching relay
Messages Sent per Second*	Up to 20,000 frames per second
Messages Received per Second*	Up to 20,000 frames per second
Isolation	CAN channel DC 2500 V isolation
Power Supply	USB power supply
Power Consumption	4.5 W
Operating Humidity	10% ~ 90% (non-condensing)
Operating Environment	Keep away from corrosive gases

*Single channel at 1 Mbps with a 0 byte data field

Hardware Interface

Pin	Definition
Pin 3	CAN_Shield
Pin 4	CGND
Pin 5	CAN 2_Low
Pin 6	CAN 2_High
Pin 7	CAN 3_Low
Pin 8	CAN 3_High
Pin 9	CAN_Shield
Pin 10	CGND

Pin	Definition
Pin 11	CAN 4_Low
Pin 12	CAN 4_High
Pin 13	CAN 5_Low
Pin 14	CAN 5_High
Pin 15	CAN_Shield
Pin 16	CGND
Pin 17	CAN 6_Low
Pin 18	CAN 6_High

Pin	Definition
Pin 19	CAN 7_Low
Pin 20	CAN 7_High
Pin 21	CGND
Pin 22	CAN_Shield
Pin 23	CAN 8_Low
Pin 24	CAN 8_High
Pin 25	CAN 9_Low
Pin 26	CAN 9_High
Pin 27	CGND

Pin	Definition
Pin 28	CAN_Shield
Pin 29	CAN 10_Low
Pin 30	CAN 10_High
Pin 31	CAN 11_Low
Pin 32	CAN 11_High
Pin 33	CGND
Pin 34	CAN_Shield
Pin 35	CAN 12_Low
Pin 36	CAN 12_High

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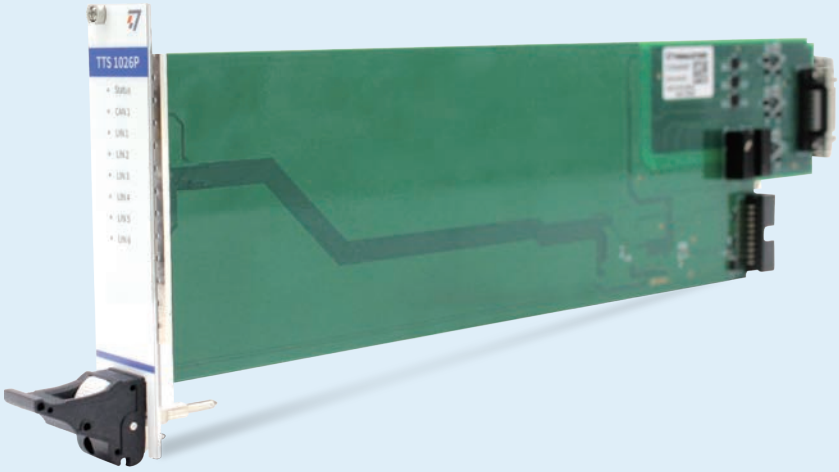
8. 1/6 channel CAN FD/LIN bus device TTS1026P



Feature Overview

TTS1026P is a 1 channel CAN FD and 6 channel LIN bus device launched by TOSUN. It adopts a chassis slide rail installation method, making it easy to integrate into the TOSUN TTS system. The CAN FD1 channel is connected to the board card control bus, allowing direct control of the boards within the same bus network through the CAN FD1 channel. The CAN FD1 terminal resistor uses the resistor mounted on the TTS0001 slide rail slot, which is not software-controlled. Other parameters are the same as the TOSUN TC1026P device.

With the powerful TSMaster software, it supports loading DBC, ARXML, etc. database files, making it very convenient to monitor, analyze, and simulate CAN FD/LIN bus data, and it also supports functions such as UDS diagnostics, ECU flashing, CCP/XCP calibration, etc.

Characteristics

- μs (microsecond) level hardware message timestamps to meet advanced requirements
- CAN channel DC 2500V isolation
- CAN channel baud rate adjustable from 125 Kbps to 1 Mbps, and CAN FD supports a maximum of 8 Mbps
- The LIN bus primary and secondary nodes can be configured via software
- Supports blf and asc format data recording and offline/online playback
- Supports UDS diagnostics and CCP/XCP calibration
- Supports UDS based Bootloader flashing
- Supports LIN bus based UDS diagnostics
- Supports information security testing
- Supports secondary development interfaces for Windows and Linux systems
- Capable of loading all paid licenses for TSMaster

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Specification

Channel	6 x LIN / 1 x CAN FD
PC Interface	Converted to USB 2.0 via backplane slot
Communication Port Interface	SCSI 26 Pin Interface
Driver	Driver-free design for Windows and Linux systems, ensuring system compatibility
Buffer	Each channel supports a transmit buffer of up to 1000 CAN frames
CAN	Supports CAN 2.0A, B protocols, compliant with ISO11898-1 standard, with baud rate 125 Kbps to 1 Mbps
CAN FD	Supports CAN FD that complies with both ISO and non-ISO standards, with baud rates from 125 Kbps to 8 Mbps
LIN	Supports LIN 1.3/2.0/2.1/J2602, baud rate 0 to 20 Kbps
Schedule Table	Supports LDF files and running schedule tables, and also allows for self configuration of schedule tables
Timestamp Accuracy	1 μs hardware message timestamp
Relay Type	Magnetic latching relay
Messages Sent per Second*	Up to 20,000 frames per second
Messages Received per Second*	Up to 20,000 frames per second
Isolation	CAN channel DC 2500 V isolation
Power Supply	USB power supply, external power supply is needed for LIN communication
Power Consumption	2 W
Operating Humidity	10% to 90% (non-condensing)
Operating Environment	keep away from corrosive gases

*Single channel at 1 Mbps with a 0 byte data field

Hardware Interface

Pin	Definition
Pin 1	VCC_LIN 1
Pin 2	CGND
Pin 3	LIN 1
Pin 4	VCC_LIN 2
Pin 5	CGND
Pin 6	LIN 2

Pin	Definition
Pin 7	VCC_LIN 3
Pin 8	CGND
Pin 9	LIN 3
Pin 10	VCC_LIN 4
Pin 11	CGND
Pin 12	LIN 4

Pin	Definition
Pin 14	VCC_LIN 5
Pin 15	CGND
Pin 16	LIN 5
Pin 17	VCC_LIN 6
Pin 18	CGND
Pin 19	LIN 6

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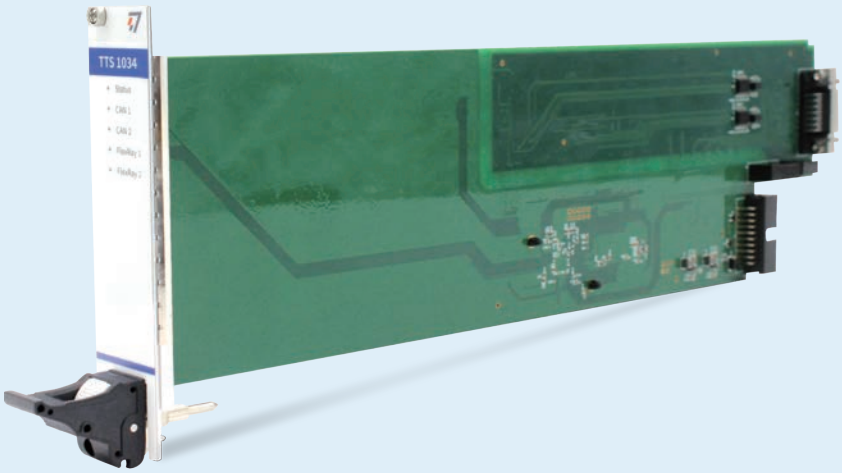
9. Dual channel CAN FD/FlexRay bus device TTS1034



Feature Overview

TTS1034 is a dual channel CAN FD and dual-channel FlexRay bus device launched by TOSUN. It adopts a chassis slide rail installation method, making it easy to integrate into the TOSUN TTS system. The CAN FD 1 channel connects to the board card control bus, allowing direct control of boards within the same bus network through the CAN FD 1 channel. The CAN FD1 terminal resistor uses the resistor mounted on the TTS0001 slide rail slot, which is not software-controllable. Other parameters are the same as the TOSUN TC1034 device.

With the powerful TSMaster software, it supports loading DBC, ARXML, etc. database files, making it very convenient to monitor, analyze, and simulate CAN FD/FlexRay bus data, and it also supports functions such as UDS diagnostics, ECU flashing, CCP/XCP calibration, etc.

Characteristics

- μs (microsecond) level hardware message timestamps to meet advanced requirements
- CAN channel DC 2500V isolation
- CAN channel baud rate adjustable from 125 Kbps to 1 Mbps, and CAN FD supports a maximum of 8 Mbps
- Supports blf and asc format data recording and offline/online playback
- Supports UDS diagnostics and CCP/XCP calibration
- Supports UDS based Bootloader flashing
- Auxiliary communication controller, eliminating the need to add extra nodes during cold starts
- Perfectly adapts to FlexRay, CAN/CAN FD bus applications based on TSMaster
- Supports secondary development interfaces for Windows and Linux systems

FlexRay Functions

- Flexible configuration for communication controller buffer
- Capable to detect empty frame
- Capable of forming composite communication modes through multiple cycles (cycle multiplexing)
- Supports frame payloads up to a maximum of 254 bytes
- Supports PDUs
- Features a start up monitoring function
- Supports FlexRay message recording and replay
- Supports using two FlexRay channels as two FlexRay nodes (parallel connected)

Technical Data

Channel	2 x CAN FD / 2 x FlexRay
PC Interface	Converted to USB 2.0 via backplane slot
Communication Port Interface	SCSI 26 Pin Interface
Driver	Driver-free design for Windows and Linux systems, ensuring system compatibility
FlexRay	FlexRay channel (A and B)
Cold Start	Supported
Buffer	Each channel supports a transmit buffer of up to 1000 CAN frames
CAN	Supports CAN 2.0 A and B protocols, compliant with the ISO 11898 1 standard, with baud rates from 125 Kbps to 1 Mbps
CAN FD	Supports CAN FD that complies with both ISO and non ISO standards, with baud rates from 125 Kbps to 8 Mbps
Timestamp Accuracy	1 μs, hardware message timestamp
CAN Terminal Resistor	Built in 120 ohm terminal resistor, software configurable
FlexRay Terminal Resistor	Built in 100 ohm terminal resistor, software configurable
Replay Type	Magnetic latching relay
Messages Sent per Second*	Up to 20,000 frames per second
Messages Received per Second*	Up to 20,000 frames per second
Isolation	CAN/FlexRay channel DC 2500 V isolation
Power Supply	USB power supply
Power Consumption	3 W
Operating Humidity	10% ~ 90% (non-condensing)
Operating Environment	Keep away from corrosive gases

*Single channel at 1 Mbps with a 0 byte data field

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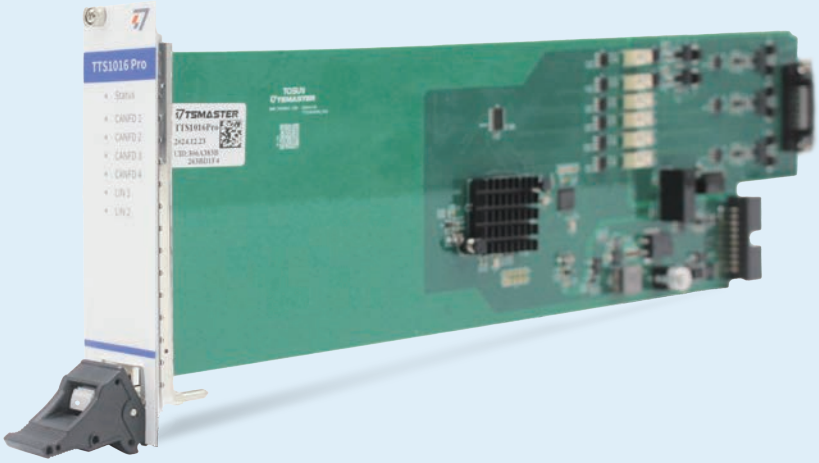
Hardware Interface

Pin	Definition
Pin 1	CAN_Shield
Pin 2	CGND
Pin 5	CAN 2_Low
Pin 6	CAN 2_High
Pin 7	CGND
Pin 8	CGND
Pin 9	FlexRay_BM 1
Pin 10	FlexRay_BP 1

Pin	Definition
Pin 11	FlexRay_BM 2
Pin 12	FlexRay_BP 2
Pin 13	CGND
Pin 21	CGND
Pin 22	CGND
Pin 23	FlexRay_BP 4
Pin 24	FlexRay_BM 4
Pin 25	FlexRay_BP 3
Pin 26	FlexRay_BM 3

10. 4/2 channel CAN FD/LIN bus device TTS1016P



Feature Overview

TTS1016 Pro, launched by TOSUN, is a device featuring 4 CAN FD channels and 2 LIN channels. It adopts a chassis slide rail installation method, making it easy to integrate into the TOSUN TTS system. The 4 CAN FD channels support a maximum bus rate of 8 Mbps, while the 2 LIN channels support speeds ranging from 0 to 20 kbps.

With the powerful TSMaster software, it supports loading DBC, LDF, ARXML, etc. database files, making it very convenient to monitor, analyze, and simulate CAN FD/LIN bus data, and it also supports functions such as UDS diagnostics, ECU flashing, CCP/XCP calibration, etc.

Characteristics

- μs (microsecond) level hardware message timestamps to meet advanced requirements
- CAN channel DC 2500V isolation
- CAN channel baud rate adjustable from 125 Kbps to 1 Mbps, and CAN FD supports a maximum of 8 Mbps
- Supports blf and asc format data recording and offline/online playback
- Supports UDS diagnostics and CCP/XCP calibration
- Supports UDS based Bootloader flashing
- Supports UDS diagnostics based on the LIN bus
- Supports secondary development interfaces for Windows and Linux systems
- Capable of loading all paid licenses for TSMaster

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Specification

Channel	2 x LIN / 4 x CAN FD
PC Interface	Converted to USB 2.0 via backplane slot
Communication Port Interface	SCSI 26 Pin Interface
Driver	Driver-free design for Windows and Linux systems, ensuring system compatibility
Buffer	Each channel supports a transmit buffer of up to 1000 CAN frames
CAN	Supports CAN 2.0A, B protocols, compliant with ISO11898-1 standard, with baud rate 125 Kbps to 1 Mbps
CAN FD	Supports CAN FD that complies with both ISO and non-ISO standards, with baud rates from 125 Kbps to 8 Mbps
LIN	Supports LIN 1.3/2.0/2.1/J2602, baud rate 0 to 20 Kbps
Schedule Table	Supports LDF files and running schedule tables, and also allows for self configuration of schedule tables
Timestamp Accuracy	1 μs hardware message timestamp
Relay Type	Magnetic latching relay
Messages Sent per Second*	Up to 20,000 frames per second
Messages Received per Second*	Up to 20,000 frames per second
Isolation	CCAN channel DC 2500 V isolation
Power Supply	USB power supply + DC power supply
Power Consumption	5 W
Operating Humidity	10% to 90% (non-condensing)
Operating Environment	keep away from corrosive gases

*Single channel at 1 Mbps with a 0 byte data field

Hardware Interface

Pin	Definition
Pin 1	CAN_Shield
Pin 2	GND
Pin 3	CAN 1_Low
Pin 4	CAN 1_High
Pin 5	CAN 2_Low

Pin	Definition
Pin 6	CAN 2_High
Pin 7	CAN_Shield
Pin 8	GND
Pin 9	CAN 3_Low
Pin 10	CAN 3_High

Pin	Definition
Pin 11	CAN 4_Low
Pin 12	CAN 4_High
Pin 13	CAN_Shield
Pin 14	GND
Pin 15	LIN 1

Pin	Definition
Pin 16	GND
Pin 17	LIN 2
Pin 18	GND
Pin 19	VCC
Pin 20	GND